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E-Health and Nursing – Knowledge for Patient Care

ACENDIO
E-HEALTH AND NURSING

Knowledge for Patient Care

Editors

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Dublin, Ireland.

Association for Common European Nursing Diagnoses,
Interventions and Outcomes, Dublin, Ireland.
E-HEALTH AND NURSING

Knowledge for Patient Care.

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Editorial

It has been my great pleasure to once again compile and edit the contributions of participants at an ACENDIO conference. I am always fascinated by the scope of topics and the enthusiasm with which these topics are pursued using both theoretical and research approaches. The role of editing is, therefore, educational, for the editor, although only giving a rudimentary review of the materials, has the benefit of gaining some wisdom from the combined knowledge of the contributors. This is indeed very rewarding.

This is the 20th anniversary of ACENDIO and it is only fitting to call to mind those who have worked with us throughout the years. My own involvement in ACENDIO started in 1997 and since then it has become something of a passion for me. Many people have shared their expertise and knowledge with us since those early days and we are delighted that so many have been able to join us at this special anniversary conference.

I expect that this will be the last proceedings that I will prepare and that the task will pass to someone else in the upcoming biennium. I hope that you have enjoyed returning to the wonderful presentations and papers that these books and ebooks have contained, even if the formatting was not always the best!

Dr. Fintan Sheerin
Message from the President of ACENDIO: eHealth and nursing knowledge

There was once a time when knowledge was embedded in education and that you could learn everything there was to learn. And then we understood that there was more to learn than the length of education programmes would allow, that knowledge is growing faster than we can ever adapt. Now we understand that knowledge is everywhere and is going far beyond human limits. It is the world of decision support systems, expert systems, electronic health records, documentation and communication standards, exploitation and learning from big data. Given the impact of eHealth on healthcare, it is surprising that eHealth and nursing informatics is still not standard in nursing curricula and that broadly available systems are not fully implemented in daily practice. Many decision makers, but also nurses still trust on their human capacity in the complex world of healthcare in which it has become impossible to master all evidence in any discipline or specialization. Many nurses don’t connect the success of their clinical work with eHealth. ACENDIO members know better. The tenth biennial ACENDIO conference in Bern is focusing on this unique contribution of eHealth to generating and expanding nursing knowledge: e-knowledge or enhanced knowledge in creating the future of nursing and healthcare. We have a great programme for you with high level keynotes and more than 50 interactive sessions. I hope that you enjoy the conference, the networks, the friendship and the great Bern hospitality. I wish you a good and inspiring conference.

Prof. Walter Sermeus
Message from the Chair of the Scientific Committee

I am proud to present you the proceeding of the European Conference of ACENDIO. The conference is exploring the state-of-art in worldwide e-health initiatives in nursing, describing best practice and looking for evidence of how these can contribute to five major goals: patient safety, quality of care, efficiency of care nursing service provision, patient empowerment and continuity of care.

Both themes are pertinent. eHealth is advancing at great speed, providing a wide range of digital solutions that are essential for health care innovations. At the same time, there is increasing awareness of quality and patient safety given the number of medical errors and adverse events that occur every year in hospitals and other healthcare settings. One of the main priorities in patient safety research, given by the WHO Alliance for Patient Safety in 2009, is that of coordination and communication. There is evidence that good teamwork, supported by high qualitative interprofessional communication and mutual respect, is leading to better quality of care, more patient satisfaction and shorter length-of-stay in hospitals.

This is what this conference is about: how nurses can take advantage of this growing digital e-health environment to take better care of their patients. In total 133 abstracts were submitted for the conference. Based on a scientific review process, we selected 82 oral presentations, 43 poster presentations and 4 workshops. I wish to thank all reviewers for their contributions to guarantee a high scientific standard for the conference. I would also like to thank all presenters for their contributions to the conference. I wish all participants a good and inspiring conference.

Prof. Anna Ehrenberg
Chapter 1 - Keynotes

1. eHealth and the changing role of the patient: what will the future bring?

Elske Ammenwerth PhD
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Introduction

E-health has been defined as the “use of emerging information and communications technology, especially the Internet, to improve or enable health and healthcare” (1). E-health architectures and applications are emerging in many countries. They may support information exchanges in different ways.

In the business-to-business scenario (2), e-health supports health-related information exchange between health care organizations. Typical application scenarios are teleconsultation, telepathology, or national electronic health records. These business-to-business e-health scenarios have been successfully introduced and are used in many countries.

But also the patient starts to use e-health to communication with their health care providers. In the business-to-consumer scenario, health-related information is exchanged between health care organizations and their patients. Typical application scenarios comprise telemonitoring, tele-education, secure messaging, e-visits, or patient portals.
In consumer-to-consumer scenarios, e-health is just focusing on the patient, without a health care provider involved in this communication. In this scenario, e-health is used for documenting health-related information by patients or for exchanging health-related information between patients. Typical examples are social networks for health-related communication, internet-based support groups, personal health records, or quantified self applications.

All these scenarios of e-health usage offer tremendous new possibilities for communication and cooperation, but also challenge the established roles of both health care professionals and patients. In this presentation, we want to explore this changing role of patients, have a closer look at patient portals that symbolize this new trend, and formulate a vision for the future.

**ePatients: The changing role of patients in eHealth**

E-health has been defined “not only a technical development, but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology” (3). This new “networked thinking” does not only challenges health care providers, but also the patient. The Gartner Hype Cycle 2013 shows the increasing relevance of a more patient-centered point of view of e-health and health IT in general: This hype cycle lists, for example, quantified self, personal health management tools, patient-centered medical homes, personal health records, patient self-service kiosks, patient portals and e-visits as emerging applications, reflecting new trends in
health care (4). All these new applications focus around the patient and all will shape the landscape of health care in the future.

This new type of patients that uses these new tools and that wants to take over a more active role in health care and health management has been called “e-patients”. E-patients describe individuals that are equipped, enabled, empowered and engaged in their health and health care decisions (5).

The idea of patient empowerment embedded in “e-patient” is based on a “philosophy which views humans as having the right and ability to choose by and for themselves” (6). This means that patients are responsible for their choices and the consequences of their choices (7). However, patients can only make autonomous and informed decisions within a true partnership between the patient and a health care professional. Patient empowerment describes this process of communication and education in which knowledge, values and power are shared between patient and healthcare provider (6).

**Patient portals and patient empowerment**

Patient portals are one application named in the hype cycle and are trying to empower patients. Patient portals can be defined as “provider-tethered applications that allow patients to electronically access his health information that is documented and managed by a health care institution” (8). Patient portals are owned and administered by health care institutions. They may offer different level of functionality.

Simple portals allow patients to access clinical data from the electronic patient record of their provider (e.g. lab results,
discharge letters, medication). More advanced portals support the
communication between patient and provider by offering
appointment scheduling or secure messaging. Patient portals may
also be part of disease management programs and thus offer
tailored personal reminders, allow access to guidelines or
education material, and may support self-documentation of the
health status by the patient.
In the U.S., Meaningful Use Stage 2 requirements have accelerated
the patient portal adoption, with 57% of US health care
organizations offering an EMR-specific patient portal in 2013 (9).
In Europe, the adoption and use of patient portal seems much
lower.
Patient portals are expected to support patient empowerment,
increase patient adherence and improve clinical outcome (10). Still,
recent reviews only found very few controlled studies on the impact
of patient portals (8, 11). Thus, whether patient portals can indeed
help to improve the process of patient empowerment and by this
lead to better clinical outcomes seems not clear yet, despite the
large investments on portals in some countries.
The evaluation of patient portals is, however, quite challenging, as
patient portals can be regarded as complex interventions: They
offer very different level of functionality and content, address
different types of users, show a high degree of self-organization
over time, their outcome shows high variability and is affected by a
number of mediator variables – all this attributes of “complex
interventions” (13).
A better understanding of the mechanism and context of the impact of patient portals, and more critical and independent evaluation studies and reviews are thus needed, reflecting the idea of evidence-based health informatics (12).

**Conclusion**

Patient portals and other e-health applications are expected to increase patient empowerment and patient activation. But for patient portals, as for many other e-health applications, their impact on quality, efficiency and safety of patient care remains doubtful. They probably won’t be successful as long as we don’t change our “state of mind”: Health care providers have to be willing to engage in a true partnership with the patient and to give up power, and patients have to be willing to take over responsibility for their own health management.

Attempts to predict future e-health adoption have often found to be wrong, and achieved progress was often surprisingly lower than expected. But we can dream and envision a health care system where patient-centred, coordinated and needs-oriented models of care are supported by user-friendly, tailored and evidence-based e-health services, in a health care system that values self-care and informal care more than today.

**References**


2. Implementing standardized languages into EHRs: inoperable nursing data

Gail Keenan PhD
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There is a major effort underway to employ “big data” science to the complex data gathered with the electronic health records (EHRs) for the purpose of improving the cost and quality of care. This exciting movement follows the lead of other industries that have realized multiple costs savings and improvement in business processes by analyzing large integrated customer data sets. NOT all data collected in the EHRs, however, is amenable to “big data” science analytics. What may be a surprise to many is the fact that most nursing data collected in EHRs today is not in a format that enables the use of big data science. Fortunately, research in the field of nursing informatics conducted over the last 2 decades has provided us the knowledge to successfully collect “interoperable” nursing data needed using EHRs. This presentation will focus on helping the audience understand the importance of “big data” science to nursing, the benefits to patients, what is required, and how to engage in meaningful participation across the world - NOW!

Disclosure: The HANDS software described in this presentation is owned and distributed by HealthTeam IQ, LLC. Dr. Gail Keenan is currently the President and CEO of this company and has a current conflict of interest statement of explanation and
management plan in place with the University of Illinois at Chicago and at the University of Florida.

**Keywords:** Nursing, Big data, EHR, Quality

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### 3. The role and impact of nurses in healthcare: linking RN4CAST to eHealth

*Walter Sermeus PhD*
*School of Public Health, Catholic University of Leuven, Leuven/BELGIUM*

RN4CAST is a large nurse workforce study funded by the Seventh Framework Programme (FP7) of the European Union. The project involves researchers from 12 European countries, the USA, China, South Africa and Botswana. The aim was to investigate on how the organization of nursing care impact individual measures of nurse well-being and patient safety outcomes and patient satisfaction. Data are available on 33,731 nurses, 11,336 patients from 478 hospitals. The aim of the presentation is to present the available evidence on the role and impact of nurses in healthcare in delivering good patient care. Secondly will be discussed how these valuable data can be captured in a more systematic and dynamic way by creating an eHealth nursing data platform.

**Disclosure:** No significant relationships.

**Keywords:** RN4CAST, outcomes, eHealth
Chapter 2 – Nursing Assessment

1. Dashboards for risk assessments to improve patient safety and quality of care

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Background
The ultimate goal of collecting data is that the data can be used and re-used to improve patient safety and quality of care. Standardized patient assessments (e.g. scales) are means which can be used for this purpose. To get nursing staff to perform the assessments and document them can be a challenge. The staff need to have knowledge of the assessments and their purpose, motivation to use them, time to fill them out and see the benefit of using them for patients and nursing.

Aim
The overall object was to implement dashboards for patient risk assessments, make them more transparent for the staff and increase their awareness to improve patient safety, quality of care and clinical decision making support.

To assess the risk for harm with acknowledged instruments is fundamental for patients because objective assessments increase
the likelihood of more appropriate interventions and thereby the likelihood of better quality of care (Hughes, 2008). Falls, pressure ulcers and malnutrition are harms that can threaten patients’ safety and are extremely expensive for the health care system and should be avoided by all means. Clinical guidelines are in use in Iceland and are based on international guidelines (Landspitali, 2007; 2008; 2011). According to the guidelines all hospitalised patients should be assessed on admission at the minimum for malnutrition, risk for pressure ulcers and patients older than 67 years for falls.

In the literature dashboard is defined as a data-driven clinical decision support tool and a strategy capable of querying multiple databases and providing a visual representation of key performance indicators in a single report (Mick, 2011; Wilbanks and Langford, 2014). The main purpose of a dashboard is to provide concise overview of a large amount of data (Wilbanks and Langford, 2014) and can be used both for showing data on an individual, ward or institutional basis, as a key performance or quality indicators (Basket, Lerouge and Tremblay, 2008; Sprague et al., 2013). Using clinical dashboards appropriately with electronic health records can ease surveillance, guide decision making and improve patients’ outcome (Basket et al, 2008; Wilbanks and Langford, 2014).
The setting
Landspítali University Hospital (LUH), the national university hospital in Iceland, provides services in all major medical specialties and serves as the country’s only university hospital and referral center. In 2013, LUH had 649 beds, 26 811 admissions, 334 528 ambulatory visits, 13 688 surgical procedures, and 3 228 deliveries (Landspítali, 2013).

Material and methods
A decision was made by the executive board at Landspítali University Hospital, Iceland to improve patient safety and quality of care by including falls and pressure ulcers in the hospital scorecard. To reach the minimum score dashboards were selected
for presentation of real time clinical data for all in-patients in the hospital. Appropriate data were already captured in a data repository. Quality indicators for patient risk assessments were selected based on clinical guidelines. The first chosen were risk assessments for malnutrition, pressure ulcer (Braden scale), and falls (Morse). The initial requirements for each quality indicator were defined. Colour codes are used to indicate whether patients are at risk or not. A green colour indicates that patients have been assessed and are not at risk (i.e. scores for nutrition ≤2, for pressure ulcers >18, for falls <45), red colour indicates patients at risk (i.e. scores for nutrition >2, for pressure ulcers ≤18, for falls ≥45) and the grey colour that assessments have not been performed. Data from the electronic health record were then mapped to dashboards based on these requirements.

**Results and present state.**

The implementation of dashboards was finished in the end of 2014. The increase of documented assessments to date in wards which have used the quality indicators is considerable. For example, in the haematology ward in February 2014 nutritional assessments were documented for 15.8% of patients, and none for pressure ulcers and falls. In September 2014 after the implementation the documented assessments were 82.5%, 85.0% and 95.8%, respectively and in December 69.8%, 90.7% and 90.5% respectively. In the acute geriatric ward in February 2014 nutritional, pressure ulcer and fall assessments were documented for none of the patients. In September 2014 the documented assessments were 0.0%, 4.9% and 9.8%, and in December after the
implementation 72.0%, 52.0% and 80.0%, respectively. In the thoracic surgical ward in February 2014 nutritional assessments were documented for 10.6% of patients, 1.5% for pressure ulcers and 34.6% falls. In September 2014 the documented assessments were 18.2%, 19.7% and 36.4%, respectively and in December after the implementation 53.4%, 65.5% and 71.9% respectively as can be seen in table 1.

**Table 1.** Discharge month, number of discharged patients, Nutritional, Pressure Ulcer and Fall assessments (67 years and older) before and after the implementation.

<table>
<thead>
<tr>
<th>Ward</th>
<th>Discharge month</th>
<th>Number of discharged patient</th>
<th>Nutritional Assessments</th>
<th>Pressure Ulcer Assessments</th>
<th>Fall Assessments ≥67 years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n(%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haematology</td>
<td>February 28</td>
<td>7(25.0%)</td>
<td>0.00%</td>
<td></td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>June 30</td>
<td>21(70.0%)</td>
<td>3(10.0%)</td>
<td></td>
<td>18.80%</td>
</tr>
<tr>
<td></td>
<td>September 40</td>
<td>33(82.5%)</td>
<td>34(85.0%)</td>
<td></td>
<td>95.80%</td>
</tr>
<tr>
<td></td>
<td>October 39</td>
<td>27(69.2%)</td>
<td>31(79.5%)</td>
<td></td>
<td>81.80%</td>
</tr>
<tr>
<td></td>
<td>November 39</td>
<td>27(69.2%)</td>
<td>31(79.5%)</td>
<td></td>
<td>81.80%</td>
</tr>
<tr>
<td></td>
<td>December 43</td>
<td>30(69.8%)</td>
<td>39(90.7%)</td>
<td></td>
<td>90.50%</td>
</tr>
<tr>
<td>Acute Geriatric</td>
<td>February 17</td>
<td>0.00%</td>
<td>0.00%</td>
<td></td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>June 16</td>
<td>0.00%</td>
<td>2(12.5%)</td>
<td></td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>September 41</td>
<td>0.00%</td>
<td>2(4.9%)</td>
<td></td>
<td>4(9.8%)</td>
</tr>
<tr>
<td></td>
<td>October 19</td>
<td>12(63.2%)</td>
<td>13(68.4%)</td>
<td></td>
<td>13(68.4)</td>
</tr>
<tr>
<td></td>
<td>November 30</td>
<td>23(76.7%)</td>
<td>21(70.0%)</td>
<td></td>
<td>26(86.7%)</td>
</tr>
<tr>
<td></td>
<td>December 25</td>
<td>18(72.0%)</td>
<td>13(52.0%)</td>
<td></td>
<td>20(80.0%)</td>
</tr>
<tr>
<td>Thoracic Surgical</td>
<td>February 66</td>
<td>7(10.6%)</td>
<td>1(1.5%)</td>
<td></td>
<td>34.60%</td>
</tr>
<tr>
<td></td>
<td>June 84</td>
<td>11(13.1%)</td>
<td>17(20.2%)</td>
<td></td>
<td>32.40%</td>
</tr>
<tr>
<td></td>
<td>September 66</td>
<td>12(18.2%)</td>
<td>13(19.7%)</td>
<td></td>
<td>36.40%</td>
</tr>
<tr>
<td></td>
<td>October 74</td>
<td>17(23.0%)</td>
<td>25(33.8%)</td>
<td></td>
<td>41.60%</td>
</tr>
<tr>
<td></td>
<td>November 45</td>
<td>16(35.6%)</td>
<td>15(33.3%)</td>
<td></td>
<td>50.00%</td>
</tr>
<tr>
<td></td>
<td>December 58</td>
<td>31(53.4%)</td>
<td>38(65.5%)</td>
<td></td>
<td>71.90%</td>
</tr>
</tbody>
</table>
Figure 2. Nutritional assessment before and after the implementation.
Figure 3. Pressure ulcer assessment before and after the implementation.

Figure 4. Fall assessment, 67 years and older before and after the implementation.
Discussion and implications
The capture, storage and access to data opens up opportunities for nursing. To be able to present data to staff seems to be of utmost importance on the journey to improve patient safety and quality of care. The use of the dashboard technique seems to have increased awerness by the staff but it is not sufficient to assess, appropriate interventions have to follow outcomes of the assessments. Therefore the next step will be to ensure that appropriate nursing interventions are in line with the results of the assessments. Real time meters are under construction to measure if the nursing diagnosis: Risk for pressure ulcer and the nursing interventions: Teaching: Individual, Risk Identification, Pressure Management, Pressure Ulcer Prevention are applied for patients at risk for pressure ulcer. These are the nursing interventions suggested by the clinical nurse specialist in pressure ulcer prevention at LUH.

Summary
Dashboards for standardized patient risk assessments (e.g. scales) can be used to improve patient safety and quality of care, make documentation transparent for the staff, increase awareness of the importance of patient assessments and support clinical decision making.

References
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**Disclosure:** No significant relationships.

**Keywords:** Dashboards, data, patient risk assessments, patient safety, quality of care, quality indicators
2. Characterisation of fatigue in patients with intermittent claudication

L. Batista¹, R. Silva¹, C. Assis¹, N. Wolosker²
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Introduction

Intermittent Claudication (CI) is characterized by pain, cramp or paresthesia in the lower limbs, often in the calves, which begins with exercise and is relieved by rest. It is the main symptom of obstructive peripheral arterial disease (DAOP) of the lower limbs. A Brazilian study showed that CI occurs in 9% of DAOP patients. It is known that patients with CI have higher risk of cardiovascular mortality. (¹-²)

Physical activity is one of the main components of non-pharmacological treatment of CI. Exercises improve the symptom by lowering oxidative stress, redistributing blood flow to ischemic areas, and improving the availability of nitric oxide, pain threshold and functional capacity.(³-⁴) However, literature shows that patient adherence to physical activity is low.(⁵)

Probably, personal and environmental barriers might contribute to the observed low adherence to physical activity. Researchers(⁵) verified that among 150 patients with CI lack of energy was associated with low level of physical activity.

Lack of energy is one of the signs of fatigue. This is a complex phenomenon, which is subjective, multifactorial, and determined and expressed by physical, cognitive and emotional factors. Fatigue
is of nursing concern. It was accepted as a nursing diagnosis by the NANDA-International in 1988, and is defined as “an overwhelming sustained sense of exhaustion and decreased capacity for physical and mental work at usual level.”

Several studies have been done in different populations to identify the prevalence of fatigue, to characterize it and to test interventions. However, as the best we know, there are not any studies that investigated fatigue in patients with CI. The aim of this study was to verify if patients with intermittent claudication have fatigue and, if so, to characterize this phenomenon among them.

**Methods**

This was a descriptive, exploratory, cross-sectional study. Our convenience sample was 49 participants with CI treated in an outpatient clinic of a tertiary hospital, in Sao Paulo, Brazil, from December 2013 and July 2014. Participants were included if they were > 18 years old, did not use any device for ambulation, had no amputation, had no major surgery within six months prior data collection and gave their consent. This study was approved by the local Ethics Committee.

Fatigue and exertion fatigue were assessed through validated questionnaires: Dutch Fatigue Scale (DUFS) e Dutch Exertion Fatigue Scale (DEFS). Both scales were developed according NANDA-I definition of fatigue for patients with heart failure. They were translated into Brazilian Portuguese and validated for use in Brazil. Brazilian versions of DUFS and DEFS have 8 and 9 items, respectively. Each item is evaluated by the patient through a 5-type Likert scale. For each scale, the total score is given by the sum of
the scores of the items. The sixth item of the DUFS needs to be corrected before it is included in the sum, because its content has an opposite direction. Scores equal or above 14.5 for DUFS and 12.5 for DEFS indicate substantial fatigue and substantial exertion fatigue.

Data were analyzed through descriptive statistics. For continuous variables we calculated the mean, standard deviation, and minimum and maximum values. Categorical variables were analyzes through their frequencies.

**Results**

Forty-nine patients were enrolled. The mean age was 66.6 years (SD = 10.1), and 70% were male. Approximately, half of them had diabetes and hypertension.

We verified that 26.5% (n = 13) of patients had substantial fatigue. The mean score of DUFS was 20.4 (SD = 8.8), with minimum and maximum values of 8 and 37, respectively (Table 1). The item with the highest score was “Is your interest in sex, your desire to make love, diminished recently??” (3.3, SD = 1.8); and the item with the lowest score was “Are you still capable recently of carrying out routine everyday activities?” (1.8, SD = 1.4).
Table 1. Descriptive analysis of the Dutch Fatigue Scale (DUFS) items and total scores

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean (SD)</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Have you had a feeling of overwhelming and prolonged lack of energy recently?</td>
<td>2.5 (1.7)</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2- Have you recently noticeably needed more energy in order to fulfil your daily tasks?</td>
<td>2.8 (1.7)</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>3- Have you felt listless recently?</td>
<td>2.4 (1.7)</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>4- Have you awoken on occasion recently with a feeling of exhaustion and weariness?</td>
<td>2.3 (1.8)</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>5- Have you an increasing need for rest recently</td>
<td>3.2 (1.8)</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>6- Are you still capable recently of carrying out routine everyday activities?</td>
<td>1.8 (1.4)</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>7- Is your interest in sex, your desire to make love, diminished recently?</td>
<td>3.3 (1.8)</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>8- Has it become more difficult to concentrate for long on one thing?</td>
<td>2.3 (1.6)</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>DUFS</td>
<td>20.4 (8.8)</td>
<td>19</td>
<td>8</td>
<td>37</td>
</tr>
</tbody>
</table>

Regarding to DEFS, we observed that 30.6% (n = 15) of patients had substantial exertion fatigue. The mean score of DEFS was 20.4 (SD = 10.8), with minimum and maximum values of 9 e 45, respectively. The item with the highest score was “Do you find it
fatiguing to walk up and down stairs?” (3.2, SD = 1.9); and the item with the lowest score was “Do you find it fatiguing to stand under the shower?” (1.4, SD = 1.2).

Table 2. Descriptive analysis of the Dutch Exertion Fatigue Scale (DEFS) items and total scores

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean (SD)</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Do you find it fatiguing to walk for 10 minutes?</td>
<td>2.2 (1.8)</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2- Do you find it fatiguing to walk for half an hour?</td>
<td>2.7 (1.7)</td>
<td>2</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>3- Do you find it fatiguing to stand under the shower?</td>
<td>1.4 (1.2)</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>4- Do you find it fatiguing to walk up and down stairs?</td>
<td>3.2 (1.9)</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>5- Do you find it fatiguing to go to the shop to buy something?</td>
<td>2.5 (1.8)</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>6- Do you find it fatiguing to clear up household rubbish?</td>
<td>2.0 (1.6)</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>7- Do you find vacuum cleaning a fatiguing activity?</td>
<td>1.8 (1.5)</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>8- Do you find, in general, going to visit other people fatiguing?</td>
<td>2.2 (1.6)</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>9- Do you find it fatiguing to attend a special social occasion,</td>
<td>2.3 (1.6)</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>such as a birthday party?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEFS</td>
<td>20.4 (10.8)</td>
<td>17</td>
<td>9</td>
<td>45</td>
</tr>
</tbody>
</table>
Discussion

This study allows us to identify the frequency of fatigue and exertion fatigue, and to characterize this phenomenon among patients with CI.

Sociodemographic characteristics of our patients are similar to those reported in the literature.\textsuperscript{(10)} A Brazilian study showed that the prevalence of DAOP increases with age and that 21.6\% of people with 60 years or older have the disease.\textsuperscript{(2)} Regarding comorbidities, 50\% of the patients had arterial hypertension and diabetes. It is well established that both are the main contributors for developing DAOP.\textsuperscript{(11)} Indeed, people with diabetes are 6 fold risk of DAOP, while 90\% of patients with DAOP have hypertension.\textsuperscript{(11)}

In our best knowledge, this is the first study that evaluated fatigue in patients with CI in a systematically way. We observed that 26.5\% of patients had fatigue and 30.6\% had exertion fatigue. In fact, the prevalence of fatigue varies widely. It may occur among people with or without diseases. A study with healthy people showed that 24\% had fatigue during one month or more.\textsuperscript{(12)} In general population, the prevalence of fatigue may be of 38\%.\textsuperscript{(13)} Besides that, patients with wide range of diseases or conditions are known to have fatigue.\textsuperscript{(13-15)}

Our data suggest that diminished interest for sex/sexual activity is one of the main factors that characterized fatigue in patients with CI. Study showed that in patients with traumatic brain injury, frequency, desired frequency, and importance of sexual activity were related with fatigue.\textsuperscript{(16)} In another study, researchers
postulated that sexual dysfunction is a common condition among women with chronic fatigue syndrome.\(^{(17)}\) On the other hand, the item that best characterize exertion fatigue was related to up and down stairs. This data is congruent with the literature. Patients with CI have low level of physical activity and the walking impairment is verified in walking distances and speed and in capacity of climbing stairs.\(^{(18,19)}\) Interestingly, although some physical activities seem to characterize exertion fatigue, daily life activities are not important in this context.

In a study carried out with adults accompanying patients in outpatient treatment, authors found similar characterization of fatigue.\(^{(20)}\) The characterization of fatigue had similarities, ie, while the item with the highest score was different (“Have you awoken on occasion recently with a feeling of exhaustion and weariness?”), the item with the lowest score was the same (“Are you still capable recently of carrying out routine everyday activities?”). Regarding exertion fatigue both, the highest and the lowest scores, were found for the same items (“Do you find it fatiguing to walk up and down stairs?” and “Do you find it fatiguing to stand under the shower?”). Taken together these data suggest that fatigue is characterized by similar items in different populations.

This study has limitation. The convenience sample and the study design compromise the generalization of the results. Furthermore, patients were recruited from a tertiary hospital in which there are patients with more complex disease conditions. Maybe this fact influenced patients’ answers to DEFS.
Conclusion

Patients with CI have fatigue and exertion fatigue as demonstrated by the mean scores of DUFS and DEFS. Fatigue was characterized by diminished interest for sex/sexual activity but was not by the patients’ ability to carry daily activities. Exertional fatigue was characterized by the impairment to walk up and down the stairs, but was not by taking a shower.

References


Disclosure: No significant relationships.

Keywords: fatigue, Nursing Diagnosis, intermittent claudication

CAPES (Comissão de Aperfeiçoamento de Pessoal do Nível Superior) gave financial support for Rita de Cassia Gengo e Silva to present this research.
3. Follow up study of assessment by ambulance and triage classification (RETTS) in electronic health records

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Background

The ordinary process for the ambulance nurse is to give prehospital care and transport all patients to the emergency ward regardless of the patients’ medical conditions. The Ambulance organisation south of Sweden has introduced a model of prehospital care for all adult patients with different severities of illness.

Aim

The main focus of the study is to give a faster prehospital assessment in collaboration with the ambulance nurse and primary health care. The secondary focus is to investigate the use of RETTS (Rapid Emergency Triage, and Treatment System) while writing the information regarding the patient. If the patient’s condition turns out to be level GREEN by RETTS, the ambulance nurse contact with the primary care physicians for a dialogue and together they decide which level of care is the most appropriate for the patient’s condition. There are three levels of care; 1. The patient is able to stay at home with supervision from the primary health care. 2. The ambulance transporting the patient to the primary health care unit for assessment. 3. The ambulance transport the patient to the emergency ward.
Method
The study design was to exploratory interventions study. The data was conducted in all Electronic Health Records during April – August 2014 (N=67). The ambulance nurse assess patients from 18 years and older with (RETTS). There are three levels of care; 1. The patient is able to stay at home with supervision from the primary health care. 2. The ambulance transporting the patient to the primary health care unit for assessment. 3. The ambulance transport the patient to the emergency ward. The data was analyzed by a descriptive method conducted by statistics from the nurses while using the clinical support systems (RETTS) for decision-making.

Results
Preliminary results will be presented with focus on clinical decision-making, clinical support systems by RETTS, and how ambulance nurse administrated their decision in Electronic Health Records.

Disclosure: No significant relationships.
Keywords: assessment, ambulance, Classification
4. Needs in nursing care of patients in palliative care

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Introduction

At the same time of the change of the death place, from home to hospital, the aging population and the increase of life expectancy led to a change in the pattern of diseases, particularly, in chronic and progressive, resulting in the extension of the death process. When the disease progression become inevitable, and curative treatments unnecessary, Palliative Care turn into a better option (Davies & Higginson, 2004; Portugal. DGS, 2004).

Nursing care for Palliative Patients in a hospital setting aim to help the patient living the last moments with greater comfort, well-being and quality of life, alleviating suffering, helping achieve a dignified dying, one of the most important goals of Palliative Care (Chochinov, 2002).

The characterization of nursing care needs documented in the Nursing Information System (NIS) in use may establish itself as an effective strategy to define training policies to nurses, to the organization of care as well as for the definition of areas of focus for research, with the ultimate goal of the continuous improvement of quality of care provided to patients in Palliative Care.
Method
Our study aim to describe the main needs for nursing care of patients in Palliative Care referred to the Hospital-Support Team in Palliative Care of a central hospital in Portugal. To achieve our goal we conducted an exploratory, descriptive and cross-sectional study, from the documentation of nursing care in the NIS in use. Our sample comprises the accessible population between September 1, 2012 and September 1, 2013, and has an inclusion criteria the last episode of hospitalization, making a total of 276 patients. For the analysis and processing of data were used content analysis documentation of nursing care, using an analytical model a priori, based on beta 2 version of ICNP®.

Results
Concerning the needs of nursing care documented in NIS, 68% of nursing focus belongs to the dimension of function and 32% to the dimension of person. Noteworthy is the presence, among the ten focuses of function most identified by nurses, of Pressure Ulcer (79,71% in risk and 61,96% with Pressure Ulcer), Pain (72,1%), Oedema (50,36%), Constipation (29,71% in Risk and 15,22% with constipation) and Dyspnea (42,75%). Regarding the dimension of person were identified focus essentially related to self-care and communication. Occurs, in focus related to self-care, the existence of 71,74% of patients with dependence in self feeding; 85,51% in self hygiene; 84,78% in self toileting; 86,23% in self dressing; 79,35% in positioning and 59,78% in self transferring.
A catalogue called "Palliative Care for Dignified Dying" was developed and published by ICN, based on Dignity-conserving
model of care by Chochinov. It contains diagnoses, results and actions for the promotion of dignity. In 2012, the catalogue was checked for cultural validity to the Portuguese context (Fonseca, 2012). A comparative analysis with the nursing care needs described in this context is essential to the reflection on the established practices, to the introducing of new concepts, as well as a suggestion of statements of diagnosis, outcomes and interventions. So, we carried out a comparison of the ten most frequent focuses on the documentation of nursing care, with the corresponding categories in the catalogue under analysis, as seen in the present table.

Table 1: Comparison of the ten most frequent focus of attention

<table>
<thead>
<tr>
<th>Focus of attention</th>
<th>Palliative Care for dignified dying</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td></td>
</tr>
<tr>
<td>Pressure Ulcer</td>
<td>Physical distress</td>
</tr>
<tr>
<td>Pain</td>
<td></td>
</tr>
<tr>
<td>Oedema</td>
<td></td>
</tr>
<tr>
<td>Self-dressing</td>
<td>Illness-Related concerns</td>
</tr>
<tr>
<td>Self-hygiene</td>
<td></td>
</tr>
<tr>
<td>Self-toileting</td>
<td>Functional capacity</td>
</tr>
<tr>
<td>Positioning</td>
<td></td>
</tr>
<tr>
<td>Self-feeding</td>
<td></td>
</tr>
<tr>
<td>Self-transferring</td>
<td></td>
</tr>
</tbody>
</table>
In table 1, we can verify the existence of focus of attention in the category *Illness-Related Concerns*, mainly in subcategories *physical distress* and *functional capacity*. For example, the focus *fall* were identified in 87.68% of the patients, *Pressure Ulcer* in 79.71% of the patients and the focus *self-dressing* in 86.23%.

Given the need to discuss to what extent the documentation of nursing care reflect the different areas that make up the nursing catalogue, we made a comparative analysis between the Focus of Attention identified in the documentation of the nursing care in this context and focus that are expressed in the catalogue, using the 3 categories of Dignity Preserving Model as an organizing strategy: *Illness-Related Concerns, Dignity-Conserving Repertoire* and *Social Dignity Inventory*.

In the Dignity-conserving model of care by Chochinov, *Illness-Related Concerns* are organized in 4 subcategories: *physical distress*, *psychological distress*, *cognitive acuity* and *functional capacity*. In this category were identified focus of attention in each subcategory *Illness-Related Concerns*, with predominance of *physical distress* and *functional capacity*. This category, besides the different types of *self-care*, present in the subcategory *functional capacity*, also includes *pain*, present in 72.10% of the patients and *constipation*, in 44.93% of the patients, in the subcategory *physical distress*. Although considered to be one of the most common symptoms, present either in oncologic and non-oncologic patients, *fatigue* was only identified in 1.81% of the patients of the present study.
The *Dignity-Conserving Repertoire* presents 10 subcategories: *continuity of self, role preservation, maintenance of pride, hopefulness, autonomy/control, acceptance, resilience/fighting spirit, living in the moment, maintaining normalcy* and *finding spiritual comfort*. In this category were identified only focus of attention related to the subcategories: *role preservation, acceptance, resilience/fighting spirit, continuity of self* and *finding spiritual comfort*. This category includes only 6 focus of attention, one in each subcategory, *role performance*, present in 1.45% of the patients, *acceptance of health status*, present in 1.09% of the patients, *coping*, present in 0.72% of the patients and *body image and suffering*, both present in only 0.36% of the patients.

The *Social Dignity Inventory* presents 4 subcategories: *privacy boundaries, social support, burden to others* and *aftermath concerns*. In this study, were identified only focus of attention in the subcategories: *social support* and *aftermath concerns*. In this category we have 5 focus of attention, 3 categorized in *social support*, which includes *support*, present in 6.16% of the patients, *caregiver stress*, in 2.17% and *socialization*, present in only 0.36%, and *aftermath concerns*, which includes *anxiety*, in 11.23% and *grief*, in 1.45% of the patients.

As can be seen when making a comparison between the statements of diagnosis and results of the catalogue and the focuses of attention that emerged from NIS of this study, occurs a predominance of the physical dimension, which includes both the control of symptoms and comfort, especially through self-care.
Conclusion
This study evidences that, despite the relevance of physical dimension, it represents only a part of total care, exposing the opportunity of the improvement of nursing care quality, regarding the psychological, social, cultural and spiritual dimensions. Emerges, hence, the need of appropriate training to the other key areas of Palliative Care, particularly fatigue, grief, family, communication, comfort and spirituality.
The introduction of the Catalogue Palliative Care for Dignified Dying in the NIS of the context of the present study may represent an excellent opportunity for progressive change in the philosophy of the care to palliative patients, with the ultimate goal of providing well-being and promoting quality and dignity to the last hours, days or months of life, in its diverse dimensions.
This study reveals the opportunity to develop nursing strategies that allows the alignment of the care with the state of art.

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Fonseca, B. 2012. Dignified Dying in the Nursing Practice. Master degree in Palliative Care, Universidade Católica Portuguesa
5. **Imbalanced human energy field:** development, revision and conceptualization of a NANDA-I nursing diagnosis within Rogers’ Science of Unitary Human Beings

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The nursing diagnosis, Disturbed Energy Field (00050) was first approved by NANDA-I in 1994 and was originally defined as “disruption of the flow of energy surrounding a person’s being that results on disharmony of the, body, mind, and/or spirit.” The diagnosis under went a minor revision in 2004. In response to the movement toward evidenced based practice, some have questioned the validity of the diagnosis. We embarked on re-envisioning and
reconceptualizing the diagnosis of an “energy field disturbance” within Martha Rogers’ Science of Unitary Human Beings as a means to more clearly establish the scientific foundation of the diagnosis and to conceptualize the diagnosis consistent with the postulates and principles within Rogers’ Nursing Science. This presentation is the result of our work that was conducted using a wiki site on “Basecamp” which facilitated and enhanced our mutual collaboration. In keeping with the definition of a Nursing Diagnosis as a clinical judgment about actual or potential individual, family, or community responses to health problems/life processes, we propose these diagnoses as a clinical judgment about an individual’s condition in relation with health problems/life processes. Also, given that a nursing diagnosis provides the basis for selection of nursing interventions to achieve outcomes for which the nurse has accountability, we provide support for nursing practice grounded in philosophical and theoretical perspectives embracing the concept of the human energy field and for the nurse accepting accountability for care grounded in the Rogers’ science of unitary human beings. The results of our work led to proposing a label change of the actual diagnosis of Disturbed Energy Field to be relabeled Imbalanced Human Energy Field and we propose a new human promotion diagnosis of Enhancement of the Human Energy Field. This presentation will focus on discussing the new proposed definition, defining characteristics, and related factors. The human energy field is the fundamental unit of the living and non living; thus human beings are each a unique energy field in mutual process with the environmental energy field. Defining
characteristics are organized into the following categories: A) disturbances in energy flow; B) disturbances in the rhythm of energy field patterns; and C) imbalances of energy flow, which are apprehended by direct appraisal through Therapeutic Touch or other energy-based modalities. Indirect appraisal through dialogue and observation is also a means for diagnosing Imbalanced Human Energy Field. The scientific base for the diagnosis will be presented by conceptualizing the diagnosis within Rogers’ four postulates: energy field, pattern, openness, and pandimensionality. Linkages to NIC nursing interventions and NOC outcomes will be presented consistent with the Rogerian Unitary Pattern-Based Praxis Method where interventions are reconceptualized as “mutual patterning strategies” and NOC outcomes are reconceptualized as “client potentials.”

**Disclosure:** No significant relationships.

**Keywords:** Imbalanced Human Energy Field, NANDA-I Nursing Diagnosis, Rogers' Science of Unitary Human Beings, NIC and NOC, Unitary Pattern-Based Practice
6. Activity tolerance and incapacity for daily living activities in patients with intermittent claudication

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Introduction

Intermittent Claudication (CI) is the main symptom of obstructive peripheral arterial disease (DAOP) of the lower limbs. It is frequently characterized by pain in the calves that begins during walking and forces the patient to stop. CI is considered an important health problem and is associated with a decrease in quality of life and with higher risk of death due to cardiovascular condition.¹⁻²

Patients with CI have low levels of physical activity and a reduction in functional capacity, which is frequently described as a decreased ability to walk in a corridor or in a treadmill, to climb stairs, or a decrease in their walking speed.³⁻⁵ In fact, functional capacity is determined by patient tolerance to physical activity.

It is reasonable that functional capacity may be related with functional independence for daily living activities in patients with CI. In our best knowledge, the association of functional capacity and functional independence was not evaluated in patients with CI. The aim of this study was to verify the association between activity
tolerance (functional capacity) and incapacity for daily living activities among these patients.

Methods
This was a descriptive, exploratory, cross-sectional study. Our convenience sample was 50 participants with CI treated in an outpatient clinic of a tertiary hospital, in Sao Paulo, Brazil, from December 2013 and July 2014. Participants were included if they were > 18 years old, did not use any device for ambulation, had no amputation, had no major surgery within six months prior data collection and gave their consent. This study was approved by the local Ethics Committee.

Sociodemographic and clinical data were collected. The Functional Independence Measure (FIM)\(^6\) and the Walking Impairment Questionnaire (WIQ)\(^7\) were used to estimate the incapacity for daily living activities and the walking ability, respectively.

Functional Independence Measure (FIM)\(^6\)
This instrument evaluates patient incapacity due to several etiologies. It has 18 items in six dimensions: self-care, mobility, transfer, communication, sphincter control and social cognition. Each item can get scores varying from 1 (total dependence) to 7 (complete independence). Each dimension is analyzed by the sum of its items. FIM total score is calculated by the sum of all items and may vary from 18 to 126. The dependence levels are categorized according the FIM total score: 18 - complete dependence, 19 to 60 - modified dependence (need assistance to until 50% of the tasks), 61 to 103 - modified dependence (need
assistance to until 25% of the tasks), and 104 to 126 – complete independence.

*Walking Impairment Questionnaire (WIQ)*

This questionnaire evaluates the walking ability in patients with CI. The initial questions are used to make the differential diagnosis for the pain in the lower limbs. Three domains follow these questions: walking distance, walking speed and climb stairs. In each domain the patient is asked to describe the level of difficult to move through increasing distances, at increasing velocities, and to climb stairs. The level of difficult is measured by a 5-point Likert type scale: 0 = unable, 1 = much difficult, 2 = reasonable difficulty, 3 = mild difficulty and 4 = no difficulty.

For each domain, patient scores are multiplied by pre-established weights. The sum of the products is divided by the maximum score for each domain. The results may vary from 0 (patient is unable to do the task) to 100 (patient does not have difficulties to do the task).

Descriptive statistics were used to analyze sociodemographic and clinical data, the FIM and the WIQ scores. To analyze the association between FIM and WIQ, Spearman correlation test was used. The level of significance was 5%.

**Results**

*Sociodemographic and clinical characterization*

The mean age of patients was 66.4 (SD = 10.2); 68% (n = 34) were male; 50% (n = 25) had diabetes and 68% (n = 34), arterial hypertension.
The mean scores of walking ability, as verified by WIQ are shown in table 1.

Table 1. Descriptive statistics of Walking Impairment Questionnaire domains

<table>
<thead>
<tr>
<th>Domain</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance walk</td>
<td>22.3</td>
<td>24.4</td>
<td>0.5 – 89.3</td>
</tr>
<tr>
<td>Speed walk</td>
<td>21.2</td>
<td>16.4</td>
<td>0 – 60.9</td>
</tr>
<tr>
<td>Climb stairs</td>
<td>34.6</td>
<td>29.1</td>
<td>0 - 100</td>
</tr>
</tbody>
</table>

Regarding the functional independence, the lowest score was observed for the memory item. Table 2 shows the mean scores for the two domains and the total score.

Table 2. Descriptive statistics of Functional Independence Measure

<table>
<thead>
<tr>
<th>Domains</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Observed variation</th>
<th>Possible variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor function</td>
<td>90.3</td>
<td>1.6</td>
<td>13-91</td>
<td>83-91</td>
</tr>
<tr>
<td>Cognition function</td>
<td>34.5</td>
<td>0.8</td>
<td>5-35</td>
<td>32-35</td>
</tr>
<tr>
<td>FIM</td>
<td>124.8</td>
<td>2.0</td>
<td>18-126</td>
<td>117-126</td>
</tr>
</tbody>
</table>

**Functional independence and walking ability**

There was association between MIF total score and WIQ domains: walking distance ($r = 0.485; p < .001$), walking speed ($r = 0.463; p = .001$) and climb stairs ($r = 0.337; p = .017$).

**Discussion**

This study provide information about the demand for care related to motor functions and cognitive functions of daily life and its association with walking ability in patients with CI.
Our data suggest that patients with CI have complete independence for daily living activities, which is consistent with other studies carried out with patients at the same age.\(^{(8,9)}\) Male sex were predominant among our patients. It is well known that DAOP is more frequent in men.\(^{(10)}\) However, it is not possible to affirm that male sex contribute for the results related to FIM scores, because there literature is conflicting on this topic.\(^{(8,11,12)}\)

It was expected that patients with more comorbidities have lower total FIM scores, which did not occur. This result might be due to the small variability observed among the scores of FIM items. Our patients had lower scores in the three WIQ domains, suggesting that they have walking impairment. Similar results were found by other researchers, even after an exercise therapy.\(^{(13)}\) The scores of WIQ domains had a significant association with FIM total score. It may suggest that despite the complete independence (FIM), the greater functional capacity measured by WIQ, and therefore the activity tolerance, the higher the FIM total score. This finding is important because it indicates that patients with CI must be stimulated to maintain their walking ability in order to maintain their functional independence to perform the daily living activities.

This study has limitations. The convenience sample and the cross-sectional design compromise de generalization of the results. Although the recommendation is that FIM must be read and answered by the patients, the researchers read the instrument because patients had difficult to do it. This was a unicentric study, carried out in a tertiary hospital, which may contribute to findings related to walking ability.
Conclusion
Patients with CI are completely independent for daily living activities and have walking impairment. MIF total score and WIQ domains scores were associated. Although patients with CI are functionally independent, the greater functional capacity measured by WIQ, and therefore the activity tolerance, the higher the FIM score.

References


**Disclosure:** No significant relationships.

**Keywords:** activity tolerance, funcional capacity, daily living activity, intermittent claudication
CAPES (Comissão de Aperfeiçoamento de Pessoal do Nível Superior) gave financial support for Rita de Cassia Gengo e Silva to present this research.

7. Risk stratification in hospitalized elderly patients

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Nursing, Felix Platter-Spital, Basel/SWITZERLAND

Introduction
Due to polymorbidity and frailty, elderly patients in hospital are prone to diverse risks. A bunch of inventories is used to assess and control these risks. Although each assessment may generate important data, systematic approaches to summarise and stratify the risks are rare.

Aim
Development and evaluation of a tool to assess, summarise and stratify typical risks of patients

Method
The method is informed by
- Comprehensive geriatric assessment
- Nursing diagnostics incl. NANDA-I® classification
- Triaging
- competence profiles and qualification levels of both diploma and associated nurses
Target group
Inpatients of an university geriatric hospital (300 beds, 3’000 admissions p.a); nurses with and without diploma.

Results
Relevant data were extracted from electronic patient records and controlling files from fall 2013 til end 2014. Data of 4’351 cases were included. The mean age was 83 (50 – 113, sd 10). 68% were female. Average length of of stay was 21.1 d. Patients had a mean of 7.3 NANDA-I®-diagnoses (0-14, sd 1.7) per capita, with a total case weight index of 9. Besides the expected functional impairments, 68% of the patients had one or more individual nursing needs (nursing diagnoses). Dependancy scores indicated 11.7% being in the highest level of dependancy. 61.5% were judged to be partly dependent on the aid of a nurse, with 22.5% needing some kind of device. 16% were judged to be independent or being dependant on a device only. The risks were identified by electronically completing focus assessments included in the comprehensive geriatric assessment. Each risk is classified as being either low, moderate or high according to evidence based threshold values. Risk values are automatically brought together in a summary table. Main risks were risk for acute confusion, infection, falls, pressure ulcer, malnutrition, dehydration and dependency. Although statistic evaluation of the risks is not yet available, stratification data could be calculated. 22.9% of the patients were assigned to a « code red » because of acuity and risk evaluation. These patients are supposed to be nursed by a diploma nurse only; however, certain tasks may be delegated to non-diploma nurses. Associated nurses will be
responsible for « code yellow » patients (30.7%) under the daily supervision of a diploma nurse. Patients on « code green » will be assigned to associated nurses under regular supervision every other day.

Discussion/Conclusion

With simple algorithms in the EPR, relevant risk data can be extracted from standardised forms and summarised in particular reporting tables, which in turn allow to stratify risks and work on appropriate, combined prevention strategies. Moreover such reports can be used for communication in shift overs as well as for controlling purposes, e.g. to evaluate progressing of patients’ situations or to assign appropriately qualified nurses to each situation. However, since every risk must be validated against the background of each individual patient situation, the most important task of assigning the appropriate code, is pure nurses’ bainwork.

Disclosure: No significant relationships.

Keywords: risk stratification elderly, "risk for" - diagnoses, skill grade mix
8. Monitoring pain management in hospitalized elderly patients

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Nursing, Felix Platter-Spital, Basel/SWITZERLAND

Introduction
In hospitalised elderly patients, pain is often poorly managed. Systematic evaluation on the base of standardised data could help to improve pain management.

Aim
Development and evaluation of a tool to systematically evaluate and improve the quality of pain management

Method
The method is informed by
- Individual assessment of pain
- Nursing diagnostics (NANDA-I®)
- Systematic data collection (daily)
- Monthly reports and evaluation with staff

Pain was assessed daily with every patient with appropriate measures on a scale from 0-10. For entry into the electronic system, values had to be recoded into 4 stages (mild: 0-3; moderate: 4-5; severe: 6-7 and worst: 8-10). Data were descriptively analysed, benchmarked (MS Excel) and the tables were reported to the staff. The results were discussed monthly with the quality responsables of the respective wards.

Target group
Inpatients of an university geriatric hospital (300 beds, 3’000 admissions p.a); diploma nurses

**Results**
Data of 4’351 cases were included. The mean age was 83 (50 – 113, sd 10). 68% were female. Acute and / or chronic pain was prevalent in 46.1 % of all patients. Mean pain score was 3 (0-10, sd 0.9). Considerable differences between the wards could be identified, particularly concerning those patients with pain scores between 5 and 7 or even between 8 and 10 respectively. Through repeated analysis and discussion of the results with the ward responsables, four main reasons were identified: omitted pain assessment, using inappropriate pain measure, inappropriate use of « as-needed »-prescription, lacking or inappropriate prescriptions. Reason- and situation orientated improvement measures were discussed and recommended for implementation. We were also able to evaluate efficacy of these measures ex post factum.

**Discussion/ onclusion**
Systematic electronic collection and evaluation of pain data is supportive in establishing a working pain management system.

**Disclosure:** No significant relationships.

**Keywords:** pain management, Nursing Diagnosis, data based controlling
Chapter 3 – Nursing Diagnoses

1. Implementing nursing diagnosis in an ICF oriented rehabilitation clinic

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Introduction
The SPC is a privately owned clinic which is acclaimed nationwide, specialising in primary care, acute treatment, comprehensive rehabilitation and lifelong care of people with spinal cord injury and similar syndromes. The SPC has 140 beds, including an intensive care unit.

The nursing staff documented the rehabilitation process using a system which did not support their processes neither used standardized classification.

The common framework and classification used by healthcare professionals in their multidisciplinary talks (in the SPC) is the International Classification of Functioning, Disability and Health (ICF) [World Health Organization (WHO), 2001].

In 2012 the nursing department decided to implement a new electronic documentation using the ICF as well as the classification of NANDA to achieve a standardized description of the nursing rehabilitation process.
Our aim was to integrate both classifications in the new documentation tool WiCareDoc (Wigasoft). WiCareDoc is a software tool, which allows to integrate different classifications to represent the nursing process. As a standard they integrated the contents of the “Pflegediagnosen und Massnahmen” (engl: Nurse’s Pocket Guide Diagnoses, Interventions and Rationales) (Doenges et al., 2003).

We would like to present the different steps we gone through, to integrate and implement a new electronic system, which includes a highly standardized language.

**Methods**

In the process of implementing the new content of the documentation we followed the nursing process beginning with the patients’ admission.

**Assessment and diagnosis**

The patient will be interviewed by the multidisciplinary team and goals will be set on an individual level. We use the classification of ICF to document our assessment. Standardized questions in the new documentation will help the nurses to find out about specific needs and problems. Physiotherapists and Ergotherapists use the same structure which makes it very easy to find out about the patients problems. Whether they are functional, structural, activity or participation based. The nurses describe the patients’ problems and can grade the severity of problem or limitation of activity.

The next step in the nursing process is to validate the possible problems and define nursing diagnoses. To simplify this step, we assigned each NANDA-Diagnosis to the proper ICF category. We
scanned the whole catalogue of NANDA-Diagnosis and matched every diagnosis with an ICF category. Two experts in rehabilitation nursing underwent this process independently and in the next step, comparing the results. Disagreements were talked through with our research unit, which published the article: Combining application of the ICF and the NANDA-International Taxonomy II (Boldt et al., 2010). We then integrated the whole content into the electronic software. The defined problems can now be chosen from a list.

Figure 1: Assessment in the new documentation software. Structured by the ICF classification
Diagnosis and Goals
The next step in the nursing process is to define goals. In our new documentation system we have the possibility to choose the possible outcome to every individual problem from a list. This step is also standardized by using the Outcomes, which are listed in the book: “Pflegediagnosen und Massnahmen” from Doenges et al. (2003).
We also reviewed the Nursing Outcome classification (NOC) but then decided to stay with the other classification, due to its simplicity and practicability. Goals will be reviewed regularly and documented in the system by adjusting the graded problems.
Interventions

In the next step of the nursing process we will define Interventions and plan those to achieve the patients’ goals. In the documentation system each intervention is matched with the associated diagnosis, which makes it easy to create an individual nursing plan. We decided to use the Nursing Intervention Classification (NIC) as a standard.

At the end of every day, each nurse will document what they performed and will record their activities. Therefore we had to match every NIC-Intervention with the categories of the performance acquisition system (tacs®).

Results

A standardized system allows to compare results and analyze the nursing problems. It simplifies the documentation and is a big support in describing complex patient situations. Classifications help to discuss in the same language with the multidisciplinary team and makes it easy to read and understand the specific nursing problems for the different disciplines.

In our developing process we found a few problems in classifications. First, the level of complexity of the classification is different. We had to decide, on which level we will be able to perform the documentation. Second, for the nurses it was a big
challenge to get used to the new documentation system, not only using a new software but also using a new language. In the old documentation system, they could write in free text what kind of nursing problems they had to deal with. Third, specific nursing problems are not always illustrated in the classifications. The NANDA Taxonomy has a full range of nursing problems, but not all of them are specific enough to describe our main problems in rehabilitation of spinal cord injured people. We therefore developed some new diagnosis, we often have to deal with:
**New diagnosis:**

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>• neurogenic bladder dysfunction</td>
<td>NANDA described a few diagnosis dealing with incontinence or elimination problems. But none of them describe precisely the problem in SCI (Spinal cord injury) Patients. Describing those as specific problems helps to discuss our goals and interventions in the multidisciplinary team.</td>
</tr>
<tr>
<td>• neurogenic bowel dysfunction</td>
<td></td>
</tr>
<tr>
<td>• Risk of imbalanced nutrition: less than body requirements</td>
<td>SCI people are often at risk of an imbalanced nutrition caused by: missing appetite, cultural diversity (does not like the hospital food), dysphagia, etc. We often detect the problem early and implement specific goals and interventions.</td>
</tr>
<tr>
<td>• Spasticity</td>
<td>A very specific problem in the care of spinal cord injured people.</td>
</tr>
</tbody>
</table>

In other diagnosis, for example “ineffective sexuality pattern”, we specified the defining characteristics as well as the related factors, because of the specific problems in this patient population.

**Discussion**

After testing the new documentation on one ward, we introduced the system in the whole nursing department. Nurses were introduced to the system and contents and work now for more than a year with the new system.

The combination of the several classifications allows the nurses to provide other healthcare professionals with patient information in the same language and be able to describe their specific nursing problems with a high quality. Although the linking of those
classifications needed much time, the process was important to find gaps and to complete the catalogue with our specific needs.

**Conclusion**

Although all the classifications (ICF, NANDA and NIC) have their strengths and weaknesses, they can be used together and can complement each other to enhance the quality of clinical teamwork and nursing practice.

The biggest challenge in the implementation was to find a practicable way in using different classifications, which are not adapted to the specific rehabilitation setting and which are very detailed.

**References**


**Disclosure:** No significant relationships.

**Keywords:** Nursing Diagnosis, Spinal Cord Injury, ICF, Electronic Documentation
2. Developing a subset of ICNP nursing diagnoses informed by an Italian nursing conceptual model: a multi-centre cross-sectional study

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Introduction
The Italian conceptual model Modello delle Prestazioni Infermieristiche (MPI) was developed in the 90s by observing Italian nurses’ activities, and it is actually used by many hospitals to inform nursing practice. Although the eleven nursing needs described by this Model facilitate nursing assessment and professional communication, the lack of use of MPI with a nursing standardized terminology does not allow nurses to document and measure nursing phenomena.

Aim
The aim of this project was to develop a subset of ICNP nursing diagnoses oriented by MPI to describe nursing clinical data in medical-surgical acute hospital wards.

Methods
A literature review was performed to identify prevalent nursing diagnoses in chosen population. Based on this review, a subset of 162 ICNP diagnoses was developed and pre-tested involving a panel of clinical experts. Resulted diagnoses were included in a paper data collection tool informed by MPI. A cross-sectional study
was conducted in three north Italian hospitals to empirically test the subset in target settings. Data were collected from healthcare documentation of admitted patients including retrospectively nursing clinical data from admission to the time of data collection. All retrieved nursing problems were cross-mapped with pre-identified ICNP subset of diagnoses.

**Results**

Documentations from 476 admitted patients were analysed; 228 were from surgical and 248 from medical wards. A total number of 24142 nursing diagnoses were detected. Prevalent MPI nursing needs and ICNP nursing diagnoses will be discussed; 21401 nursing diagnoses (88%) were fully mapped by the ICNP subset.

Conclusions: Results showed high capability of ICNP terminology to describe nursing care in acute medical and surgical areas in Italian Hospitals. The identified subset of ICNP diagnoses could represent a valuable support to build a computerized documentation system based on ICNP terminology for hospitals using MPI to provide nursing care in the Country.

**Disclosure:** No significant relationships.

**Keywords:** ICNP, Nursing Conceptual Models, Nursing Diagnosis, medical and surgical nursing care, cross-sectional study
3. Nursing diagnosis: an essay of an archetype that expresses the clinical concept

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Summary
This original research / practice applications paper reports an essay of an archetype that expresses the clinical concept of nursing diagnosis.

Background
The proliferation of numerous solutions in health information systems presented challenges on the best way to allow data flow between different health information systems, preserving the meaning of the data. The semantic interoperability is one of the crucial aspects in sharing data among healthcare information systems.

Allow the existence of a data stream by ensuring that the meaning remains unchanged, is a purpose of innumerous standards. The Clinical Information Modeling Initiative with the purpose of providing a common format for detailed specifications of the representation of clinical content, elected the model of OpenEHR archetypes as the initial formalism for clinical models representation.

The OpenEHR approach based in the dual-model, use an ontological division that clear divide information model, domain
content models and terminologies, enhancing flexibility and long term sustainability of the Electronic Health Records (EHR), by limiting the scope and decreasing the interdependence between each other.(Beale and Heard 2008)
The information reference model is small, independent from knowledge model, and has a minimal semantic representation defined by the different classes. Data recorded from health environment is divided in care or administrative data. The care information is categorized in four classes: evaluation, observation, action, instruction.(T Beale, S Heard et al. 2008)
The archetype model aim to represent the clinical knowledge, by controlling the structure and content of a clinical concept from a domain(Beale and Heard 2007). It constrain and combine the entities from the reference model. The purpose of the archetype, is to capture the maxim data set relevant to the clinical concept definition and interpretation, allowing the meaning to be preserved, not depending the context of use. Each clinical concept is defined how information must be expressed, mandatory data, value sets, and other rules essentials for ubiquitous interpretation.
The archetype allow terminology binding at different instances (concept names, ref-sets for values in certain data fields). Thus, archetype work as an intermediate between terminologies and information model.
To adjust the information need to local context, templates are used. In this structure, archetypes are aggregated and restricted, and terminologies are binding.
The openEHR approach, by separating information reference model from the knowledge model, allows clinical expert to modelling without having to considerer technical aspects (software).

The nursing diagnosis is a key concept in nursing activity, thus is important that an archetype expresses this clinical concept (Hovenga, Garde et al. 2005).

**Goal**

Develop an essay of an archetype that expresses the clinical concept of "Nursing Diagnosis".

**Materials and Methods**

We conducted a literature review on the concept "Nursing diagnosis" and different terminologies in use on the domain of Nursing. For the design of the archetype, we used the Archetype Editor OpenEHR Foundation.

**Results**

We identified two ways of building diagnosis, depending on the type of terminology in use: using a predefined syntax with pre-combined terms provided by the terminology or the construction of a diagnosis syntax by combination of terms. The design of the archetype, has to address the possibility of using the ISO standard 18104:2014 at a care context level.

From the literature review we identified four essential elements that contextualize and consolidate the concept: related factors, diagnostic data, diagnostic criteria and diagnostic status.

The next picture illustrate the nursing diagnosis evaluation archetype, in the Archetype Editor. It can be divided in six main
elements: Diagnosis Label, that content two possible way to express the diagnosis sintax; Date of onset and resolution; Diagnosis status; Related factors; Diagnosis data incorporate the possibility of use data from patient observation, data already recorded or from other not interoperable information systems.

Picture 1 – Nursing diagnosis archetype

In the modeling process, we intend not only in create new elements, but in reuse archetypes from OpenEHR repository (Clinical Knowledge Manager). Thus, “Anatomical Location” and
“Problem context qualifiers” were used, fulfilling an archetype modeling principle: define once, reuse many. To achieve semantic interoperability, create archetypes it’s fundamental, however they have to be shared and reused to prevent the existence of different archetypes for the same clinical concept.

The next picture represents information flow across three EHR. In this scenario, different interpretations can be addressed based on information available, although the diagnosis syntax remain unaltered. In the EHR B, the diagnosis is assumed as active due to the inexistence of diagnosis status and diagnosis criteria, affecting the decision in extend the assessment.

Picture 2 – Example of impaired semantic interoperability

In the EHR C, Oral Mucous Membrane ulcer is classified only as a diagnosis, losing the etiologic relation with impaired nutritional intake assumed in EHR A, which may cause a delay in delivering effective nursing care. The archetype enable meaning preservation, by capturing the purpose and context of information, contributing to unambiguous records.

The different terminologies existent in nursing profession is an additional challenge, when semantic interoperability is the goal. Although exist cross-mapping between terminologies relevant for
nursing practice, the problem increases when combinatory terminologies are used in the initial diagnosis. This terminologies allow diagnosis syntax more specifics, which difficult matching terminologies using pre-coordinated terms. The next picture exemplify the problem. Using the ICNP terminology we combine terms set “Low caregiver Knowledge about perioperative period” as the initial nursing diagnosis. This example illustrate how the archetype has potential to be used, maintaining the original terms and the terminology identifier, when full semantic match is not achieved. Thus, the primordial clinical intention and description are partial preserved. This enhance the importance of design archetypes agnostic to terminologies enabling their use to be context-independent but clinical relevant. Further tests have to be made before assuming the utility/feasibility of this possibility.

**Conclusions**

The archetype intends to capture the maximum data set that constitutes the clinical concept of "Nursing Diagnosis" and enables the use of diagnostic statements, regardless the combination of the terms used by terminologies. The elements added to the archetype, reflect the concepts most frequently referenced in the literature. Status of the diagnosis, related factors, diagnostic criteria and diagnostic data are essential elements that enable capture the meaning that is intended to describe the concept. We aim to submit the archetype to the Clinical Knowledge Manager OpenEHR foundation for testing, analysis and review, assuming the possibility of changes to the structure and content that may emerge at this stage.
### Example of nursing diagnosis with different terminologies

<table>
<thead>
<tr>
<th>Diagnosis Label</th>
<th>ICNP</th>
<th>NANDA</th>
<th>CCC</th>
<th>Omah System</th>
<th>PNDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis</td>
<td>Deficient knowledge</td>
<td>Knowledge deficit</td>
<td>Knowledge deficit</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Nursing diagnosis categorial structure

**Statement with a Focus**
- **Focus**: Knowledge
- **Judgment**: Low
- **Focus Type**: Caretaking/Parenting
- **Clinical Finding**: actual

#### Additional Descriptors
- **Potential**: 
- **Clinical Course**: 
- **Degree**: 
- **Timing**: Peri-operative Period
- **Anatomical structure**: 
- **Subject of information**: Caregiver
- **Terms**: 
- **Text**: About
References


Disclosure: No significant relationships.

Keywords: archetype; nursing diagnosis, semantic interoperability; nursing clinical terminology

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4. Evaluation of the level of ability to diagnose nursing diagnoses for nurses in accordance to the NANDA diagnoses: a retrospective study

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Introduction

Nursing diagnoses ensure that nurses use a professional language in the determination of standards for information sharing, organizing information, decision-making, nursing practice, and designating appropriate patient outcomes. Nursing diagnoses are the basis for nursing care planning, implementation, and assessment, and used for focusing on patient’s individual responses to health-related problems (Gordon 1994; NANDA 2007). The nursing diagnosis determination stage is based on the synthesis of all data that have been collected and guides the nursing care process. The formulation of nursing diagnosis based on assessment of all the data that have been collected guides the interventions and also other steps of nursing care process.

Nursing diagnosis provides the basis for planning, implementing and evaluating nursing care. It is an analysis of the assessment of the patient’s nursing needs (Ehnfors 1993). Identification of clinical
phenomena by use of nursing diagnosis enhances communication among nurses. The need to identify specific nursing data for clinical, professional, managerial, research and policy purposes has also been recognized (Clark & Lang 1992). Accurate documentation of nursing diagnosis is vital in daily hospital practice to aid nurses correctly plan, intervene and assess nursing care needs for individual patients and to provide optimal care and patient safety (Needleman & Buerhaus 2003). This has a greater impact in Intensive Care Units (ICU) as rapid evaluation of the patients is critical and there is a need for comprehensive care plans, services to be well coordinated with other health professionals as well as convenient and effective planning for discharge (Salgado et al. 2011). Nursing diagnosis directly affects patient care and provides to define patient’s care priorities. Accordingly to define appropriate nursing diagnosis in patients is quite important for Nurses.

**Purpose**

In this study it is aimed to commentate the level of able to diagnose nursing diagnosis for nurses in accordance to The North American Nursing Diagnosis Association.

**Design and sample**

This descriptive and retrospective research has accomplished with the determined computer based nursing diagnosis data of the patients which hospitalized entire clinics of a thoracic disease and surgery hospital. Sample of the research were constituted by the 6972 patient data which hospitalized between 2013 and 2014 years.
**Instrument**

All the computer-based data has categorized considering to the patient’s personal, and clinical characteristics and determined nursing diagnosis.

**Data collection and analysis**

A data collection form regarding the socio-demographic characteristics of patients and computer-based data for data collection. All the computer-based data has categorized considering to the patient’s personal, and clinical characteristics and determined nursing diagnosis. Number and percentage distribution was calculated in the data analysis.

**Findings**

It was determined the mean age of the patients was $57.05 \pm 17.49$ and 69.6% was men. The educational status of the patients 68.72% illiterate, 4.20% graduated from primary school and 17.11% graduated from secondary school.

The medical diagnosis of 82.3% patient had pneumonia, mean hospitalizing day of the patients was $5.44\pm9.22$. It has revealed that 92.4% of the patients has been treated as clinical patient and 7.6% of the patients has been treated as an intensive care patients. The mean hospitalizing day of patients in hospital is 6.82 days.

The number of patients with single-day outpatient 360. The clinic that determined highest rate of nursing diagnosis is Chest Disease Clinic with the rate of 53.47% and the clinic that determined no nursing diagnosis is Sleep Disorders and Sleeping Problems Clinic. Most commonly used nursing diagnosis in Chest Disease Clinic is infection risk.
It is revealed that 48 different nursing diagnosis has been determined. When the diagnosis which has been determined were examined, the mostly determined diagnosis were lack of information 18.93%, the risk of infection 18.70%, trauma risk 17.49%, and pain 9.05%. It is revealed that among these nursing diagnosis there were no any nursing diagnosis related to sexuality-reproductive and values and beliefs patterns.

**Discussion**
The nurses failed to identify any diagnosis under Cognitive-perceptual, Coping-stress tolerance and Value-belief patterns. This is food for thought, considering not only the high levels of stress and anxiety of the patients and their families but also the spiritual needs of the patient under the circumstances. A holistic approach necessitates handling of physiological and psychological problems simultaneously, otherwise causing a high risk of compounding the existing problems or creating new ones with the patient.
The diagnosis that nurses mostly determined are lack of knowledge, trauma risk, infection risk and pain
The rate of determined other diagnoses are quite low.
When considering the of the hospital's patient profile, most of the patients are hospitalized disease related with respiratory tract. In this context it is pointed that, there is the lack of determination of nursing diagnosis for the patients and these diagnosis are not individual.

**Conclusions**
According to the results that obtained in this research it can be said that nurses could determine the appropriate nursing diagnosis of
patients but defined nursing diagnosis was determined by the patients physiological needs and they did not take in to account patients psychosocial needs.

**Disclosure:** No significant relationships.

**Keywords:** computer based data, Nursing Diagnosis, retrospective study.

### 5. Clinical indicators of the nursing diagnosis *sedentary lifestyle* in adolescents

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Regular physical exercise is an essential element in the promotion of health and prevention of many diseases. Currently, despite youth being the most active segment of the population, their increasing levels of sedentary lifestyle has alarmed healthcare professionals. Physical inactivity is a powerful risk factor for stroke and other chronic diseases (McDonnell, 2014).

The nurse's practice assessment of this human response has been regarded as a nursing diagnosis, demimonde Sedentary lifestyle
(00168), presented in the NANDA-I taxonomy since 2004 (Herdman, 2012).

It is well established and known that the nursing diagnoses validation is an essential phase in the development of knowledge to the practice of nursing and health promotion to the population they serve. It is also known that a nursing Sedentary Lifestyle diagnoses represents problems to specific groups, including adolescents. Consequently, it is necessary to improve these diagnostics tools to facilitate their use in practice by nurses. Therefore, to extend the reliability of these diagnoses, we must subject them to a validation process, refining the set of clinical indicators and making their use more reliable, both in practice and academia.

Thus, the study’s goals were aimed to identify the accuracy of the defining characteristics and prevalence of the nursing diagnosis Sedentary Lifestyle, among adolescents in the public school system. A cross-sectional study was carried out with 564 adolescents, ages 14 to 19 years of age, students from seven public schools, from the city of Fortaleza, Ceará, in the Northeastern part of Brazil. The adolescents that participated in the surveyed were selected through a multistage sampling process.

Data were collected the third quarter of 2012 through a physical examination questionnaire, to identify the defining characteristics present in adolescents based on conceptual and operational definitions. The data collection instrument consisted of 27 questions developed by the study author with the help of other published instruments (Grubaum et al 1999; Sallis et al 1996; InteliHealth 2005 Petroski 2000). The final evaluation instrument,
developed exclusively for this study allowed for the evaluation of related factors and defining characteristics, which included the original factors proposed by NANDA-I and other factors arising from the content validation study by Guedes (2013).

Subsequently, the study’s clinical histories were sent to eight independent nurses for review and to determine the presence or absence of a diagnostic Sedentary Lifestyle. Their findings allowed the calculation of sensitivity, specificity and predictive values. Statistical analysis was performed by the statistical package SPSS® 20 version. The study was approved by the ethics committee opinion research No. 70539/12 and the data analysis was conducted in 2014.

The data results showed that more than half of the adolescent population were female (52.1%) and were in their first year of high school (48.2%). In addition, it was observed that the adolescents were between fourteen and nineteen years of age, with a mean age of 16.18 years (± 1.13). The data results demonstrated a high prevalence of adolescents with a diagnosis of Sedentary Lifestyle (48.6%), with females presenting with a 2.1 times greater probability of a Sedentary Lifestyle diagnosis.

This prevalence of the nursing diagnosis Sedentary Lifestyle (48.6%) in the study results compares closely to the values found by other Brazilian studies (Barbosa Filho, Campos, Lopes 2014). Culture factors in the Brazilian region may play a role in the risk in sedentary comportment in females. Adolescent females are expected to be at home and help with house duties. Adolescent males are not expected to participate with house duties or related
activities in Brazil and are allowed to participate in activities outside of the home.

Among the most common defining characteristics of the study results the following stand out: "verbalizes preference for activities with little exercise" (59.9%), "decreased respiratory capacity" (55.3%) and "choose a daily routine without exercising" (49.1%). It is noteworthy to state that decreased muscle strength was not a characteristic observed in the study group. Of all the defining characteristics, "Choose a daily routine without exercising" appeared as the main indicator for predicting a Sedentary Lifestyle diagnosis, high value under the ROC curve (0.9771) and elevated high-sensitivity value (98.18) and specificity (97.24) for the Sedentary Lifestyle.

The characteristic “Choose a daily routine without exercise” had the highest probability of accuracy for a nursing diagnosis Sedentary Lifestyle in the adolescent population. To choose a routine without exercise leads to an attitude shift in the opportunity to decrease your disease risk factors. It is accepted that the decision-making process to work out or not is influenced by other personal factors. We can infer that the inclusion of exercise and physical activity in the daily routine seems to promote a more active and healthy lifestyle, while the opposite would predict a sedentary lifestyle.

Amongst the most prevalent related factors reported were: "Reporting of pain" (65.2%) and "Lack of resources (money, time, location, and equipment safety)" (61.3%). The resources, time and equipment safety, apparently were important factors for students to determine whether to exercise or not. However the reporting of
pain, even though it prevailed high, it was not statistically associated with the nursing diagnosis in the study. Related factors, "mobility impaired" and "activity intolerance" were not reported factors among the adolescents studied. As authors, we presume that these findings were typical characteristics of the sample, the probability of finding these related factor would be more in line with a hospitalized adolescent.

Finally, we can conclude that this study allowed us to determine the defining characteristics and related factors more specific to the adolescent population.

It is necessary to viewed generalizations with wariness, whereas economic and social factors may have contributed to the findings in our research. However, this study provides significant statistical information, as the basis for other studies related to the correct identification of this diagnosis, with planning and an implementation of a care plan. Also, it is essential that nurses continue to investigate and discuss this diagnosis in order to promote more effective human response intervention, as well as the promotion of the validation of diagnoses, as instruments of technological care.

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**Disclosure:** No significant relationships.

**Keywords:** Nursing Diagnosis, Sedentary, Teenage school
6. Videotelephony project in home care at the City of Helsinki Department of Social Services and Health Care 2013-2014

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In Finland, the Quality recommendation to guarantee a good quality of life and improved services for older persons (Ministry of Social Affairs and Health 2013:11) and the Act on Supporting the Functional Capacity of the Older Population and on Social and Health Services for Older Persons (28 December 2012/980) emphasise both the reduction of institutional care and support for older people living at home. Similarly, one of the objectives of the 2014–2016 strategy programme of the City of Helsinki Department of Social Services and Health Care is to strengthen and develop home care and informal care. In practice, this will require the department to strengthen its home care services, informal care and preventive measures. The customer base of the home care division currently consists primarily of customers in need of extensive care, and the work of home care employees who care for older persons with multiple illnesses is wide-ranging and hectic (Niemelä 2006). In recent years, the sector has had difficulties in recruiting new employees, and on the other hand a large numbers of employees are expected to retire in the coming years. However, as baby boomers age, the number of people who will require these services
will continue to grow. The situation calls for new kinds of operating models and new kinds of services to support living at home. As one such new service model, the city of Helsinki Department of Social services and Health Care has trialled virtual care, meaning a videotelephone connection with customers.

**Virtual care**

Virtual care is a video and audio transmission service, through which a customer can contact a nurse and a nurse can keep in contact with the customer in accordance with the customer's care plan. The home care division of the City of Helsinki Department of Social Services and Health Care has previously trialled virtual care in two different projects. The first project, carried out in cooperation with Aalto University and Forum Virium, focused on building a technical concept. The second project initiated the development of a cooperation model with Palmia's telephone and wellness services. Palmia is a municipal enterprise owned by the City of Helsinki that provides property maintenance and wellness services. Palmia's telephone and wellness services unit employs over 20 public health nurses and practical nurses, who handle safety telephone alarms. The cooperation with Palmia made it possible to provide home care customers with an around-the-clock audiovisual connection with nurses. In 2013, a decision was made to expand the project, with the new project (15 November 2013–15 May 2014) involving a new device partner, Pieni Piiri Oy and a new device, a tablet computer. The device used in the project was a small Samsung Galaxy Tab tablet, which will hereinafter be
referred to as a videophone. The project will hereinafter be referred to as the Circly Project.

**Operating model of the Circly Project**

The Circly Project involved the home care, informal care and day activities (recreational activities) divisions of the City of Helsinki Department of Social Services and Health Care, as well as Palmia’s telephone and wellness services unit.

With the help of the videophone, customers and employees were able to establish an audiovisual connection with each other. A customer could at any time call the agreed upon cooperation parties using the device's touch screen. However, the customer could only be called during agreed upon times, as part of the customer's care plan, and the customer was required to accept incoming calls themselves. The customer's family members and close friends also had the opportunity to purchase a subscription to the service, allowing them to call the customer. All participants were also able to call Palmia's nurses 24/7.

**Home care customers** could call the home care office and Palmia, as well as family members and friends who had bought a subscription to the service. **Informal carers** could contact the informal care director; the informal care activity centre, where they could participate in group activities; the home care unit (if they were a home care customer); Palmia and other informal carers, as well as family members and friends who had bought a subscription to the service. **Day activity customers** could contact their instructor, the home care unit (if they were a home care customer)
and Palmia, as well as family members and friends who had bought a subscription to the service.

The trial included 50 videophones. The total number of customers participating in the project was 40, of whom 14 were informal care customers, 19 were home care customers and 7 were day activities customers.

**Research questions, methods and data**

The aim of the Circly Project was to develop remote care carried out through a videophone connection as a cooperation and care tool. The objective was to study and evaluate:

1. What kind of customer groups is the service suitable for?
2. What kind of visits can the service replace?
3. How easy/difficult is it for employees to find customers suitable for the project among the customer base?
4. What is the relevance of the device to informal care families and day activities?
5. How easy/difficult is it for an elderly person to learn how to use the device?
6. Can customers participate in group activities with the help of the device?
7. How are Palmia's services used through the device (nurses available 24/7)?
8. How important is it for customers to be able to contact family members and friends through the device?

The data consisted of summaries drawn up by employees concerning customers (40), telephone interviews with informal carers (15), interviews with home care customers (6), group
interviews with home care employees (4), interviews with day activities instructors (2), meeting minutes of project and steering groups and the order forms for the service. The results provide some indication of issues related to the use of videotelephony, but they do not have any research-based generalisability due to the small amount of data.

The following sections present the results of the project in accordance with the research questions.

**What kind of customer groups is the service suitable for?**

Based on the results, it would seem that the videotelephony service is suitable for elderly people of various ages. The oldest participant in the project was a 96-year-old woman. Men were somewhat more interested in using the device than women. The customers suffered from various illnesses, but only memory disorders and mental health problems seemed to have a significant impact on the use of the device. A mild memory disorder did not prevent the use of the device, but a more progressed memory disorder made it difficult to learn how to use the device. People suffering from mental health problems could use the device successfully, as long as it worked correctly. Mental health problems combined with technical problems related to the device increased the customer’s anxiety. Poor hearing made using the device more difficult and caused anxiety if the customer could not differentiate between a telephone ringing, the doorbell and the videophone.

**What kind of visits can the service replace in home care?**
The videophone was used in home care primarily to remind customers when to eat meals and take their medication. The videophone was also used to remind customers to attend day activities, and to evaluate the customer's general condition and neurological symptoms. For example, customers were instructed how to change a plaster under supervision, their walking was evaluated and their weight was monitored through the videophone. In other words, the videophone connection replaced reminder, follow-up and evaluation visits in home care.

**What is the relevance of the device to informal care families and day activities?**

Interviews with informal care families firstly highlighted deficiencies related to how customers were taught to use the device. The older and less experienced the customer is in using computerised devices, the more thorough the instructions and support need to be. Since informal carers work alone, they need particular guidance from the installer of the device in order to familiarise themselves with it. This also applies to day activities customers. In the case of informal care families, the use of the videophone was initially shadowed by technical problems. As a result, group activities could not be successfully carried out before early 2014, and connection problems and interruptions continued to occur from time to time. Even so, the videophone proved to be a significant source of peer support in the form of group calls. Male informal carers in particular felt that this form of peer support was important, with carers keeping in touch with each other and even organising meetings. The lectures of the informal care activity
centre carried out through the device were also deemed important. Calls to the home care office were infrequent, but not all customers were aware of the possibility of calling Palmia in case of an emergency. This was a clear deficiency since sudden problem situations are precisely the kind of situations where contacting a Palmia nurse could provide significant support. Social care workers called informal carers on a weekly basis through the videophone to ask how they were doing, provide service guidance and support and inform them of upcoming events. In informal care, the videophone could be a considerable asset going forward. The day activities customers who took part in the project were customers who had previously been involved in day activities and who were experiencing loneliness. The aim of the communication carried out through the videophone was to liven up everyday life, provide information about upcoming events and provide support to the customer or their partner as necessary. The day activities connection may be best suited to lonely persons who can no longer participate in day activities. The plan was to start group activities through the videophone and also offer them to persons who are queuing for day activities.

**How easy/difficult is it for an elderly person to learn how to use the device?**

The device displays the customer's agreed upon contacts in the form of icons and a call could be made by touching an icon. When the customer received a call, the device played a ring tone, and the call could be accepted by pressing the green receiver icon on the screen. The call could be terminated by pressing the red receiver
icon. In other words, the device was essentially easy-to-use. However, some of the home care customers who took part in the project were unable to learn how to use the device. These customers suffered from memory disorders, had poor hearing or sight, or their learning was hindered by technical problems, as a result of which the use of the device was discontinued. In other words the device was essentially easy-to-use, but for elderly people with little information technology expertise, learning how to use the device can be difficult, requiring time and a great deal of repetition.

Can customers participate in group activities with the help of the device?
There were some technical difficulties in the commencement of group activities, as a result of which group activities could not be conducted with the device until early 2014. Some informal carers used the videophone to participate in group discussions from home. Later in interviews these customers said that speech through the device was audible when only one person was talking at a time, but when several people were talking at the same time, you could not make out what was being said. Participation in group activities with the help of the videophone is a good way of supporting the living at home of informal care families that are no longer able to attend group activities in person.

How were Palmia's services used through the device (nurses available 24/7)?
All project participants had the possibility of calling Palmia through the videophone. The aim was that some home care
customer visits, particularly reminders, could be transferred to Palmia. However, none of the participants made use of this possibility. The reason for this was probably the available videophone connection to the home care office, due to which customers preferred calling the home care office instead of Palmia. Informal care families called Palmia a few times, but not all informal carers were aware of Palmia's care services, despite the fact that a quick connection with a nurse through Palmia could be particularly important to informal carers. Among day activities customers, the use of Palmia's services was actively instructed and tested, but the customers themselves did not call Palmia using the videophone.

How important was it for customers to be able to contact family members and friends through the device?
The family members and friends of customers participating in the project had the possibility of purchasing a subscription to the service, enabling them to call the customer through their own devices. This feature was quite actively used. In informal care, the possibility of calling family members and friends was deemed important; it facilitated the flow of information, and through the videophone connection the person being cared for could also take part in shared discussions. Some customers who made use of the family member and friend subscription felt that their family members and friends did not call them often enough. At its best, the videophone served as an active communication tool with family members and friends, and in technical problem situations family members could also call Palmia directly.
Reflection

Nearly all of the customers who took part in the project were over 80 years of age, apart from the informal carers. For some of the participating customers, this was the first time in their lives that they came into contact with information technology. As such, it is understandable that some customers may view the device as frightening and have little desire to try it out. Because of this, it is extremely important that the customers are instructed on how to use the device (see also Intosalmi 2013, Vahtola & Lukkarinen 2004, Aro 2008). A lack of guidance and instruction materials was highlighted particularly in the case of informal carers. In the future, more focus should be put on teaching users how to use the device.

Previous projects (such as Ruuska 2010, Ahola 2010, Mäki 2011, Karppi 2013) showed that problems with the device itself are very common. A large number of technical problems were encountered in this project as well, particularly in the early stages. Technical problems and personal inexperience in using information technology can obviously have a negative impact on a customer's desire to use the videophone. The research data included two very good descriptions of how the customer's overall situation was mapped. The mapping included a discussion with the customer about their situation, weight monitoring, monitoring of medication taking, preparation for day activities, monitoring of the customer's walking and observation of neurological symptoms. These mappings give the impression that the videophone was used to comprehensively assess the customer's overall condition, as opposed to a task-oriented approach, which would have, for
example, simply reminded the customer when to take their medication. In this way the videophone provides an opportunity for a more comprehensive assessment of the customer's overall situation than a simple reminder call.

The possibility of calling family members and friends through the device proved to be an important motivating factor for customers whose family members and friends took an active part in the project. The family members and friends of some customers were enthusiastic about the prospect of using the service through their own devices, but in some cases their devices proved to be incompatible with the service. It would be preferable if the software owner could define in writing precisely what devices are compatible with the service in advance.

The project once again highlighted the importance of information flow in learning a new operating model. Everyday home care involves many different kinds of activities, and adopting a new operating model requires those involved to reserve adequate time for familiarising themselves with it. Employees need to thoroughly familiarise themselves with a new device before they can present it to customers in a motivating manner. The same assessment was made by the nurses involved in the VIRTU project (Karppi et.al. 2013). The new operating model, the way customers are selected and experiences gained should also be discussed from time to time, as it is important to remind people of lessons learned and exchange experiences. The instilment of a new operating model also requires strong local management.
Some home care customers and even employees expressed concern over whether this new service would replace home care visits in the future. This will most likely not happen, as home care customers still need many forms of concrete help and the presence of employees. The videophone service can replace reminder, follow-up and assessment visits, while at the same time providing security for customers, meaning access to around-the-clock care assistance. In summary, video telephony can replace reminder, follow-up and assessment visits in home care. In informal care, a videophone can provide peer support, increase security and provide joy and chances to participate in the form of group activities. In day activities, the videophone helped with loneliness and provided support for informal carers. In the future, the home care division plans to project nurse-physician cooperation and wound care nurse-physician cooperation carried out through a videophone.

References
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Chapter 4 – Nursing Interventions

1. Submission of a new intervention to the NIC team

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As an ongoing process, the Nursing Interventions Classification editors review and revise the Classification. The editors consistently receive and welcome suggestions and submissions for new or revised nursing interventions for consideration in future Nursing Intervention Classification (NIC) publications, from interested nursing scholars. A new publication of the NIC occurs roughly every four to five years.

There is a process that is used to ensure the accuracy and the relevancy of the submissions, to avoid duplication of existing interventions, and to determine the appropriateness of the submission for inclusion in the taxonomy. Careful guidelines are employed. During the review process, examination and consideration are conducted with a panel of NIC experts and relevant content experts. The process is as follows.

**Process**

Initially upon receipt of a suggestion or submission, the items are assigned to two or three reviewers who have expertise in NIC and in the content of the submission. For example, a submission
involving an intervention for a person who is pregnant would be assigned to someone with expertise in the taxonomy domain #5, Family, and with expertise in the class of Childbearing Care. The reviewer is requested to return the submission to the NIC team within one month, at which time the submission with the reviewer comments is examined by the NIC research team. A decision is made related to the content. Two to six months after submission, the submitter receives a letter stating the outcome of process: whether the submission was accepted, why it was rejected if that was the outcome, and the final version of the intervention if it was accepted. If a decision was made to include the submission in the NIC, the submitter is acknowledged in the next edition of the NIC.

**Materials Needed for Complete Submission**

The following materials are needed for the submission of a NIC, to increase the likelihood of its acceptance and to assure that it meets existing guidelines. First, assure that it is typed and formatted in the same style as is used in the NIC publication. Assure that the background readings and references are in APA format. Review the current NIC publication if in doubt about a particular reference style. Three copies of all materials should be submitted, remembering that materials that are too difficult to read or interpret will be returned. An example of the proper format of a submission follows.

**Properly Formatted NIC Submission**

A properly formatted submission consists of the label, definition and activities listed in a logical order. For Chemotherapy Management, this part of the submission would be:
LABEL: Chemotherapy Management 2240
DEFINITION: Assisting the patient and family to understand the action and minimize side effects of antineoplastic agents

ACTIVITIES:
Monitor pre-treatment screening work-ups for patients at risk for earlier onset, longer duration and more distressing side-effects
Promote activities to modify the identified risk factors
Monitor for side effects and toxic effects of treatment
Provide information to patient and family on antineoplastic drug effect on malignant cells
Teach patient and family about the effects of therapy on bone marrow functioning

At the end of the activities list, the Background Readings are listed, which should include sources of information found in the NIC and additional information that will be enlightening for a user of that particular intervention. These readings are formatted as follows.

Background readings:

Proposing a New Intervention

When proposing a new intervention, assure that the following items are included. First, make sure the label is three words or less. Next, define the label completely, avoiding the use of any of the terms in the label in its definition. Next, begin with a list of activities that can be done while carrying out the intervention described in the label. Make sure that the activities are in a logical order. For example, in a preventive intervention such as Religious Addiction Prevention, an initial intervention would be to identify those persons at risk. Assessment of the person’s beliefs might follow, including exploring the behaviors the person might possess that are healthy and can be reinforced. The intervention will likely conclude with teaching activities for the patient and family. Next, assure that the background readings are current and accurately support the activities listed in the intervention. Preferred readings are not more than ten years old. Next, give the rationale for the inclusion of this new NIC in the Classification. Explain how this proposed intervention differs from the existing interventions. If possible, explain how the new intervention impacts the existing interventions. Finally, include the demographic form that provides information about the person(s) submitting the new intervention.

Revising a Current Intervention

Using the current NIC intervention from the book (or request a copy from NIC office), indicate what is to be revised, such as additions, deletions, and modifications. Using a program to track changes such as in Microsoft Word is most helpful; however,
changes can be bolded or in different color, or they can be highlighted. Indicate how proposed changes relate to the existing intervention, or why they must be made (i.e., a new standard of care has been published in this area; research indicates this activity is no longer effective for this intervention). If changes are substantial, retype the entire intervention and attach the current intervention to the new one. Be sure to include a rationale for each and every change. As with the submission of the new intervention, the demographic information form must be included.

**Example Revision with Additions Bolded and Italicized**

**ACTIVITIES:**
Administer chemotherapeutic drugs in the late evening, so the patient may sleep at the time emetic effects are greatest.
Ensure adequate fluid intake to prevent dehydration and electrolyte imbalance.
Monitor the effectiveness of measures to control nausea and vomiting.

*Offer six small feedings daily, as tolerated* (new research indicates six small feedings daily are more effective)

*Instruct patient to avoid hot, spicy foods* (new research indicates hot spicy foods increase nausea)

*Provide nutritious, appetizing foods of patient's choice* (new research indicates patient should be involved in food selection as much as possible)

*Monitor nutritional status and weight* (new research indicates regular monitoring increases changes of noticing undesired changes)
The source(s) of the new research are also cited and provided in the Background Readings.

**General Principles**

There are some very basic rules that are followed in the taxonomy format. Assuring that your submission follows these rules will also increase its chances of acceptance.

First, labels have a certain format. They are always noun statements, usually three words or less, and use a colon to separate words if they are two part labels, such as Cardiac Care: Rehabilitative. Each word in the label must be capitalized. A modifier (i.e., in the example a modifier would be the word ‘rehabilitative’) is allowed if essential to represent nurse actions, but it is considered based on its meaning, how it sounds in relationship to the other words in the label, and its acceptability in general practice.

Second, definitions are always phrases, not complete sentences. The phrases describe the behavior of the nurse. Terms for the patient and the nurse are avoided, but if necessary, the word patient or person is used, not the word client. For phrases that must begin with a verb form, the ending ‘ion’ or ‘ing’ is used.

Third, activities have rules. Each activity must begin with a verb. Activities must be as generic as possible, and repetition is avoided. Each activity should be only one idea. Activities must focus on the critical and essential activities, and not include all supporting activities. If possible, keep the activities to one page. Word each activity so that it is clear and does not refer to the patient or the nurse. Make sure activities are consistent with the label definition.
Arrange all activities in the order in which they are usually carried out.

**Transport Label Revision Example**

The Nursing Interventions Classification editors received revision suggestions for the Transport label that indicated a lack of consideration of the Emergency Medical Treatment and Active Labor Act (EMTALA). Expert review revealed that three separate labels should be created: one for transport within a facility, one for transport between facilities and one for movement of a patient between nearby surfaces.

This required consideration as to whether a label needed to be retired. Was the change to the Transport label substantial enough to make it significantly different, and would the addition of the new Transport titles cause confusion with older versions of the Nursing Interventions Classification? It was determined that elements of the older version would be retained in the new titles, and be divided between all three. There was a discussion related to the possibility of clarifying the Transfer label by redefining it as Self-Care Assistance: Transfer, instead of Transfer. However, as the Self-Care label already existed and the uniqueness of the transfer label would be subsumed into the existing self-care label, it was determined that its uniqueness would be lost. Therefore, the label was left as Transfer.

**Conclusion**

Creating new labels and revising old labels is a very involved process in which every effort is made to ensure that thorough evaluations of suggestions are undertaken. All aspects of existing
labels must be examined and the merits of the new submissions or revision suggestions evaluated. During this process, duplication is avoided as much as possible, while allowing for creativity and useful additions to the NIC. While it is a time-consuming process and involves much discussion and interaction among the NIC Editors, it is rewarding to keep the NIC current and add to its wealth of knowledge regularly. The NIC editors continue to welcome submissions, revisions and suggestions from all interested nurses and scholars.

**Disclosure:** No significant relationships.

**Keywords:** intervention review process, NIC, NIC Submission Guidelines, Upkeep of NIC, NIC Intervention Submission

### 2. Journaling: establishing the scientific basis of a NIC intervention

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Journaling was one of 34 new interventions added to the Fifth Edition of NIC. Journaling is defined “the promotion of writing as a means to provide opportunities to reflect upon and analyze past events, experiences, thoughts and feelings” (Bulechek, Butcher,
The purpose of this paper is to present the research foundation, the findings of our study testing the intervention in a population of ADRD family caregivers, as well as the activities of journaling as a nursing intervention. More specifically, this presentation will focus on structured written emotion expression (SWEE), which served as a foundation for the development of the journaling as a NIC intervention. SWEE is a promising, low cost, and innovative intervention designed to enhance meaning-making that involves asking participants to share brief written accounts expressing their deepest thoughts and feelings about a traumatic experience. Investigations of SWEE have demonstrated its effectiveness in enhancing adjustment to stressful or traumatic events in healthy populations. Controlled studies have found significant health benefits of SWEE, including reduced stress, enhanced physical health, increased immune function, fewer days in hospital, fewer stress-related visits to a physician, improved mood/affect, reduced depressive symptoms, and improved working memory. Meta-analyses support the conclusion of SWEE’s wide-ranging efficacy. One meta-analysis of 13 studies found a significant and positive effect size of .230. A meta-analysis of 146 randomized experimental studies, SWEE was found to produce significant health benefits with an overall effect size of .075, including reduced stress, decreased depression; improved immune function; and improved cognitive function. Seventy 70% (102) of the studies in the meta analysis reviewed showed a positive effect. Our study reported here tested the effect of written emotional expression on the ability to find meaning in caregiving, and the
effects of finding meaning on decreasing emotional and psychological burden in 91 ADRD family caregivers (M = 60.9 years, SD = 11.6). The study included 59 persons who competed the study using an online, or eHealth version of the study that was identical to the in person version of the study. In a pre-test – post-test design, participants were randomly assigned to either an experimental or comparison group. Experimental group caregivers (n = 57) wrote about their deepest thoughts and feelings about caring for a family member with Alzheimer’s Disease or a related disorder, while those in the comparison group (n = 34) wrote about non-emotional topics. Results showed enhanced meaning-making abilities in the experimental group relative to the comparison group. Meaning-making abilities were associated with psychological benefits at post-test, but the experimental participants did not show significantly more benefit than the comparison participants. We explore the mediating roles of the meaning-making process, as well as some of the background characteristics of the individuals and their caregiving contexts.

**Disclosure:** No significant relationships.

**Keywords:** Journaling, NIC, Written Emotional Expression, Testing Web-based Nursing Interventions
3. Clinical applicability of the nursing results from Nursing Outcomes Classification (NOC) for patients with risk for perioperative positioning injury

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Introduction
The nurse evaluation of potential risks related to anesthesia and surgical procedure, guided by clinical assessment, allows to identify specific patient needs(1). Among the interventions to be implemented during the intraoperative period are those interventions that affect surgical positioning which directly influence skin integrity protection, as well as anatomical structures(2).

For the perioperative period NANDA International suggests the diagnosis ‘Risk for perioperative positioning injury’. Hence, this diagnosis is widely used in clinical nursing practice(3). The interventions to be implemented for this diagnosis enable the development of an individualized care plan, providing patient comfort and safety.

To measure the nursing outcomes for this diagnosis allows nurses to continuously assess the patient's responses to interventions,
contributing and strengthening the care implemented by nurses, especially in the perioperative period and in the operating room\textsuperscript{(4-6)}. This is the research gap that will be filled by this pilot study since to our knowledge this diagnosis, nor its related nursing interventions and outcomes, was evaluated in a real clinical environment.

**Objective**

To evaluate the clinical applicability of nursing outcomes from the NOC for patients with ‘Risk for perioperative positioning injury’.

**Methods**

In a longitudinal study 10 patients with the nursing diagnosis ‘Risk for perioperative positioning injury’ were evaluated during their perioperative period. Data were collected in August 2014 in a general hospital in southern Brazil. Adult patients undergoing elective surgery and classified as size 2, 3 and 4 were included. Surgical size is classified as the patient’s length of stay in the operating room, with the size 1 ranging from zero to two hours, size 2 from two hours and one minute to four hours, size 3 from four hours and one minute to six hours, and size 4 above six hours and one\textsuperscript{(7)}. Patient selection was stratified by surgical positioning: dorsal, lateral, lithotomy, ventral and Fowler.

For data collection, researchers adopted an instrument containing sociodemographic data and an instrument with nursing outcomes from NOC for that diagnosis\textsuperscript{(4)}. This instrument was previously validated by expert consensus.

Patients were evaluated at five different times: immediately preoperative, intraoperative, postoperative, and second and third
day postoperative. Data were analyzed with descriptive statistics using absolute and relative frequencies. Equation of Generalized Estimates (EGE) model was used to compare NOC outcomes and their indicators means.

**Results and discussion**

Preliminary data from the study shows that patients were dominantly male (60%) with a mean age of 50.9 years (± 14.86). The predominant surgical specialty was neurosurgery (30%) and urology (30%), followed by orthopedics (20%). The mean patient time in operating room was 4h59 minutes, mostly classified as size 2 (40%) and 3 (40%). The totality (100%) of the sample developed skin lesions related to the operative positioning (Table 1).

Table 1 - Clinical and demographic patient characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)*</td>
<td>50.9 (±14.86)</td>
</tr>
<tr>
<td>Male (gender)</td>
<td>6 (60)</td>
</tr>
<tr>
<td><strong>Classificação da American Society of Anesthesiologists (ASA)</strong></td>
<td></td>
</tr>
<tr>
<td>ASA 2</td>
<td>8 (80)</td>
</tr>
<tr>
<td>ASA 3</td>
<td>1(10)</td>
</tr>
<tr>
<td>ASA 4</td>
<td>1(10)</td>
</tr>
<tr>
<td>Type of anesthesia</td>
<td></td>
</tr>
<tr>
<td>General anesthesia</td>
<td>7(70)</td>
</tr>
<tr>
<td>General anesthesia + local block</td>
<td>3(30)</td>
</tr>
<tr>
<td><strong>Surgical specialties</strong></td>
<td></td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>3 (30)</td>
</tr>
<tr>
<td>Urology</td>
<td>3 (30)</td>
</tr>
</tbody>
</table>
Of the eight nursing outcomes with their respective NOC indicators, only the outcome ‘Tissue integrity: skin and mucosa membranes’ showed significant results between the first and fifth evaluation. The NOC outcome ‘Thermoregulation’ showed no variability in scores over the five evaluations (Table 2).
Table 2 - Means of nursing outcome (NOC) results

<table>
<thead>
<tr>
<th>Nursing Outcomes</th>
<th>A1 (n=10)</th>
<th>A2 (n=10)</th>
<th>A3 (n=10)</th>
<th>A4 (n=10)</th>
<th>A5 (n=10)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immobility consequences: physiological</td>
<td>5,00</td>
<td>4,00</td>
<td>4,20</td>
<td>5,00</td>
<td>5,00</td>
<td>0,00</td>
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<td>Circulation status</td>
<td>4,80</td>
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<td>4,72</td>
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<td>(0,09)</td>
<td>(0,10)</td>
<td>(0,05)</td>
<td>(0,06)</td>
<td>(0,05)</td>
<td></td>
</tr>
<tr>
<td>Neurological status: peripheral</td>
<td>4,97</td>
<td>4,53</td>
<td>4,77</td>
<td>4,90</td>
<td>4,97</td>
<td>0,23</td>
</tr>
<tr>
<td>(0917)</td>
<td>(0,03)</td>
<td>(0,10)</td>
<td>(0,13)</td>
<td>(0,06)</td>
<td>(0,03)</td>
<td></td>
</tr>
<tr>
<td>Blood loss severity</td>
<td>4,63</td>
<td>4,65</td>
<td>4,85</td>
<td>4,87</td>
<td>4,60</td>
<td>0,10</td>
</tr>
<tr>
<td>(0413)</td>
<td>(0,13)</td>
<td>(0,14)</td>
<td>(0,10)</td>
<td>(0,06)</td>
<td>(0,15)</td>
<td></td>
</tr>
<tr>
<td>Tissue integrity: skin and mucous</td>
<td>4,98</td>
<td>4,52</td>
<td>4,77</td>
<td>4,80</td>
<td>4,82</td>
<td>p&lt;0,001</td>
</tr>
<tr>
<td>membranes (1101)</td>
<td>(0,01)</td>
<td>(0,10)</td>
<td>(0,06)</td>
<td>(0,05)</td>
<td>(0,06)</td>
<td></td>
</tr>
<tr>
<td>Tissue perfusion: cellular</td>
<td>4,78</td>
<td>4,78</td>
<td>4,65</td>
<td>4,80</td>
<td>4,75</td>
<td>0,54</td>
</tr>
<tr>
<td>(0416)</td>
<td>(0,12)</td>
<td>(0,08)</td>
<td>(0,09)</td>
<td>(0,06)</td>
<td>(0,06)</td>
<td></td>
</tr>
<tr>
<td>Tissue perfusion: peripheral</td>
<td>4,95</td>
<td>4,70</td>
<td>4,81</td>
<td>4,93</td>
<td>4,96</td>
<td>0,08</td>
</tr>
<tr>
<td>(0407)</td>
<td>(0,02)</td>
<td>(0,11)</td>
<td>(0,08)</td>
<td>(0,04)</td>
<td>(0,02)</td>
<td></td>
</tr>
</tbody>
</table>

Legend: A: evaluation. Note: used Equation of Generalized Estimates (EGE) with values expressed as mean ± standard deviation. The outcomes were described with the titles and their code numbers.

The outcome ‘Tissue Integrity: skin and mucous membranes’ with its indicators e.g. ‘erythema, skin lesions, mucous lesions, tissue perfusion, and skin temperature sensitivity’ were sensitive to the clinical variability of the patients during evaluations performed in the perioperative period.
Studies indicate that the highest incidence of skin lesion from positioning is mainly related with the development of lesions of stage I pressure ulcer (8-10). The indicator ‘skin lesions’ is an indicator for development of lesions of this pressure ulcer type, as 100% of the sample of patients from this study developed pressure ulcer stage I related to surgical positioning. Previous studies support that using NANDA-I diagnoses and effective interventions lead to better patient outcomes (11).

**Conclusion**

The results show that, regardless of the implementation of nursing interventions to minimize the risk of developing lesions by surgical positioning, patients still had stage I of skin lesions. The NOC outcome ‘Tissue integrity: skin and mucous membrane’ was the only significant and relevant outcome measured in continuous assessments in this study. The authors suggest to apply this NOC outcome in clinical practice.

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Disclosure: No significant relationships.

Keywords: Nursing Diagnosis, Outcome Evaluation, Perioperative Nursing
4. Integrated nursing-activity recording.

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Summary
Prior to the introduction of a new hospital information system (HIS) nursing activity recording had to be done in a separate system. With the new HIS the recording of nursing care was connected with the nursing documentation. So could on the one hand, the recording of the nursing activity be automated and on the other hand, the quality of documentation be improved.

Starting point
In the Uniklinik Balgrist the documentation of nursing care is associated with the LEP documentation since the beginning of 2014 in the HIS called KISIM. Only since the introduction of KISIM this linkage is possible, which allows to send automated the performed values to the evaluation system (PKS). This means that the nurses only confirm the effected action (and that the existing capacity in the background is sent to PKS via an interface). In the medical documentation (medically indicated measures) feedback will be sent automatically, without the nurse has the ability to adjust a time value (time value permanently stored). In contrast, a nursing action indicated in the feedback can be evaluated in time, so that an individual timeline is sent to the evaluation database PKS.
Measurements
During two day shifts, two nurses were accompanied with stopwatches and the duration and the quality of each documentation action was recorded. The following criteria were evaluated:

- Measurement of time spent Criteria which must be considered and documented in addition to the pure time recording in the measurements: Number of documented patients; Number of entries/exits; Postoperative transfers directly to station or via recovery; Nursing indexed care and documentation effort; Medically indexed care and documentation effort; LEP performance/timing (automated processing of LEP-evaluation)

- Measurements of quality: To measure the quality, the following questions were relevant: Are there checks to the care plan for completeness and timeliness and adjusted if necessary? Keep the nurses at the planning?

- Comparisons: After evaluating the various criteria, the following comparisons are made: what is the relationship between medical and nursing achievements indexed? How big is the proportion of "Deputy documentation"? Are there differences between the departments/clinics in terms of the time and/or effort of the documentation?

Discussions
Is an automated nursing activity recording in the nursing-care possible? How much effort this is for the nurses? Which statements can be made, with automated nursing-activity-recording? Has the
5. Time use of nursing staff in the institutional long-term care: a time-and-motion study using the Nursing Interventions Classification.

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Introduction
The increase of frail residents in the long-term institutional care affects the type of care and required qualifications of nursing staff. Studies show mixed results in clinical quality of care outcomes related to type of staff and it is unclear what is done in the process of care. Examination of the process of care should be done in specific settings in order to identify residents’ care needs and
matching these to staff. Insight in the actual input by staff is therefore important. Because resident outcomes related to nursing staff are attained through nursing interventions, the Nursing Interventions Classification was adapted to examine the care process.

**Objectives**

To explore the time spent on interventions by nursing staff in long-term care units and assess the association between time spent on interventions and staff level, residents’ acuity levels and type of unit.

**Materials and Methods**

The Nursing Interventions Classification (NIC) was used to develop the observation list. The NIC designates nurses' (and nurse aids’) daily activities and prior to the research, staff were observed to study their daily routine activities. Subsequently, the Delphi technique was used in two series of structured questionnaires to obtain consensus on the included interventions in the observation list. Structured observations using Time-and-Motion technique were conducted in five Dutch long-term care facilities. Purposive sampling consisted of four residential care units, three somatic and six psycho-geriatric units. Eighty-nine nursing assistants, nineteen registered nurses, nineteen health care assistants and nine primary caregivers were observed. A total of 877 hours were observed. Median and interquartile range were calculated to explore the time use of nursing staff. The association between time spent on interventions and nursing staff level, residents’ acuity levels and
type of unit was calculated with a linear mixed model with log transformed data.

**Results**

Nursing staff spent most of their time on direct care interventions (54%), particularly in the domain of basic physiological care. Limited time was spent on interventions in the behavioural and safety domains. Type of unit rather than residents’ acuity levels or nursing staff level was significantly associated with time use on domains. Overall, differences in time spent on interventions between staff levels were small.

**Conclusion**

Limited task differentiation was found between nursing staff. Most time was spent on physiological care and little time on psychosocial interventions and acuity levels of residents did not seem to guide the residents’ care. Since the increase in complex needs of residents and the aim of long-term care institutions at person-centred care and well-being of residents, task differentiation between nursing staff requires reconsideration. Furthermore, this study identified interventions conducted on residents in the long-term institutional care. Since most Dutch long-term care facilities implement electronic care plans, documenting using a standardized language as the NIC could facilitate person-centred care, improve quality of nursing care, and more accurately present nursing practice thereby influencing policy decisions (e.g. task allocation).

**Disclosure:** No significant relationships.
Keywords: Classification, Long-term care, Nursing care, Nursing staff, Time use

6. The analysis of the intervention controlled substance checking and its activity performed by chief nurses in Turkey.

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Introduction
Nowadays, reducing the medication errors is the most important criteria in order to ensure the patient safety. It is the most compelling issue for health institutions and health professionals.⁴,⁵ According to the Institute of Medicine, the medication errors dramatically increase.³ It has been shown that many of these errors can be prevented.⁴,⁵ Health professionals have responsibilities determined by regulations and also important duties, particularly in the preparation of the drugs, the appropriate storage and the administration of the drugs.⁴,⁶,⁷

The Nursing Interventions Classification (NIC) is a comprehensive, standardized classification of interventions that nurses perform. Besides, there are many well known advantages of this
classification such as clinical documentation, communication of care across settings, integration of data across systems and settings. It is also useful for the competency evaluation, determinations of deficit area in a patient care.\textsuperscript{8,9} The Nursing Interventions Classification (NIC) system is used in the standardization of the nursing interventions. Furthermore, by the help of Controlled Substance Checking, this system can provide a regular and continuous nurse follow-up regarding the recording of the drugs, storage of them as well as following the drugs. This standardization that is going to be applied in the use of the controlled substances can help to reduce the medication errors.\textsuperscript{8,10}

“Controlled Substance Checking” is one of the intervention in NIC, that is defined as “Promoting appropriate use and maintaining security of controlled substances” and it includes 13 activities.\textsuperscript{8} It can be stated that this intervention and activities would be performed by all chief nurses. Failure to carry out the activities can cause the lack of complete coverage in nursing care; therefore there should be legal regulation to describe these activities that have an interdisciplinary nature and private professional practice of the nursing profession.\textsuperscript{9,11}

**Purpose**

The objective of this cross-sectional, descriptive study is to identify the features of nursing interventions known as “Controlled Substance Checking” and the activities performed by nurses who work as a chief nurse in hospital wards.
Methods

Research samples consisted of chief nurses, charge nurses and shift nurses who can be responsible for controlling the substances when the chief and the charge nurses were not present in the clinic. Our samples were from six different hospitals and from different provinces of Turkey. The universe of the study consisted of 345 head nurses, charge nurses and nurses who can take responsibility for the monitoring of controlled substances. The nurses were from 5 private hospitals and 1 state hospital (totally 6 hospitals) located in Adıyaman, Ankara and İstanbul. The scope and the technique of the study were explained to the nurses during face-to-face conversations. They were invited to participate in our study and 392 nurses who were volunteered to participate were asked to fill out the questionnaire form. The 28 questionnaire forms were excluded from our study because more than %50 of them were left blank. In our study, we finally included 264 nurses whose forms were completely filled out.

Data were collected as a result of the analyses obtained from the answers of the questionnaire forms. These forms included two parts. First part contained questions regarding the working and socio-demographic characteristics of nurses. The second part included “Controlled Substance Checking” intervention and its 13 activities. The form designed as three point Likert scale. The implementation status was evaluated as “1=I have never used, 2=I rarely use, 3= I use many times/I am still using”. The Opinion of nurses about the applicability of activities in The Controlled
Substance Checking Intervention status was evaluated according to the four point Likert scale. 1=Convenient, 2=very convenient, 3=not convenient and 4=I am not sure/I don’t have an idea.

This intervention was previously translated into Turkish in the continuous translation studies of the NIC book by Erdemir. Each intervention in NIC was translated by nurses who were academicians as well as a Delphi study conducted to obtain the expert opinions and the consensus for Turkish names and definitions of nursing interventions. Then, the corrections according to the suggestions were made. In this study, the reviewed and the reorganized version was used.

A pilot study carried out with 12 chief nurses who were working in hospitals located in Adıyaman, Ankara and İstanbul. These 12 nurses were not included in the study. Then, the forms attached to an e-mail included an explanation regarding the purpose and the methods of the study and the deadline was also reported to the participants. Three weeks later, the second email sent as a reminder.

Data analysis was performed by using the Statistical Package Program for the Social Sciences (SPSS 17.0). The data were evaluated by using the frequency and percentage distributions.

**Findings and Discussion**

The average age of the participants was 28 and half of the nurses had 1-5 years professional experience. This can indicate the excess of the young population in Turkey. Besides, %45.8 of the nurses graduated from university and %37.5 of them graduated from high school. In other words, despite the expansion of undergraduate
education, there are still quite a lot number of nurses graduating from high school. Finally, we can notify that the intervention of “Controlled Substance Checking” performed by nurses who did not have a BS degree. Out of all nurses included in our study, only %80 of them had education on controlled substances and the hospitals of %91 of them had protocols and electronic applications intended for the drug control. It has been stated that the increase especially in in-service training, using the electronic control systems, disseminating the education of these systems will decrease the errors. The educational status of the participants and their use of controlled substances and approval levels were parallel with each other. Meanwhile, the rate of the 1-5 years experienced nurses was higher according to others regarding the approval of the activities. According to the results, it can be inferred that younger generation gets better education and they are more compatible with electronic systems.

Although the electronic systems facilitate the storage of the drugs, drug enumeration, they cannot prevent the errors. The continuous use of the system by more than one person can lead to errors and its misuse. Out of all, %73 of the participants reported that they practiced the first activity of intervention (Table1) and they also found it was appropriate to do this activity at the same level. Most of these nurses graduated from university (%44.5) and had 1-5 years work experience (%51.6).

According to studies, errors such as wrong drug administration, incorrect labelling due to the dispensing system constitute the significant portion of the errors12,13  In our study, 5 of the hospitals
had the automated dispensing system, but only the %72.3 of the participants found the second activity. (Table 1) Besides, %50.2 of the nurses stated that they ‘have never used’ this activity. There is no comprehensive study regarding the medication errors due to the dispensing system in Turkey. Therefore, it can be possible that the importance of this system is ignored.

In this study, %76.5 of the nurses stated that they controlled the drugs by two nurses and they thought this activity ‘convenient’ and ‘very convenient’. %93 of the nurses found this activity ‘Count all controlled substances with an RN on the opposite shift’ ‘convenient’. Gonzles K et al.² have summarized the medication errors and they have supported the idea that the one third of the errors were found to be due to the lack of the double-check and that have also stated that the number of errors decreased in case there was a double-check.

The 4th (Table 1) activity is important, especially for the preventing of the drug abuse. In our study, we have shown that this activity should be applied frequently. On the other hand, it has been detected that health professionals as well as most of the participants in our study thought that the 5th and 6th (Table 1) activities were under the responsibility of the drug company and the pharmacist. Perhaps for this reason, only approximately the half of the nurses stated that they used these activities and %65 of them told that these activities ‘can be applied’.

The most important difficulty in determining the medical errors was the lack of the convenient reportings about the timings, the qualities as well as the numbers of the errors.²,¹⁴ It can be possible
that the health professionals do not report or report partially their errors because they hesitate to be fired, punished or underwent inspection. In this study, the %70 of the participants found ‘convenient’ and practiced the 12th and 13th activities (Table1). However, it has been determined that nurses are legally responsible for not only preventing the errors but also detecting and reporting them.
In our study, we have observed that the “Lock controlled substances cabinet after the count is finished” activity was commonly practiced. The legal responsibilities are increased in order to prevent the misuse of the drugs. The liabilities about drugs can explain why the “Document accuracy of count on the appropriate form” activity was applied and found ‘convenient’. Nevertheless, the convenience in the registration system and automated coding systems may have facilitated the documentation15 Nurses have difficulties in the control of the drugs due to the increase in the number of patients and the diversity of drugs. Additionally, electronic systems facilitate the process between the pharmacy and the patients and this help nurses. Perhaps for this reason, the rates of the implementation and compliance of the 9th activity (Table1) were high in our study. There are also laws related to the unused drugs. However, we have observed that the 10th activity (Table1) was applied at a lower rate. As a result of this, we can state that there are no alterations in behaviors of health professionals despite laws and regulations. 16
Table 1. The status of nurses regarding the application of the controlled substance initiative activities and their views with respect to the convenience of these substances

<table>
<thead>
<tr>
<th>CONTROLLED SUBSTANCE CHECKING Definition: Promoting appropriate use and maintaining security of controlled substances</th>
<th>Implementation frequency</th>
<th>Opinion about applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTIVITIES</td>
<td>N 264</td>
<td>Never used</td>
</tr>
<tr>
<td>1. Account for controlled substance cabinet keys at all times</td>
<td>n 77</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>% 29,6</td>
<td>6,9</td>
</tr>
<tr>
<td>2. Follow agency protocol for dispensing and administering controlled substances</td>
<td>n 124</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>% <strong>50,2</strong></td>
<td>15</td>
</tr>
<tr>
<td>3. Count all controlled substances with an RN on opposite shift</td>
<td>n 33</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>% 13,1</td>
<td>10,4</td>
</tr>
<tr>
<td>4. Inspect packaging of controlled substances for signs of tampering</td>
<td>n 86</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>% 35</td>
<td>12,2</td>
</tr>
<tr>
<td>5. Report discrepancy(ies) immediately, per agency policy</td>
<td>n 98</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>% <strong>40,2</strong></td>
<td>16,4</td>
</tr>
<tr>
<td>6. Follow agency protocol for resolving discrepancy(ies)</td>
<td>n 102</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>% <strong>42,3</strong></td>
<td>12</td>
</tr>
<tr>
<td>7. Lock controlled substances cabinet after count is finished</td>
<td>n 33</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>% 13,3</td>
<td>10,8</td>
</tr>
<tr>
<td><strong>8. Document accuracy of count on appropriate form</strong></td>
<td>n</td>
<td>22</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>---</td>
<td>----</td>
</tr>
<tr>
<td>%</td>
<td>8,8</td>
<td>8,8</td>
</tr>
<tr>
<td><strong>9. Count controlled substances received from pharmacy</strong></td>
<td>n</td>
<td>17</td>
</tr>
<tr>
<td>%</td>
<td>6,8</td>
<td>6,8</td>
</tr>
<tr>
<td><strong>10. Return controlled substances not in routine use to pharmacy</strong></td>
<td>n</td>
<td>52</td>
</tr>
<tr>
<td>%</td>
<td>20,8</td>
<td>19,2</td>
</tr>
<tr>
<td><strong>11. Document wasting of controlled substances</strong></td>
<td>n</td>
<td>49</td>
</tr>
<tr>
<td>%</td>
<td>19,6</td>
<td>12</td>
</tr>
<tr>
<td><strong>12. Monitor for evidence of misadministration or diversion of controlled substances</strong></td>
<td>n</td>
<td>62</td>
</tr>
<tr>
<td>%</td>
<td>24,9</td>
<td>15,3</td>
</tr>
<tr>
<td><strong>13. Report suspected misadministration or diversion of controlled substances, according to agency policy</strong></td>
<td>n</td>
<td>97</td>
</tr>
<tr>
<td>%</td>
<td><strong>39,0</strong></td>
<td>13,7</td>
</tr>
</tbody>
</table>
Conclusion
Participants stated that they mostly practiced the Controlled Substance Checking activities and they found them ‘convenient’. These findings show that the intervention of “Controlled Substance Checking” under the domain of the Health System Management in Nursing Intervention Classification is valid and reliable in our health care settings in Turkey. The work with larger and different sample groups and to determine the effects of the electronic systems will provide the basis in the determination of the impacts of these interventions. The use of standards such as NIC in the names and the contents of the interventions will make it possible to evaluate the outputs of applications in different environments, the developments in the of nursing knowledge. Meanwhile, the continuity and consistency of nursing care will be provided. The detection of the implementation status of the NIC interventions that are applied in different countries or in the different care environments will increase our global power.

References


Disclosure: No significant relationships.

Keywords: Substance control, Nursing intervention, patient safety

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Introduction

The Nursing Process (NP) is regarded as important for guiding the organization and documentation of professional practice, aiming to qualify nursing care. In this perspective, information technology and nursing classification systems are excellent tools that facilitate the application of the nursing process, refine and provide visibility to health records, which enhance the safety and quality of care¹. Thus, the development of tools may support more efficiently the collection of information from patients², which will be used on clinical judgment and decision-making, especially when developing nursing diagnoses³. The educational strategies to develop diagnostic abilities are challenging and multidimensional, regarding the possible human responses each individual may present, aside from the complexity of diagnostic reasoning⁴.

The Software Educativo do Diagnóstico de Enfermagem (Nursing Diagnosis Educational Software)⁴⁵ is a program developed in a
nursing project, which contains five clinical studies validated by specialist nurses. The program is aimed at students and nurses learning the diagnostic reasoning process. The first screens present the goal of the software, instructions for the exercise and definitions of nursing diagnosis (ND) from NANDA International. After that, a list on clinical studies is presented for the user to select one and run it. The first stage of the clinical study consists of patient history, from which relevant data must be selected (signs, symptoms and risk factors), which will be signaled. In the following stage, relevant data generate different clusters for which diagnostic hypotheses are presented. When the most accurate ND is real, syndrome or healthcare promotion type, options of related factors are offered. At the end of this stage, the ND is visualized and it is possible to return to the cluster stage in order to establish other diagnoses. The exercise is finished when all clusters have been completed. Although the software has been ratified, it is important to gather user evaluation regarding teaching activities.

**Objective**

To assess the Software Educativo do Diagnóstico de Enfermagem (Nursing Diagnosis Educational Software) in nursing undergraduation teaching.

**Method**

The software was used and assessed individually by 41 students from the 5th semester in Nursing graduation in a public university in the South of Brazil. The activity lasted for four hours and was carried out in a computer lab, in March 2014. Assessment was carried out by means of an instrument which presented items on
case studies content, tool usability and teaching methods. Each item was assessed according to the following grades of pertinence: completely agree, agree, no opinion, disagree, and completely disagree. The project was approved by the Research Ethics Committee (n.: 130035).

**Results**

The results of the evaluation of the 41 students regarding the software are presented in Table 1.

<table>
<thead>
<tr>
<th>Items/evaluation grades</th>
<th>Completely agreed</th>
<th>Agreed</th>
<th>No opinion</th>
<th>Disagreed</th>
<th>Completely disagree</th>
<th>No answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>25 (61%)</td>
<td>13 (31.5%)</td>
<td>1 (2.5%)</td>
<td>1 (2.5%)</td>
<td>0</td>
<td>1 (2.5%)</td>
</tr>
<tr>
<td>tool usability</td>
<td>27 (66%)</td>
<td>10 (24.5%)</td>
<td>3 (7%)</td>
<td>0</td>
<td>0</td>
<td>1 (2.5%)</td>
</tr>
<tr>
<td>teaching methods</td>
<td>28 (68%)</td>
<td>9 (22%)</td>
<td>2 (5%)</td>
<td>2 (5%)</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Table 1 – Number and percentage of grades regarding the software evaluated by students*

The content evaluated considered if: the studies were written in a clear and concise fashion; were relevant; presented precise information, included appropriate amount of data; increased their knowledge on the nursing diagnosis elaboration. The tool usability referred if it was easy to use, had clear instructions, was motivational, visually attractive; and was interactive. About the teaching methods, it was evaluated if the software reinforced concepts progressively, the material promoted learning, the amount of evidence to define priority ND made the choice easier. It was also asked to the students if this software provided more case studies, then they would like to be part of it.
Conclusion
Most students evaluated the Nursing Diagnosis Educational Software positively regarding case studies content, tool usability and teaching methods.
Small adjustments will be provided in the software and the addition of new case studies in order to favor teaching-learning of students and nurses in elaborating accurate nursing diagnoses.

References
Disclosure: No significant relationships.

Keywords: Nursing Diagnosis, software, teaching, Evaluation

This work was supported by the Fundo de Incentivo à Pesquisa e Eventos (FIPE) do Hospital de Clínicas de Porto Alegre (HCPA) and Fundação de Amparo à Pesquisa do Rio Grande do Sul (FAPERGS).
Chapter 5 – Diagnoses, Interventions and Outcomes

1. Using a multidimensional aging model to suggest outcomes, interventions and diagnoses

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Overview of the Characteristics of the World’s Population
The world’s population is growing and aging. In the coming decades, the percentage of individuals around the world over 65 will be greater than at any point in the world’s history. The very low birth rates in developed countries and the declining birth rates in most developing countries appear to be responsible. Specifically, persons 65 and older will be 2.5 times the population of individuals 0-5. By 2050, the number of people over 65 will be 16 percent of the global population. While the number of people of retirement age is already straining retirement financing, a growing number of persons over 75 will challenge the health care systems-requiring more medical attention and more assisted living facilities, day care and nursing home facilities. With the “graying” of the world, issues relevant to older adults will assume greater societal significance. These substantial increases in life expectancy combined with medical advances, escalating health and social care costs, and
higher expectations for our older adults all have led to aging becoming an international interest and how to promote successful aging.

**Major Conceptualization of Successful Aging**

Scientists and clinicians have worked to improve their understanding of successful aging. The definition put forth by Rowe & Kahn (1987) of successful aging as the avoidance of disease and disability has been relied on most heavily. These criteria also set a standard of performance that very few older adults could meet. It also suggests that aging has only one dimension of physical ability or function and does not incorporate other dimensions. While the other dimensions of a psychological, social or spiritual nature that may impact the lives of individuals with chronic diseases are absent. Health is a very important issue for older adults as they do have a greater tendency to have a chronic disease or disability. With these changing patterns of illness in old age, morbidity compression and effective interventions reducing disability and health risks in later life, the goal of aging successfully is becoming more of a reality.

In response to the observation that Rowe & Kahn’s definition (1987) did not incorporate all major dimensions of life Young, Frick & Phelan (2009) formulated a new definition and model representing successful aging (Figure 1). Young and colleagues focused on the following three basic principles: 1) aging is an individualized process and individuals age differently, 2) there are different paths to successful aging, and 3) successful aging can be accomplished with compensations for deficits and limitations.
These principles led to the definition: “A state wherein an individual is able to invoke adaptive psychological and social mechanisms to compensate for physiological limitations to achieve a sense of well-being, high self-assessed quality of life, and a sense of personal fulfillment even in the context of illness and disability” (Young et al., 2009, p.88-89).

Figure 1. Multidimensional Model of Successful Aging (Young et al., 2009)
This model represents three dimensions of health: physiological, psychological and social. Each dimension is defined by selected criteria; physiological incorporating disease and functional impairments, psychological incorporating emotional vitality,
coping, and resilience, and sociological incorporating spirituality and adaptation through social support mechanisms. The diagram also has intersecting shaded areas, which represent those individuals where successful aging is being achieved due to physical adjustments or other compensatory psychological or sociological mechanisms are being made. Of these shaded areas, the central area (A) intersects all three dimensions and represents individuals who rate high in all of the dimensions of the model and have the most desired outcome of successful aging or have minimal or no deficit in any of the dimensions. In the case of the other three shaded areas of (B, C, and D), these intersects represent desired outcomes related to successful aging in two of the dimensions of the model. For example, individuals with multiple chronic conditions and deficits in the physiological dimension but implement actions in their lives within the psychological and sociological dimensions to offset the existing illnesses or functional limitations represented within the physiological dimension. These three intersects reflect areas that individuals may have deficits but due to mechanisms involving coping, adaptation, resilience and spirituality that are put in place, they can still age successfully.

To examine the alignment of this model to the individual NANDA International, Nursing Outcomes Classification, and Nursing Interventions Classification (NNN) domains, each of the domain definitions was reviewed and compared to the individual dimension definition and the respective criteria presented for each of the dimensions. The decision was made to align each of the domains of the respective languages only once.
Comparison of Domains of NNN to the Model of Successful Aging

In reviewing the sociological dimension (engaging with life and spirituality), Young and colleagues define social relationships to have a significant influence on well-being and supportive relationships can improve outcomes. In addition, spirituality is defined by subjective well-being (2009). These general concepts align with NANDA-I’s Domain 7 “positive and negative connections ...between people” (Herdman & Kamitsuru, 2014, p. 277) and Domain 10 Principles underlying conduct...or having intrinsic worth.” (Herdman & Kamitsuru, 2014, p. 359). In reviewing the psychological dimension (cognitive function, emotional vitality and depression), there is an alignment with vitality, resilience and coping that are evident in the NANDA-Is of Domain 9 and consistent with the title of the domain. Figure 2 depicts the domains of NANDA-I aligned with all three dimensions of the model. Six domains align with physiological, two domains align with psychological, two with sociological, two align with “A” intersect, and one aligns with “D” intersect.
An example of the alignment with the domains of NOC and the model is within the physiological dimension (disease and impairment) and the Functional Health domain, which is defined as “outcomes that describe the capacity for and performance of basic tasks life” (Moorhead, Johnson, Maas, & Swanson, 2014, p. 48). Granted the model focuses on the negative aspect while the focus of NOC is on the resolution of signs and symptoms of disease and associated impairments by the implementation of nursing interventions. This juxtaposition is an important relationship to show. Another example demonstrating the alignment between the domains of NOC and the three dimensions of the model is the domain Family Health within “A” Intersect. The definition of Family Health is “outcomes that describe health status, behavior, or functioning of the family as a whole or of an individual as a
family member” (Moorhead, et al. 2014, p. 64). Specifically, in reviewing the domain, all three dimensions are reflected in the definition. Figure 3 depicts two NOC domains align with physiological, one domains aligns with “C” intersect, and the remaining four domains align with “A” intersect.

![Multidimensional Model & Domains of Nursing Outcomes Classification (NOC)](adapted from Young et al., 2009).

An example of the alignment of a NIC domain and the model is represented within the sociological dimension (engaging with life and spirituality) and the NIC domain of Community or the care of the community. The sociological dimension is the only one to focus on the degree of interaction of individuals within the environment and specifically references community. Another example from the sociological dimension relates to the criterion of the dimension that
denotes “...supportive relationships can contribute to improved outcomes.” (Young et al., 2009, p. 90). Young and her colleagues continue by referring to “other groups,” which could be defined as groups within the health care system. As Bulechek, Butcher, Dochterman, & Wagner (2013) present the definition of the Health System domain is “Care that supports effective use of the health care delivery system” (p. 113). As the diagram depicts, three NIC domains align with sociological, two NIC domains align with physiological, one domain aligns with “C” intersect, and one aligns with “D” intersect.

Figure 4. Multidimensional Model & Domains of Nursing Interventions Classification (NIC) (adapted from (Young et al., 2009)).

In summary, the world is aging and the model of successful aging within the context of NNN can assist nurses in the care of older patients. In other words, with the new diagrams, we can be
cognizant of nursing diagnoses, relevant outcomes and interventions selected for our older clients to attain positive aging.

References


Disclosure: No significant relationships.

Keywords: outcomes, aging, interventions, diagnoses
2. Validating linkages of nursing diagnoses, outcomes and interventions using clinical data from specialty units in acute care

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The 6 steps of the nursing process require content to describe the patient problems nurses diagnose and the outcomes nurses achieve by providing targeted interventions. Linkages of nursing diagnoses, nursing outcomes, and nursing interventions have been published to support care planning and decision-making in nursing since 2001. This linkage work has developed content for care planning for nurses regardless of their practice specialty or setting. It is critical that these efforts continue as new concepts are developed for the three classifications of diagnoses (NANDA International, NANDA-I), outcomes (Nursing Outcomes Classification, NOC) and interventions (Nursing Interventions Classification, NIC) known as NNN. Research is needed to validate these linkages in a variety of settings and with different patient populations. Objective: To highlight research results that validate published NNN linkages in acute care specialty units. Methods: Previous research focused on clinical data from specialty units in acute care hospitals will be used to identify linkages of diagnoses, outcomes, and interventions selected from care plans for different patient populations (congestive heart failure, cancer, and intensive care patients).
These data will be compared to published linkages to validate the suggested outcomes and major interventions for a specific diagnosis. Results The linkage of NNN for use in practice is the foundation for building nursing science. Results of the comparison of actual clinical data with the linkages published support the linkages for several patient populations. The most frequently selected diagnoses in care plans varied among specialty units as expected. Additional research is needed to validate the diagnoses, interventions, and outcomes in these classifications across the continuum of care and with other populations of patients. In addition validation of NNN used in practice will further refine the linkages. This will provide the nursing profession with content that is evidence-based and assist nurses to predict the outcomes of specific interventions for specific problems in the future. This knowledge will support nurses working with patients to meet safety needs, increase participation in care decisions, improve outcomes, and enhance satisfaction with care.

References


Disclosure: No significant relationships.

Keywords: Linkages, outcomes, interventions, diagnoses, care planning
3. The predictive power of nursing documentation on possible outliers in length of hospital stay of patients admitted for total knee and total hip surgery

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Summary

In a retrospective cross-sectional documentation audit (N= 200 EHRs) the predictive power of nursing documentation on length of hospital stay (LOS) of patients admitted for total knee and total hip surgery was evaluated. The prevalence of nursing diagnoses had a positive significant influence on LOS.

Abstract Rationale

Previous studies regarding Standardized Nursing Language (SNL) focused mainly on better quality of nursing documentation, and analysis of variables such as Length Of Stay (LOS) were hardly addressed. Reliable and valid analyses on LOS as a dependent outcome variable relies on the meaningful use of SNLs including nursing diagnoses, interventions and background information for care planning and evaluations. The predictive power of nursing diagnoses can be calculated based on accurately stored nursing information in the Electronic Health Record (EHR) (Welton et al
Accurate nursing diagnoses can be used for early adaptation in care plans to prevent patients’ health complications. These early interventions may positively affect hospital efficiency and therefore save hospital expenditures. SNL is needed for valid calculations (Welton et al., 2005, Freitas et al., 2012, Xiao et al. 1997, Müller-Staub et al., 2006). Current developments in EHRs require the use of structured documentation and SNL. However, little is known on the impact of the quality of documentation when using SNLs in electronic systems. This study focused on: 1) The agreement, correctness and accuracy of nursing documentation and 2) Prevalence of NANDA-I nursing diagnoses their effects on LOS as documented in EHRs.

**Objective**

To evaluate the quality of predictive nursing documentation power of accurate on LOS in patients with total knee and total hip surgery in orthopedic hospital settings.

**Method and instrumentation**

A retrospective cross-sectional documentation audit was performed by using the D-Catch instrument for the assessment of nursing documentation in 200 EHRs of patients (age of >70 years) in a general hospital, admitted between 2011-2013 for total knee and total hip surgery.

**Data-analyses**

Measurements of nursing care plan documentation according to the D-Catch variables were carried out in three phases: pre-operative, post-operative, and on the last day of patients’ hospital stay. Inter-rater reliability of the D-Catch instrument was
calculated by using Cohen’s weighted kappa. Student T-test and factor analysis (ANOVA) was used to calculate the influence on the dependent variable LOS as well as a regression analysis was carried out.

**Results (Preliminary)**

Based on the first analysis of electronically stored documentation, the prevalence of nursing diagnoses had a positive significant influence on LOS. Significant and most prevalent nursing diagnoses were: Nausea, Acute pain, Deficient fluid volume, Imbalanced nutrition: less than body requirements, and Impaired skin integrity (pressure ulcer). Documented medical diagnoses as well as medical treatment had no significant influences on LOS.

**Conclusion**

Accurately stored nursing process information demonstrated predictive power of nursing diagnoses on LOS. The prevalence of nursing diagnoses was strongly related to LOS. A positive association between the number of nursing diagnoses and LOS was determined.

**Disclosure**

No significant relationships.

**Keywords**

Quality of documentation, Electronic Nursing Record, Nursing diagnoses, Prevalence, Effect of documentation on LOS, Predictive power.
4. Developing and submitting two new nursing diagnoses

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**Introduction**

Impaired physical mobility is one of the most relevant, predictive factors for the institutionalisation of the elderly after acute illness or accidents. Therefore, rehabilitation focuses on restoring physical mobility to the best possible extent. The concept of physical mobility consists of different phenomena, such as the ability to get up from bed or chair, to transfer, to walk, or to move independently using devices. These phenomena are conceptualised with discriminative nursing diagnoses, each defined differently and calling for discriminative interventions. Therefore, and in order to follow a patient orientated approach, each situation must be analyzed individually. However, in the fields of neurological and musculoskeletal rehabilitation, two more concepts have emerged. Team members expressed the wish to develop new nursing diagnoses.

**Aim**

Development of two new nursing diagnoses, according to NANDA-I®-regulations and on the base of explorative data

**Method**

The method is informed by Structure and processes for submitting new diagnoses (NANDA-I®) Nursing diagnostics (NANDA-I®)
Concept Analysis (Deductive approach) Systematic data collection (exploratory approach) The need for new nursing diagnoses was formulated independently by members of two different nursing teams, one focussing on neurological and the other on musculoskeletal rehabilitation. Both reported situations in which their patients needed specific interventions to be able to either sit, or stand, or both. They complained that the concepts of already existing nursing diagnoses did not cover these situations sufficiently. In an attempt to develop concepts that could better express what was meant, two new nursing diagnoses were developed by deducing labels, definitions and characteristics from neighbouring concepts. Differing and similar characteristics were identified and the concepts were pretested in two small groups of patients on each ward.

**Target group**

Inpatients of a geriatric hospital (320 beds, 3‘000 admissions p.a; Dpt. for Rehabilitation)

**Results (quantitative data analyses are still under way)**

The new nursing diagnoses were found to precisely express the impairments of the ability to stand, or to sit respectively. According to NANDA-I®-regulations, the new concepts were presented to the Diagnostic Development Committee of NANDA International. After refinement, both concepts were added to the NANDA-I® 2015-2017 classification as new nursing diagnoses. Further research is needed in order to refine labelling, definitions, characteristics and appropriate interventions.

**Disclosure:** No significant relationships.
Keywords: rehabilitation nursing, nursing diagnoses development, impaired sitting, impaired standing.

5. Application of exposure science principles to contact tracing nursing interventions and eHealth supporting tools

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Objective
To discuss the principles of exposure science influencing nursing interventions related to infectious diseases (such as HIV, Tuberculosis, and MERS), contact tracing, and the design of information tools to support exposure management situations in public health settings.

Methods
Literature review, field observation, and critical application of principles of exposure science to the practice of public health nursing, public health exposure management, and contact tracing situations in multiple international locations.
Background Observations

Exposure science creates a narrative that captures the spatial and temporal dimensions of exposure events with respect to acute and long-term effects on human populations and ecosystems. Collection and analysis of quantitative and qualitative information is essential to understand the nature of contact between receptors (such as people or situations) and physical, chemical, or biologic causative agents. The principles have direct application to infectious disease contact tracing incorporating an assessment of how people acquired illness with the ultimate goal of determining the transmission potential to others. Contact tracing is the process of identifying the relevant contacts of a person with an infectious disease (index patient) and ensuring that they are aware of their exposure. The scope of contact tracing may be broad (e.g. an entire school for measles), targeted (e.g. sexual partners for sexually transmissible infections) or narrow (e.g. domestic or other close social contacts for TB). Accurate, timely, and detailed nursing documentation is required to support effective reporting and analysis of each type of investigation. The general aims of contact tracing are: to interrupt the ongoing transmission of infection; to identify people with an infection who may benefit from treatment in order to minimize the likelihood of complications of infection; and to prevent re-infection from an untreated partner to help limit the prevalence of infection in the population. These aims are achieved by professional competency and assessing each case individually, determining the medical and social implications of
each infection, considering the ethical and legal aspects of each case.

**Application and Recommendations**

Exposure science theory directly influences nursing interventions and clinical decision making performed during the contact tracing process for communicable diseases. Identifying acquisition situations and establishing the potential for ongoing transmission of an infectious disease are key to containing the spread and limiting complications by judicious use of prophylactic interventions. eHealth solutions enable the appropriate documentation of index cases and their contacts to support outbreak containment. The key functionality of eHealth solutions supporting holistic patient management, informing clinical decision making, and enabling efficient use of limited public health resources include; 1. Establishing a single record with an easy shift from contact to case record to ensure that history is maintained 2. Mass uploading of large contact lists and automatic creation of investigation records 3. Auto assignment of investigation records to investigators 4. Rapid assessment of contact dispositions to ensure follow up is complete 5. System alerts to indicate when multiple investigations are linked to single source, possibly indicating a cluster or outbreak

**Disclosure:** No significant relationships.

**Keywords:** Exposure Science, Contact Tracing, Nursing Interventions, Infectious Disease, eHealth Solutions
6. Analysis of the intervention *infant care – preterm* and its activities performed by the nurses working in neonatal intensive care units in Turkey

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**Introduction**

The Nursing Interventions Classification (NIC) is a comprehensive standardized classification of interventions that nurses perform. It is useful for clinical documentation, gathering information regarding the care provided in treatment units, integrating data into information systems and treatment units for research efficiency, measuring productivity and evaluating competence, facilitating reimbursement, and for curriculum planning. The use of a standardized language in the provision of health care enables the generation of data for decision making on issues related to cost and quality in healthcare institutions. The data are also useful in assisting in decision making regarding healthcare policy.

“*Infant care: Preterm*” is one of the interventions in the NIC defined as “aligning caretaking practices with the preterm infant’s individual developmental and physiologic needs to support growth and development” and includes 45 activities. It can be said that this intervention and included activities would be performed
by all nurses who work in preterm care units because of the relatively homogenous structure and care needs of preterm infants. Not performing some of these activities can cause lack of complete coverage in nursing care; therefore, there is a need for a legal apparatus to describe the activities that comprise professional practice exclusive to nursing personnel and those activities that have an interdisciplinary nature.

**Purpose**

The objective of this cross-sectional, descriptive study was to identify the activities of nursing intervention “Infant care:Preterm” and its activities performed by nurses who work in Neonatal Intensive care units.

**Method**

The research sample consisted of 161 nurses who accepted to participate in the study voluntarily and work in neonatal intensive care units (NICUs) of three different hospitals – a private hospital, an university hospital, and a state hospital in Istanbul, in Turkey.

Data were collected using a two-part questionnaire form that was prepared by the researchers. The first part consisted of questions about working and socio-demographic characteristics of nurses. The second part included “Infant care:Preterm” intervention and its 45 activities. The form was designed as three-point Likert scale that questioned the use and frequency of implementation each activity. The applicability Intervention/Activity was evaluated as “1= not at all appropriate, 2= not sure 3=very appropriate. The
use/performance status of Intervention/Activity was evaluated as “1= I have never used, 2= I used a little, 3= Used various times/still using”.

This intervention was previously translated into Turkish in the continuous translation studies of the NIC book, which is edited by Erdemir. All interventions in the NIC book were translated by related nurse academics. A Delphi study was conducted to obtain expert opinions and consensus for Turkish names and definitions of nursing interventions, and corrections were then made according to their suggestions. The reviewed and reorganized version was used in this study.

The first questionnaires were pilot-tested beforehand on 5 nurses who work with infants in a private hospital in Istanbul. These questionnaires were not included in study. The forms and instructions regarding the completion of forms were then sent to the nurses who were given a four-week deadline for responses.

Activities that were expressed as “applicable” by ≥ 90% nurses in evaluating the data were considered to be “the most applicable activities”. For the use of these activities, those that were never used by ≥ 20% of the nurses were considered as “the least used activities”, and the activities that were used by ≥70% of the nurses were taken as “the most frequently used activities”.

Data analysis was performed using the Statistical Package Program for the Social Sciences (SPSS 17.0). The data was evaluated by using frequency and percentage distributions were used in the study.
Results

Of the nurses who participated in the study, 95% (n=153) were women and their average age was 28.45±6.1 years. Sixty percent (n=97) of the nurses had bachelor degrees and approximately half (50.9%) were married.

Some 28% of the participant nurses were working for private hospitals, 33.5% for public hospitals, and 38.5% for university hospitals; and 58.4% of the nurses declared that they had been working as a neonatal nurse for 1-5 years, 21.1% for 6-10 years, and 15.5% for 11 years and more.

Eighty-two percent of the nurses reported that they had a form with which they record their nursing care and 32% of the nurses stated that they found this form sufficient; however, 22.4% declared it as insufficient.

While examining the opinions of nurses on the applicability of activities of “**Infant Care: Preterm**” intervention, activities that were considered as “very applicable / practicable” by ≥ 90% of the participants were grouped together. Activities that were considered as “very applicable” were identified as “Cover eyes and genitalia with opaque shield for child receiving phototherapy” (93.2%);
Table 1. Activities of nursing intervention “Infant Care: Preterm” evaluated as “very applicable” by most of nurses

<table>
<thead>
<tr>
<th>Nursing Interventions Infant Care: Preterm</th>
<th>Opinion about applicability of activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very applicable</td>
</tr>
<tr>
<td>Cover eyes and genitalia with opaque shield for child receiving phototherapy</td>
<td>93.2</td>
</tr>
<tr>
<td>Monitor hematocrit and administer blood transfusions when necessary</td>
<td>92.5</td>
</tr>
<tr>
<td>Provide comfortable chair in quiet area for feeding</td>
<td>91.9</td>
</tr>
<tr>
<td>Position infant for sleeping in prone upright position on parent’s bared chest, if appropriate</td>
<td>91.3</td>
</tr>
<tr>
<td>Support breastfeeding</td>
<td>91.3</td>
</tr>
<tr>
<td>Remove eye mask during feedings and regularly to monitor for discharge or corneal irritation</td>
<td>91.3</td>
</tr>
<tr>
<td>Monitor intake and output</td>
<td>90.7</td>
</tr>
<tr>
<td>Gather and prepare necessary equipment away from bedside</td>
<td>90.1</td>
</tr>
</tbody>
</table>

“Monitor hematocrit and administer blood transfusions when necessary” (92.5); “Provide comfortable chair in quiet area for feeding” (91.9%); “Remove eye mask during feedings and regularly to monitor for discharge or corneal irritation” (91.3); “Position infant for sleeping in prone upright position on parent’s bared...
“Rest, if appropriate” (91.3%); “Support breastfeeding” (91.3%); “Monitor intake and output” (90.7%); and “Gather and prepare necessary equipment away from bedside” (90.1%). The activities that were considered as the most applicable by the nurses were those conducted to provide for the physical care needs of babies. The remaining 9 activities were evaluated as “very applicable” by less than 80% of the nurses. Three of these activities were about informing, support, and care participation of parents with preterm babies. The other activities were concerned with controlling the environmental stimulus required for individualized developmental care and about providing appropriate stimulus. It can be said that the discordance of the opinions is a factor of the nurses’ awareness/qualification status rather than the appropriateness/inappropriateness of these activities.

Activities that were never used by $\geq 20\%$ of the nurses participated in the study were considered as the “least used activities”. The least used nursing activities were “Create a therapeutic and supportive relationship with parent” (41.6%), “Inform parent about prevention measures for sudden infant death syndrome (SIDS)” (41.6%), and “Provide water mattress and sheepskin as appropriate” (39.1%).
<table>
<thead>
<tr>
<th>Nursing Interventions</th>
<th>The utilization / performing status of Intervention/activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infant Care: Preterm</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Never used</td>
</tr>
<tr>
<td>Create a therapeutic and supportive relationship with parent</td>
<td>41.6</td>
</tr>
<tr>
<td>Inform parent about prevention measures for SIDS (Sudden Infant Death Syndrome)</td>
<td>41.6</td>
</tr>
<tr>
<td>Provide water mattress and sheepskin as appropriate</td>
<td>39.1</td>
</tr>
<tr>
<td>Use smallest diaper to prevent hip abduction</td>
<td>23.6</td>
</tr>
<tr>
<td>Provide space for parent on unit and at infant’s bedside</td>
<td>23.0</td>
</tr>
<tr>
<td>Decrease environmental noise</td>
<td>21.7</td>
</tr>
<tr>
<td>Avoid over-stimulation by stimulating one sense at a time</td>
<td>20.5</td>
</tr>
</tbody>
</table>

There is no doubt that the care activity of “Create a therapeutic and supportive relationship with parent” is an indispensable activity of a family-centered care approach. Reasons for the lesser use of these activities (41.6%) might be not defining this function properly in service policies of neonatal units, role perception of the nurse, excessive work load, and inappropriate environmental
conditions. Reasons for the lesser use (39.1%) of “Provide water mattress and sheepskin as appropriate” activity might due to a traditional mindset that these products in neonatal units are not appropriate and that these products might be harmful for a baby. Other activities that were never used were related with the developmental care approach, which is a contemporary and desirable care approach for NICUs.

Table 3. The most used 10 activities of nursing intervention ““Infant Care: Preterm” by nurses

<table>
<thead>
<tr>
<th>Activities of Infant Care: Preterm</th>
<th>Utilization of the activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never used</td>
</tr>
<tr>
<td>Position and support throughout feeding maintaining flexion and midline position</td>
<td>2.5</td>
</tr>
<tr>
<td>Feed in upright position to promote tongue extension and swallowing</td>
<td>4.3</td>
</tr>
<tr>
<td>Reposition infant frequently</td>
<td>5.0</td>
</tr>
<tr>
<td>Cluster care to promote longest possible sleep interval and energy conservation</td>
<td>6.2</td>
</tr>
<tr>
<td>Position infant for sleeping in prone upright position on parent’s bared chest, if appropriate</td>
<td>8.1</td>
</tr>
<tr>
<td>Support breastfeeding</td>
<td>4.3</td>
</tr>
<tr>
<td>Gather and prepare necessary equipment away from bedside</td>
<td>6.8</td>
</tr>
</tbody>
</table>
Among the 10 activities that were the most frequently used by the nurses (≥70%) were activities about baby positioning, breastfeeding support, feeding, and other monitoring activities.

When the frequency of each activity was examined, amongst “Infant Care: Preterm” intervention activities we found that nurses mostly used interventions concerned with the physical needs of babies.

**Conclusion**

In neonatal units, babies should be considered together with the family and environment as a whole and adaptation to its surroundings should be provided. For this reason, nurses working in these units should provide holistic nursing care while attending to the needs of the neonate and family. From the data obtained in this study, it can be seen that most of the nurses meet the physical care needs of the neonate and consider the psychosocial needs less. Nurses who work in neonatal intensive care units in Turkey must determine appropriate care interventions and perform these duties according to international standards. Defining the nursing applications/interventions and making use of a common
terminology/classification may provide opportunities to compare, review, and improve these applications.

References


Disclosure: No significant relationships.

Keywords: NIC activities, Postpartum care, Turkey
Chapter 6 – Standardised Language

1. Connecting nurses: spreading the word

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Connecting Nurses is an initiative for nurses that has been developed, with support from Sanofi, by a number of international organisations: International Council of Nurses (ICN), Nurse Practitioner Healthcare Foundation (NPHF), Secrétariat International des Infirmières de l'Espace Francophone (SIDIIEF), Association Française pour le Développement de l'Education Thérapeutique (AFDET), Foundation of European Nurses in Diabetes (FEND), Millennia2025 Foundation WeObservatory. The aim is simply to bring nurses together. Through a number of projects, Connecting Nurses provides an online forum for nurses from around the world to share ideas, advice and innovations, both among themselves and with clients, patients, carers and other citizens. Two key projects that support this activity are Information Shareapy and Care Challenge. The Information Shareapy platform facilitates nurse-led patient education. It allows nurses to share useful online resources with other nurses anywhere in the world, thereby providing a living library of peer-endorsed materials that are readily available to support patient education. Resources are
organized by topic and can be sorted according to the date of posting or by popularity. Favourite topics can be tracked and users can follow others to ensure that they are kept aware of the latest additions that are relevant to their practice. Additional functionality includes: a newsfeed, a search function, bookmarking, identifying similar members and personalised profiles. Shareapy was launched in 2012. In September 2014, there were 500 registered users and a total of 1500 online resources had been posted. The Care Challenge started in 2011. The Care Challenge platform leverages the power of nurses to self-identify challenges and create solutions, thereby promoting nursing-led innovation. The goal is to raise awareness of nursing-led projects from around the world and to showcase ‘favourite’ initiatives. Nurses are able to submit, on an ongoing basis, a précis of their initiative i.e. the challenge, the solution and the anticipated results, either under a general nursing category or under more specific chronic disease or midwifery categories. Submissions are made public via the Care Challenge platform for users to discover, browse, ‘like’ (support), or share through social media. Any public support gained through the platform forms part of the evaluation criteria used by the judging panel in selecting favourite initiatives, which are selected on an ongoing basis and which are supported for example through the production of high-quality video presentations. In addition, eHealth-focused initiatives that resonate particularly with the empowerment and gender equality goals of the Millennia 2025 Foundation may be further showcased through their WeObservatory. In September 2014, 140 submissions had been
posted. This presentation will discuss the development and practical use of both platforms in order to shed further light on online nursing engagement and to celebrate nursing innovation. For Information Shareapy, examples of the breadth of resources will be shared and key insights around nursing engagement will be explored. For Care Challenge, a diverse range of submissions will be presented in order to expose the innovative nature of nursing practice worldwide.

**Disclosure:** No significant relationships.

**Keywords:** Engagement, Innovation, Social media
2. Documenting holistic nursing care through use of standardized terminologies: the congruence of Wilber’s Integral Theory’s four quadrant perspective and nursing languages

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Integral Theory and its four quadrant perspective are used to examine the comprehensiveness of current standardized nursing languages and to trial the capacity of these languages to represent the domain of each quadrant.

The reader is asked to consider two seemingly unrelated ideas:

Standardized nursing languages (SNLs) have been developed to assist nurses in the articulation and documentation of their practice. While many in the field of informatics emphasize the ‘documentation’ aspect of the purpose, most nurse scholars working in the field emphasize the use of SNLs to articulate what nurses do and to give voice to nurses’ work. Clark and Lang reflected this stance when they wrote “if we cannot name it, we cannot practice it, control it, teach it, finance it, or put it into public policy (1992, p192). After over 40 years of development, current SNLs include several systems addressing various aspects of nurses’ work and encompass assessment and diagnoses, interventions and
outcome measurement. Nursing standardized terms also include concepts representing the physical, psychosocial, spiritual and cultural aspects of the client and the nurse-client encounter. In spite of this rather broad scope of concepts envisioned at the outset of their development and now contained in SNLs, from the start some opposed the use of SNLs believing that standardized terms limit practice, prohibit intuition, and would be insufficient to deal with the full essence of nursing’s work (Shamansky and Yanni, 1983). Still today, with the refinement and advancement of SNLs and the emergence of electronic health records requiring use of codable terms, some in nursing still express the negative view that SNLs are too limiting and not suitable for holistic practice.

Concurrent to nursing discussions of SNLs, there is a rather new development in the international holistic nursing community. This is the use of Wilber’s Integral Theory (Wilber, 2000) as a means to consider various paradigms nurses use to think about and to execute their practice. Nurse theorist Barbara Dossey developed her Theory of Integral Nursing (TIN) in 2008 as a way of bringing multiple paradigms to the discipline specifically through what is called a ‘four quadrant perspective’. These four quadrants represent all ways of knowing and being such that their use permits nurses to work from differing yet appropriate world views ‘all at once’. The four quadrants represent a complete whole and can be illustrated as a map that is considered a useful tool for visualizing the holistic caring process (Potter and Frisch, 2015).

The purpose of this paper is consider how the ideas related to SNLs and a four-quadrant perspective might be used together to 1)
demonstrate ways in which current SNLs and their terms can be placed within the emerging four-quadrant framework of holistic care and 2) through that demonstration to evaluate the degree to which SNLs have the capacity to bring the whole of nursing practice into a concise documentation system.

**Relevant Literature/Description of Concepts**

**Standardized Nursing Languages**

SNLs have developed through an evolutionary process for the purpose of creating a means to identify, document and retrieve all nursing information. Early work on nursing languages grew from a recognition that *that which is unnamed is unnoticed.* Nurses needed a means to bring nursing’s work to awareness and to document that work in order for that work to be recognized and valued. Over the years, nurses developed: data sets (such as the NMDS), classification schemes (such as the Nursing Interventions and Outcomes Classification), taxonomies (such as the list of NANDA-I nursing diagnoses), and more recently a unified system (ICNP) for nursing language. Taken together, these SNLs provide a means to articulate and document nursing work and, because these SNLs are computer-codable, these languages provide a way to retrieve both individual and aggregate data to gage nursing’s contribution to care.

While there have been clear enthusiasts and champions for using SNLs, from the beginning of the use of SNLs there has not been universal acceptance of standardization. Many nurses have voiced a preference for writing individual, narrative notes and some adherents of certain philosophical or theoretical perspectives
believe that standardization of words and their meaning cannot be realized and that the use of nursing diagnosis forces something that seems objective without an understanding of its context (Lutzen & Tishelmand, 1996). Others operating from a holistic framework assume that standardization has meaning only in an objectivist, behavioral sphere (Perdue, as quoted by Dossey, 2015). While thorough examination of these ideas and arguments is outside the scope of this paper, a criticism of SNLs is that they cannot be used to address a truly holistic perspective of care as they cannot capture the context nor the relational aspects of nursing work. Examination of how SNLs might address the whole follows with first a description of the four-quadrant perspective. 

*Four Quadrants*

In integral thinking, each of the four quadrants represents a different aspect of the human experience (Wilber, 2000). The upper right quadrant (URQ) represents the objective, observable, quantifiable, material external world. For nursing the URQ is the domain of physiological care. The upper left quadrant (ULQ) represents the personal subjective, interpretive, qualitative internal world of the individual which include thoughts, feelings and beliefs that form a person’s identity. In practice, the ULQ includes both the nurse and the client. The lower left quadrant (LLQ) represents the collective cultural, subjective, interpretive, qualitative internal world of the collective. In nursing, this quadrant is expressed through relationships and may include the shared vision or understanding that a community or collective has that gives them a shared understanding of events or experiences. The lower right
quadrant (LRQ) represents the objective, observable, quantifiable external world of the collective. In nursing and healthcare the LRQ depicts the systems and structures of the organization and society. As a framework that represents the human experience, each quadrant represents a domain of experience: the “I” that is personal and subjective; the “It” that is observable and measurable; the “We” that is collective and cultural; and the “Its” that is interobjective and structural. Figure 1 illustrates these quadrants.

Figure 1: The Four Quadrant Perspective

The four quadrants are not absolutes – they are a way of emphasizing a particular focus. When taken together, these quadrants encompass all human experience and provide a way to look at any situation through multiple world-views. Likewise, each quadrant and the world-view it represents is less than the whole; it is merely a part of human experience. Much of nursing care is situated in the URQ when the focus is on the physiologic aspects of care, but physiology is not the whole of care. Much of nursing care
is also situated in the LLQ when the focus is on the meaning of health/illness and the cultural influences on the healthcare experience for both the nurse and the client. Because of the relational nature of nursing practice, the nurse’s ways of interacting with each client as a unique individual requires understanding of the subjective essence of both self and other, as represented in ULQ. Lastly because nursing and healthcare are provided within societal structures, recognition of the LRQ provides an understanding of how these structures and their influence on care impacts care adds the last domain to the framework.

The Four-Quadrants, Nursing Diagnoses and Nursing Interventions

To trial the inclusiveness of the SNLs of NDX – we have mapped terms from NANDA-I taxonomy to the four quadrants and have likewise mapped nursing activities in the Nursing Interventions Classification to the four quadrants. See Tables 1 and 2.
Table 1 – Selected Nursing Diagnostic Concepts Mapped to the Four Quadrants

<table>
<thead>
<tr>
<th>“I” Subjective</th>
<th>“It” Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment</td>
<td>Airway clearance</td>
</tr>
<tr>
<td>Anxiety</td>
<td>Constipation</td>
</tr>
<tr>
<td>Consciousness</td>
<td>Elimination</td>
</tr>
<tr>
<td>Fear</td>
<td>Fluid volume</td>
</tr>
<tr>
<td>Hopelessness</td>
<td>Hypo-hyperthermia</td>
</tr>
<tr>
<td>Post-trauma syndrome</td>
<td>Intercranial pressure</td>
</tr>
<tr>
<td>Powerlessness</td>
<td>Mobility</td>
</tr>
<tr>
<td>Self-Image, -concept, - esteem</td>
<td>Nutrition</td>
</tr>
<tr>
<td>Sensory perception</td>
<td>Swallowing</td>
</tr>
<tr>
<td>Spiritual well being/distress</td>
<td>Tissue integrity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>“We” Intersubjective</th>
<th>“Its” Interobjective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment</td>
<td>Community coping</td>
</tr>
<tr>
<td>Family processes</td>
<td>Institutional coping</td>
</tr>
<tr>
<td>Roles: parental, caregiver</td>
<td>Protection</td>
</tr>
<tr>
<td>Role performance</td>
<td>Environmental safety:</td>
</tr>
<tr>
<td>Role conflict</td>
<td>falls,</td>
</tr>
<tr>
<td>Social isolation, engagement</td>
<td>infection,</td>
</tr>
<tr>
<td>Social Safety</td>
<td>comfort</td>
</tr>
</tbody>
</table>
Table 2 – Selected Nursing Intervention Concepts Mapped to the Four Quadrants

<table>
<thead>
<tr>
<th>“I” Subjective</th>
<th>“It” Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active listening</td>
<td>Acid-base management</td>
</tr>
<tr>
<td>Calming techniques</td>
<td>Airway stabilization/suctioning</td>
</tr>
<tr>
<td>Counseling</td>
<td>Continence care</td>
</tr>
<tr>
<td>Meditation</td>
<td>Cough enhancement</td>
</tr>
<tr>
<td>Presence</td>
<td>Feeding</td>
</tr>
<tr>
<td>Relaxation</td>
<td>Fluid management</td>
</tr>
<tr>
<td>Therapeutic Touch</td>
<td>Nausea management</td>
</tr>
<tr>
<td>Touch</td>
<td>Swallowing therapy</td>
</tr>
<tr>
<td></td>
<td>Vital Sign monitoring</td>
</tr>
<tr>
<td>“We” Intersubjective</td>
<td>“Its” Interobjective</td>
</tr>
<tr>
<td>Cultural brokerage</td>
<td>Financial resource assistance</td>
</tr>
<tr>
<td>Crisis intervention</td>
<td>Health care information exchange</td>
</tr>
<tr>
<td>Developmental enhancement</td>
<td>Health policy monitoring</td>
</tr>
<tr>
<td>Family therapy</td>
<td>Health system guidance</td>
</tr>
<tr>
<td>Family process maintenance</td>
<td>Incident reporting</td>
</tr>
<tr>
<td>Patient contracting</td>
<td>Infection protection</td>
</tr>
</tbody>
</table>

Discussion and Conclusion
The mapping demonstrates that current nursing terms exist that represent all domains of practice and, seemingly, have the capacity to document the range of human experience as seen within the four quadrants. We accept that the standardized terms are but a shorthand description of a human experience and most certainly do not ‘tell the whole story’, yet the short-hand description provides a means to call attention to nursing phenomena of concern and to record a nursing activity in a concise and valuable way. Those advocating for full electronic documentation of nursing activities often face challenges when nurses operating to their full scope of practice claim that standardization of terms eliminates the
subjective, reflective parts of practice and further omits the very important psychosocial realm of care and of human experience itself. Mapping current nursing terminologies to the four-quadrants provides a new way of looking at established terminologies and, used properly, invites nurses to consider positively the use of standardizations in documenting holistic nursing practice.

References


Disclosure: No significant relationships.

Keywords: Integral theory, Nursing documentation, Standardized Languages, Holistic Care
3. Critical reasoning and nursing language linkage applications: a short primer

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Summary
This presentation discusses two frequently encountered critical care patient health conditions and appropriate choices of diagnoses, outcomes and interventions for those conditions, including the critical reasoning incorporated in the selection. A process for applying the critical reasoning method to other health care conditions and unique patients will be presented. Practice scenarios will be incorporated into the presentation to allow audience engagement and enhanced learning experiences.

Abstract
A critical issue for nursing practice is the accurate classification and documentation of nursing activities to demonstrate competent care of the patient. Although nursing documentation systems and electronic health records are increasingly incorporating nursing languages such as the diagnoses developed by NANDA International (NANDA-I), Nursing Interventions Classifications, and Nursing Outcome Classifications, nurse ability to accurately and promptly select related diagnoses, outcomes and interventions for particular health conditions could be enhanced. This presentation discusses two frequently encountered critical care patient health conditions and appropriate choices of diagnoses,
outcomes and interventions for those conditions, including the critical reasoning incorporated in the selection process. A method for applying the critical reasoning selection process to other health care conditions and unique patients will be presented. Practice scenarios will be incorporated into the presentation to allow audience engagement and enhanced learning experiences.

**Specific Object**

This presentation discusses two frequently encountered critical care patient health conditions and appropriate choices of diagnoses, outcomes and interventions for those conditions, including the critical reasoning incorporated in the selection.

**Disclosure:** No significant relationships.

**Keywords:** NANDA/NIC/NOC, Linkages, critical care nursing languages, nursing documentation systems, electronic health records
4. Standardised terminology for nursing documentation. Development of an ICNP catalogue

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Summary
Access to accurate nursing documentation can improve patient safety and communication between healthcare professionals. A Delphi method and a focus group interview were used for the data collection. A subset of ICNP® to guide observations and documentation of nursing care for patients with dementia is identified.

Introduction
Nursing documentation is an important source of information for communication of information between the patient, healthcare services and healthcare professionals (Wang et al., 2011). Accurate information is important for continuity in care, especially in areas where the patient is unable to express their needs (Ehrenberg and Ehnfors, 2001; Naustdal and Netteland, 2012). Increase use of Electronic Health Records (EHRs) increase requirements concerning accurate information. Lack of quality and accuracy in the nursing documentation can cause impaired patient safety and a risk for increased morbidity and discomfort for patients. The EHRs
are important to safeguard the security, continuity and quality of nursing practice (Florin et al., 2013; Naustdal and Netteland, 2012; Urquhart et al., 2009). The intensified use of EHRs has increased the need for implementing standardized terminology. Standardized terminology has the potential to improve patient care and generate new knowledge through clinical research (Coenen and Kim, 2010). Standardized nursing language can help to provide common definitions, and can promote common understanding among healthcare professionals and continuity of care (Wang et al., 2011). Nursing practice can be difficult to describe in nursing documentation because it must include psychological and emotional aspects. To make nursing visible and measurable is often difficult, especially if there is a lack of concepts to describe performance of clinical practice is happening in clinical practice (Sansoni and Giustini, 2006). Nursing documentation contains concepts and expressions that nurses use in their clinical practice. Differences in nursing language can be quite pronounced without some form of classification or organization of concepts, and can lead to different interpretations of the nursing documentation (Conrick, 2005). Terminologies in nursing practice have evolved into large and complex sets of concepts and expressions. International Classification for Nursing Practice (ICNP®) 2013 is a terminology that can be used to describe nursing with approximately 4000 concepts. Development of subsets or catalogues based on the ICNP® terminology for a given clinical practice area within nursing will be important. The catalogs will
provide nurses with concepts and expressions that are appropriate in the clinical practice when guiding observations and documentation of nursing care (Coenen and Kim, 2010; Hardiker and Coenen, 2007).

The objective of this study is to identify relevant concepts for development of an ICNP® catalog to guide observations and documentation of nursing care for patients with dementia.

**Background**

To our knowledge, there is no particular theoretical model for organizing concepts in the development of a subset or a catalogue of ICNP®. Concepts related to nursing diagnoses, outcome and interventions may vary for different catalogs and will be determined by nursing experts on the current site. How to categorize concepts in a catalog will also depend on ratings provided by nursing experts (ICN, 2008). In efforts to develop ICNP® catalogues a process model has been developed based on ICNP® terminology life cycle. The process model helps to ensure that developed concepts are clinically relevant for the clinical area (Coenen and Kim, 2010).

The ICNP® catalogues should be organized by two main areas, client(s) and health priorities or care specialty. By identifying the patient and healthcare area, the concepts in the catalogue will be developed in line with who needs exactly this type of nursing care (Coenen and Kim, 2010). Basic aspects of nursing care are similar across international borders, but the individual context may allow nursing practice to be defined locally (ICN, 2008). ICNP® catalogs are intended to describe nursing diagnoses, outcome and
interventions, and they are supposed to be useful for the everyday practice of nursing care (ICN, 2008). In the development of an ICNP® catalogue, it is essential to have clinical experts because catalogues must consist of concepts that are clinically relevant and user-friendly at a given health care area (Coenen and Kim, 2010). The Delphi method has been applied to a broad range of disciplines and is adaptable to research purpose. The method is highly valued for its ability to structure group communication and to benefit from subjective judgments given by individuals on a collective basis (Skulmoski et al., 2007). Follow-up surveys can be used to assess the validity of a Delphi study. Interviews can for example elaborate high or low consensus on certain areas. Such interviews must not necessarily be with the same participants who have participated in the Delphi (Powell, 2003). By obtaining variations in daily communication between people, access to people's knowledge and attitudes can be gained on a deeper basis than if they answer a direct question (Kitzinger, 1995).

Methods
The development of the subset followed the steps in the nursing process, and contains terms related to nursing diagnoses, nursing outcomes and nursing interventions. In accordance with the guidelines adopted by the International Council of Nursing (ICN), this study follow the process model for the development of an ICNP ® catalog (ICN, 2008). This study has selected a focus on documentation of nursing care to people with dementia living in healthcare institutions.
A modified form of the Delphi method was used to identify terms and expressions in the directory. A total of six nurses from the healthcare services in the municipality with postgraduate education in geriatric psychiatry and dementia care participated in the Delphi study. Their clinical expertise and skills from working with people with dementia was; two with 0-5 years, one with 6-10 years and three with 11-20 years of experiences. The participants described their experiences of nursing documentation in EHRs as on an intermediate or expert level. Three participants worked at reinforced and shielded unit for people with severe dementia, and three participants worked with professional development and consultation in dementia care in nursing homes or in the community healthcare services. The participants were asked to rank terms relevant for a subset during two sessions, with the ability to present alternative formulations.

Focus group interviews with six nurses with postgraduate education in dementia care were conducted for the face-validity of the subset. Data were analyzed using content analysis. The six participants had postgraduate education in geriatric psychiatry and dementia care. Their clinical experience was from long-term care of people with dementia mainly from nursing homes. The experience gained as nurses was; one with 0-5 years, two with 6-10 years, two with 11-20 years and one with over 21 years in nursing practice. Their experiences with documentation in the EHRs were described as either on an intermediate or expert level.
**Results**

In total, 301 concepts were identified; 77 nursing diagnoses, 78 outcomes and 146 nursing interventions. The study shows that it is important to have specific and adequate concepts in terms of physical needs for people with dementia. However, according to knowledge and theory about care for people with dementia, there should be a greater focus on concepts related to basic psychosocial needs such as identity, comfort, connection, inclusion and engagement.

**Discussion**

The Delphi method was suitable to identify concepts and expressions relevant for documentation of nursing care for people with dementia. The participants assessed every term in the directory and they were able to obtain a reconsideration of terms that had joined uncertainty. A limitation is that the relevant terms can have been overlooked initially by the experts. The participants in the Delphi study were given the opportunity the first time to give alternative formulations on terms they found suitable for people with dementia or propose new terms that did not exist in the given directory. Another limitation might have been that the participants in the Delphi study did not get the opportunity to explain their opinion and clarify their statements orally.

Through the focus group discussion different views and experiences on the practical nursing care in everyday life of people with dementia emerged. The focus group interview results resulted in views and experiences about the terms in the identified subset that did not appear in the written feedback from the participants in
the Delphi study. The discussion provided important data to clarify the terms perceived as meaningful and relevant to everyday nursing practice. Furthermore the focus group helped to identify relevant differences of opinion about the concepts and expressions. Nurses in this study expressed that pre-formulated nursing diagnoses, outcomes and interventions can make it easier to develop a care plan for people with dementia. The nursing process is a useful tool to structure nursing practice, but it has demonstrated limitations in clinical practice (Cheevakasemsook et al., 2006; Wang et al., 2011). The participants in this study expressed that nursing diagnoses for people with dementia are rarely used and that it is hard to find formulations of relevant concepts. Inadequate documentation of nursing diagnoses may be due to the structure of the electronic documentation tool available (Wang et al., 2011).

A standardization of language may lead nursing care into paths which are not good for people with dementia (Pelletier et al., 2002). Nurses in this study expressed that a standardization of nursing documentation can lead to improved follow-up of people with dementia by allowing involved staff to gain knowledge about how best to perform nursing care for this specific person. Standardized terminology can provide a common understanding of nursing concepts among staff and this will possibly raise awareness of safeguarding important needs for the patient (Wang et al., 2011). Further research should be conducted to test if pre-formulated concepts can improve the documentation of nursing care to people with dementia. It would be interesting to test an ICNP catalogue in
nursing education during students participation in clinical practice, for example in developing care plans for people with dementia. The subset identified in this study is sent to ICNP terminology editors in Norway. The study do not cover step three to six in the process model (Coenen and Kim, 2010).

References
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**Disclosure:** No significant relationships.
Keywords: basic needs, dementia, elderly, Nursing documentation, nursing process, standardized terminology

5. A case-study methodology for use of a NANDA-I clinical decision support eTool

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Content knowledge is imperative in clinical practice (e.g., pathophysiology of a disease, knowledge of common symptoms). But this knowledge must be paired with clinical reasoning skills. Clinical reasoning refers to cognitive processes used to gather and analyze data and formulate hypotheses. For example, observation of a patient that reveals dyspnea and restlessness, coupled with assessment findings of cyanosis and reduced CO₂ levels may suggest to the nurse a possible diagnosis of impaired gas exchange (00030). Clinical reasoning, which includes diagnostic, ethical, and treatment-related forms of reasoning, requires a foundation in the nursing discipline, as well as supporting disciplines which impact human responses, provide evidence-based intervention strategies, and support the formation of professional nurses. Alfaro-Lefebre (2004) suggests that nurses need to practice clinical reasoning skills. She identifies specific reasoning skills such as
clustering related data, making inferences, and distinguishing relevant from irrelevant data. Such skills are difficult to practice, however, by merely understanding the reasoning strategy and how it can be applied.

Recent literature recommends the use of interactive methods to engage students in the development of their clinical reasoning abilities. Case study methodology has been used as an effective teaching strategy with good success in the health sciences, including nursing, for quite a while. Effective use of case study methods use cases that unfold over time (temporal nature of a case) and involve contextualization. Benner, Sutphen, Leonard, and Day (2010) describe contextualization as including the responses of the patient in the situation and this includes physiological responses as well as areas such as illness experience, patient concerns and behaviors. Cases used in nursing education, however, are often overly simple, text based clinical scenarios focused predominantly on identifying a medical condition. Cases are often not focused on analyzing the assessment data from a nursing perspective, nor do they often contribute to accuracy in nursing diagnosis. Cases used in simulation labs, for example, are often focused on assessment to intervention (“what to do”) such as following a protocol or finding the “right” answer versus how to think through the data and move from assessment to diagnosis and then intervention. Additionally, cases often do not reflect the ambiguity experienced in the process of analyzing data and determining potential hypotheses, which commonly occurs in the process of clinical reasoning in practice. Questioning is an important part of clinical reasoning (“What
if...?”, “How does this symptom relate to .....?”) and a necessary skill to develop given the complex and dynamic nature of healthcare.

The body of nursing knowledge, then, is incredibly multifaceted and requires nurses to collect and aggregate a variety of data before they are able to accurately analyze that data and determine the focus of nursing care: the nursing diagnosis. NANDA International defines a nursing diagnosis as a clinical judgment concerning a human responses to health conditions/life processes, or a vulnerability for that response, by an individual, family, group, or community. In reality however, nurses are required to acquire so much data on patients that it can become overwhelming to identify the most relevant, most critical human responses for consideration in planning care. This can lead nurses to make assumptions that all patients with a particular medical diagnosis will experience a particular nursing diagnosis, or set of nursing diagnoses. This practice is not only erroneous, it can lead to unsafe care in which patient responses that truly require nursing care are not identified, while time, effort and money are spent “treating” a diagnosis that is assumed to exist, but which in reality does not.

In an effort to improve nurses’ clinical reasoning, a clinical decision support e-tool, NurScope™, was developed through collaboration between NANDA-I and the University of Wisconsin System (UW) which allows faculty to focus more on clinical reasoning and the process of linking assessment data to the determination of nursing diagnoses. Users can explore nursing diagnoses via three different
A summary of tool functionalities will be described including the features of:

- Easy referencing of nursing diagnoses, definitions, defining characteristics, related factors, or risk factors;
- Decision support including differential and possible co-occurring nursing diagnoses for common nursing diagnoses;
- Selection features to mark signs & symptoms (defining characteristics) based on nursing assessment;
- Features to prioritize and confirm diagnoses, and selection of etiological factors (related factors) on which interventions should be based;
- Features to view, edit and email a summary of potential diagnoses based on patient assessment data to oneself or a professor.

Using the Assessment Pathway (currently in pilot testing), a variety of assessment data can be entered through the categories of
Functional Health Patterns and additional subcategories. Additional functionalities include availability of standardized assessment tools and learning videos.

The NurScope tool designed for use in classroom and simulation labs as well as in clinical courses, provides educators with a new strategy for using case studies to improve student knowledge and understanding of nursing diagnoses and the clinical reasoning required to make appropriate nursing diagnoses. Simple to more complex case studies can be developed to challenge students and more closely mimic real life scenarios. Example case scenarios and e-tool screenshots will be shown in the presentation.

References

Disclosure: No significant relationships.

Keywords: case studies, decision support
6. Means to improve the quality of nursing data in a nursing universe

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Content
Standardized nursing data are yet not captured or stored in many health care settings and can therefore not be retrieved for use. To prepare patient-nursing data for permanent storage in a data repository for use and re-use requires planning, knowledge and thorough project management. Quality of the nursing data is always of concern as studies have shown that the patient record may not be a reliable source and that the data lack accuracy, completeness and comprehensiveness. To reach the level where the quality of the data is considered acceptable is always a challenge.

Aim
The overall object of this project was to capture nursing data in a data repository, prepare the data for permanent storage in a data warehouse and retrieve the data for use. To reach this object it was necessary to ensure that the data reflected real time patients’ status and thereby the quality of the data.
Material and method
Since 2011 all nursing care at Landspitali University Hospital, Iceland has been documented in the hospital EHR system. Standardized nursing care plans with standardized nursing terminologies are available for use and core nursing data are transferred from the EHR data repository into the data warehouse. A nursing data universe has been built and data elements are related (e.g. signs and symptoms and nursing interventions are linked to nursing diagnoses) and can be related to data elements in other universes (e.g. nursing diagnosis can be linked to certain patient populations or ICD-10 diagnoses). Several means have been used to improve quality of the nursing data, e.g. feedback reports which are sent to nurse managers to inform them on their nursing staff performance related to nursing documentation and dash boards showing patients at risk, for example, for pressure ulcers and falls.

Results and present state
The core nursing data elements that were selected for transfer and storage in the data warehouse are now being retrieved for use. Reports for nurse managers have been made where they can see aggregation of data in the form of nursing diagnoses, signs and symptoms and nursing interventions on the patient populations in their wards.

Discussion and implications
Even nursing data is now well represented the quality of the data is still a concern and improvement of nursing data quality is an ongoing project. With increased use of the data it is hoped that the
quality will also improve. The fact that patient-nursing data is captured, stored and can be retrieved for use and re-use we consider as a great accomplishment. Gradually a big database will be built up which opens up opportunities for using big nursing data sets for research.

**Disclosure:** No significant relationships.

**Keywords:** data warehouse, nursing data, nursing universe

7. **Reuse of evidence-based nursing – using nursing terminology as we go**

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**Background**

The ambition The Danish Government is that the Danish Health Service has a quality that can be compared with the best in the world. The Government therefore described an ambitious national quality program that rethinks the quality of health.

One element of this effort is a massive, multi-year commitment to the use of data and results in health-care system in which the government sets out its vision and prioritizes the necessary investments. But it also requires close involvement of the parts in the healthcare sectors.
International experience shows that active use of data on both administrative and clinical level and visibility of results is a key driver for quality improvement in health care.

Better data may include is used to:

- Predict the risk of developing diseases, so that can be deployed in time
- Predict what treatments, each patient benefit most from
- Inform the patient about how quality is best
- Ensure consistency across sectors

And better and especially real-time data is used to ensure learning across the public health service with sectors players, so the individual hospital at all the time use the care which gives the best results and most health for money. It should eliminate differences in quality, so all patients are ensured treatment of the same high quality, wherever they live in the country.

Altogether, better data concerning the patient's needs gives the treatment with the greatest benefit for the patient.

One of the key elements of the government's vision for better use of data is

- Improved treatment and care. Data must quickly and smoothly back to health staff and hospital board.
- For example, the doctor, nurse or hospital management could get reported information of costs of treatment and quality and results quickly and smoothly back, so it can be included in quality development in the department. (1)

In Denmark we are working on two levels:
It was required that launched initiatives that could enhance the quality of clinical guidelines, join forces to develop guidelines that will be followed by national circulation.

Health Authority prepares these years 50 national clinical guidelines to help ensure uniform treatment of high professional quality across the country.

The national clinical guidelines are systematically developed, professional recommendations that can be used as decision support of health professionals. The guidelines deal with selected aspects of diagnosis, treatment, care and rehabilitation for specific groups of patients, which found particular opportunity to uncover evidence. The guidelines are based on scientific evidence and best practices, and the purpose is to support similar efforts across municipalities, regions and the practice - regardless of where the patient lives. (2).

The other level is:

Center for Clinical Guidelines was established by a consensus conference organized by the National Counsel of Nursing documentation set up by Danish Nursing Society (DASYS) in 2008. Here, it was clear that there were missing national coordination and that there was a great need for the Center for Clinical Guidelines. This paper is written from experience from this work.

Efforts to develop clinical guideline had until 2008 resulted in:

Guidelines of varying quality
Guidelines with limited evidence
Guidelines are too little published
Guidelines with different instructions for action in relation. To the same
Inappropriate use of resources

Development of a clinical guideline is a comprehensive work that requires professional skills, systematics and their methods.

The Danish Center of Clinical Guidelines has developed 44 clinical guidelines since 2008. In order to implement these evidence based guidelines, where has been a desire to investigate whether these guidelines have an effect on the patient care in the hospitals? To be able to monitor the indicators into the existing or coming clinical databases, these have to be unambiguous named and coded.

Therefore it is necessary to structure the indicators in the clinical guidelines in order to reuse data for quality development and research in nursing care.

Structured information should be understood broadly as data relating to the patient and stored in a form so that they can be recovered and reused. This applies to information about the patient's health problems and related activities such as operations, palliative, rehabilitative and preventive actions. Conventional records often contain large amounts of free text that contains much information about the patient's condition, plan of actions and results, which hampers reuse of data to e.g. assessment of clinical quality, further planning, statistics etc.

We use the official national terminology in the Danish Health Care where the terminology covers the data. The Danish National Classification System (SKS do only contains very few specific nursing terms.
Prior to HEALTHY TERM project was the structure and content of the Health Care Service Classification System (SKS) were analyzed and found inadequate to meet the requirements of a comprehensive health terminology. Board of Health assessed the existing national and international classifications and found that SNOMED CT® is suitable as a basis for developing a health terminology with extensions and adaptations that are necessary in relation to Danish conditions.

The Centre of Clinical Guidelines has therefor made an agreement with the National Board of Health when a term is needed, that do not exist in the official terminology, and the Centre are apple to establish a new code in the classification system.

**Material and Methods**

These indicators are found in Snomed CT terminology and then to be coded into the Danish National Classification System (SKS). The data are now – due to SKS code – that are accepted in the National Databases and electronic patient care records and ready to be reuse for quality and research development.

**Results**

An example: We are in the process of reusing data from a research study at Aalborg University Hospital in Denmark. The research aims at finding the effect of using the clinical guideline: “Prevention of postoperative infections by systematic pre-and post-operative oral care” (3). To improve the practice in preoperative oral hygiene in patients undergoing planned open heart surgery in order to reduce post-operative pneumonias. We wanted to measure
following nursing sensitive indicators and browsed the SKS Classification System:

- Is there a code for oral hygiene procedure?
- Have the patient done performed the procedure for oral hygiene?

Yes or no?

We found a code for special care of the mouth in both the SKS system and the Snomed CT. But in Snomed CT we found a more specific and useful terms to describe our procedure in the procedure hierarchy:

Special Mouth Care
SCTID: 4496006
Special Care of the mouth (regime/ therapy)
Mouth care
Mouth care procedure
Oral hygiene procedure
Special care of the mouth.

To registrar whether the patient had performed the procedure, we did not succeed in finding these terms in the SKS classification. In the Snomed CT the National Board recommended the following term:

Context values for actions
SCTID: 288532009
“done”
Absence findings
SCTID: 272519000
“no”.

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With help from the National Board of Health Denmark, we have found these terms in the Snomed CT classification. We are now able to monitor the nursing part of the research project in Snomed CT codes that are to be integrated into the SKS system. The aim is to monitor all national clinical guidelines, to integrate the codes in the description of the clinical guidelines that is available for free on the Center of Clinical Guidelines website. But using the Snomed CT makes it possible to share our results internationally. This example and the collaboration with the Danish National Board of Health, is the start of using Snomed CT in the work with outcome research of clinical guidelines nationally and internationally.

References
1. Danish Ministry of Health Care
   http://www.sum.dk/Aktuelt/Nyheder/Ministeren/2014/August/~/media/Filer%20-%20dokumenter/Sundhedsudspil-fakta-ark/Faktaark%20kvalitet%20-%20synlighed%20og%20data%20ud%20i%20klinikken%20DOK1513056.ashx (in Danish).

Disclosure: No significant relationships.

Keywords: evidensbased nursing, X, Terminology, Snomed CT

Acknowledge to Palle Gerry Petersen and Camilla Wiberg Danielsen, The Danish National Board of Health.
8. Criteria and evaluation of classifications

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Lectoraat Nursing Diagnostics, Pflege PBS/HANZE University, Wil/SWITZERLAND

**Aim**

The aim of this study was: 1) to describe literature-based classification criteria, 2) to assess classifications according to these criteria, and 3) to assess the evidence-base of classifications (number of studies) and dissemination. Included were: Clinical Care Classification (CCC), International Classification of Nursing Practice (ICNP®), International Classification of Functioning, Disability and Health (ICF), NANDA International Nursing Diagnosis Classification (NANDA-I), Nursing Interventions Classification (NIC), Nursing Outcomes Classification (NOC), nursing typology apenio®, European Nursing Pathway (ENP), and Practice Oriented Nursing Diagnostics (POP).

**Methods**

A multi-step procedure was applied. First, classification criteria were derived by literature review, resulting in a criterion matrix. Second, the original literature of the classifications and research studies on these classifications were analyzed. Third, each classification was evaluated based on the study results and by using the matrix. Literature review inclusion criteria: Studies published in peer-reviewed journals (PubMed, CINAHL, EMBASE) and
original texts of each classification. Search terms: (MeSH+Text), classification name, e.g. ICNP® (AND) Nursing Diagnosis, Nursing Interventions, Nursing Outcomes (AND) Validation; combined with: Journal Article, Reliability, Mapping, Evaluation, Clinical Trial (AND) Clinical Validation.

**Results**

Classification criteria resulted in a Matrix containing 38 items. Key items: a) The classification represents the scope of nurses’ accountability; b) Transparent classification procedures with clearly established validation parameters: each class fits within a central concept of nursing and is conceptually driven; c) Elements of the classification are coded concepts, including definitions and hierarchical or definitional linkages to other concepts; d) Each within-class of nursing diagnosis, resp. intervention or outcome concept possesses an exact description with diagnostic, resp. intervention or outcomes features/characteristics, and etiologies to differentiate among concepts; e) The classification coherently links each level; f) Number of published studies; g) International dissemination. The 38 criteria demonstrated that NANDA-I, NIC and NOC (NNN) fulfil most criteria and are the most internationally disseminated classifications. The numbers of studies found per classification was: CCC= 12; ICNP®= 103; ICF= 35; NANDA-I= 572; NIC= 218; NOC=225; apenio= 1; ENP= 4; POP= 0.
Discussion
Scientific research on the NANDA-I classification is extensive, whereas research related to the other classifications was limited. The number and dissemination of CCC, ICF, ICNP, NIC, NOC, apenio, ENP and POP is based in their “young age”. Whereas NANDA-I was developed over 40 years ago, other classifications are newer and articles until 2014 were included. Each classifications has specific aims/scopes, therefore comparability was limited. Based on the study results, NANDA-I and NOC and NIC are recommended for implementation into EHRs because of their dispersion in textbooks and journals, and the number of validation research. NOC and NIC have shown similar results because of their provision of background knowledge to assist practicing nurses at the bedside and within clinical settings.

Conclusions
The Criteria Matrix and guide the selection of a classification. Based on results, the NNN is recommended for implementation into practice and EHRs. Educating nurses about nursing classifications and how to apply evidence-based diagnoses, interventions and outcomes is key for the success of safe and meaningful use of nursing classifications.

Disclosure: No significant relationships.

Keywords: Classification criteria, Validation, ICNP, ICF, CCC, NANDA-I, NIC, NOC, ENP, apenio, POP, Systematic review, Criteria matrix, Evidence base
Chapter 7 – NANDA-I/NIC/NOC

1. The nursing care plan with Gordon’s model and NANDA-I, NOC, NIC taxonomies: the experience of Azienda Usi 9 Grosseto

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Background

The use of a standardized nursing terminology allows to define the nursing care (Clark & Lang, 1992), to decline the health needs of the person, the expected health outcomes and the nursing interventions necessary to ensure the safety of the person, care quality and satisfaction for the care received (Lau et al., 2012; Urquhart et al., 2009; Fernando et al., 2009; Thoroddsen & Ehnfors, 2007; Müller-Staub et al., 2006; Thiuru et al., 2003; Daly 2002).

At the same time, standardized nursing language improves the documentation of nursing care (Muller-Staub, 2009, 2006) and supports nurses in the different setting when they are planning the
health care for the patients (Harris et al. 2000; Englebardt & Nelson, 2002; Muller-Staub 2009, 2006).

The taxonomies NANDA-I, NOC and NIC (NNN), among the different nursing classifications identified by the American Nursing Association (ANA) and other Internationally Nursing Associations (Tastan 2014), are currently the most widely used (Park, 2011; Anderson et al. 2009, Thoroddsen et al. 2012). So NNN improve the quality of information, correlating diagnosis, results and interventions and allows to personalized care plan (Thiuru et al. 2003; Müller-Staub et al. 2006; Fernando et al. 2009; Urquhart et al. 2009; Lau et al. 2012).

The NNN promote autonomy and professional responsibility and constitute a way of effective and standardized communication among nurses and other health care providers. Furthermore, the standardized nursing language allows to measure the complexity and intensity of care (Harris et al. 2000; Englebardt & Nelson, 2002) and to code the entire nursing care plan in the digital format records (ESF).

The specific training about NNN in the clinical setting, in the educational and organizational fields (Bjorwell et al. 2002; Muller-Staub 2007) and the implementation of the innovative care organizational models nursing are the very important elements to change the health care assistance and to improve safety and quality for patients.

In the Italian context, according to national and professional norms such as the Professional Profile, the Academic Organization and the Ethics Code, nurses "are accountable for the care plan of the

The Project
In Azienda USL 9 of Grosseto-Italy, in line with the objectives of the Tuscany Region (LR February 24, 2005 No. 40; PSR 2008-2010; DGRT 1235/2012 implemented by the Balduzzi Law 189/2012), have been implemented from 2008-2009 a gradual reorganization of the Hospitals, according to the model “Intensity of care," and of the Territorial Network, according to the "Chronic Care Model".

This legislation and organizational strategic evolution was an opportunity for the Nursing Directorate to move from a structured organization for medical specialties to healthcare organizational models tailored on the needs of the person, such as the Primary Nursing and Case Management, with the use of custom care plans and standardized NANDA-I, NOC, NIC (NNN) nursing language.

In the 2008-2009, the Azienda USL 9 of Grosseto - in agreement with the Company Directorate and in collaboration with "Formazione in Agorà - Health Education School - Padova"-planned the training of 160 nurses about "the Case Manager Nurse: Planning with taxonomies NANDA-I, NOC and NIC " and
in 2011, the Azienda USL 9 planned an advanced training about Primary Nursing and Case Management for 60 health care professional between clinical nurses and head nurses.

**Objectives of the project**
The project involved five hospitals and the territorial network of health care services of the Azienda USL 9 of Grosseto with the purpose of:

- adopting the primary nursing care model,
- promoting knowledge and the use of NNN taxonomies in the nursing care plan (NCP),
- standardizing the language and the behaviors, facilitating the mono and multi-professional sharing.

This paper describes the results of the planning nursing experimentation with NNN taxonomies in the territorial settings.

**Specific objectives of the planning implementation with NNN taxonomies:**

To document the nursing process and to evaluate the sensitive outcomes of the nursing care, in a residential, outpatient and home care environment.

**Methods**
The project took place from June 2012 to December 2014 and has developed into three phases (Table 1):

1. Starting the project with implementation of Primary Nursing care, training on the use of NNN taxonomies in clinical practice, assignment of users to the Primary Nurse and identification of the most frequent nursing diagnoses with a retrospective analysis of the nursing documentation.
2. Implementation of the individual nursing care plan (NCP) with: assessment with the theoretical Gordon Model, identification NANDA-I nursing diagnoses priority; identification NOC and related indicators of global outcomes and choice modificatof the NIC interventions and related activities.

3. Testing and Evaluation of the results achieved by the people at the discharge or end of the testing.

<table>
<thead>
<tr>
<th>PHASES/ ACTIONS</th>
<th>Year</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
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<tbody>
<tr>
<td>Trimesters</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>PHASE 1</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>- Presentation of the project;</td>
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<tr>
<td>- Meetings with nurses coordinators</td>
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<tr>
<td>- Identification of Nurses trained in NNN Taxonomies</td>
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<tr>
<td>- Assigning Users to Primary nurse</td>
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<tr>
<td>- Retrospective study of nursing documentation</td>
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</tbody>
</table>
PHASE 2
- Implementation of the care planning with NNN taxonomies
- Identification of priority NANDA-I Diagnosis
- Processing PAI with NNN Taxonomies
- Identification NOC and related performance indicators
- Choice of NIC interventions and related activities.
- Start testing,
- Reinforcement learning
- Meetings to review and sharing

PHASE 3
- Meetings to verify and compare, reinforcement training
- Monitoring and analysis of the collected data

Table 1- The phases of the NNN taxonomies implementation project in PAI

283 Territorial service users (Table 2) were enrolled in implementation of nursing care plan with NNN Taxonomies from October 2013 to December 2014; they were assigned to 50 nurses, previously specifically trained in NNN Taxonomies, belonging to the Territorial Service of Pathological Addictions, Primary Home
Care, Residential Rehabilitation Center, Adults Mental Health, of the Azienda USL 9 of Grosseto.

**Results**

34 of 216 possible NANDA-I diagnoses (2012-2014) were identified as priority; 44 of 330 possible NOC (2007) and 60 of 514 possible NIC (2007), related to NANDA I., were chosen and the nursing care plans were developed.

279 users (98.5%) of the 283 included (Table 3). were evaluated by 26 (52%) of the 50 nurses enrolled at discharge or at the end of the study: we compared according to the selected NOC indicators with Likert scale.

Each phase of the project involved a reinforcement learning, sharing and reviewing the different results achieved.

<table>
<thead>
<tr>
<th>Operational unit/service</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pathological Addictions</td>
<td>48</td>
<td>17.2%</td>
</tr>
<tr>
<td>Primary Homecare</td>
<td>30</td>
<td>10.8%</td>
</tr>
<tr>
<td>Residential Centre of Rehabilitation</td>
<td>174</td>
<td>62.4%</td>
</tr>
<tr>
<td>Adults Mental Health</td>
<td>27</td>
<td>9.7%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>279</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

Table 2 – The users distributed in the several settings

19 (55.88%) NANDA-I Diagnosis (2012-2014) of the 34 Diagnosi identified as priorities were used. The most frequent were: 00085 *Impaired Physical Mobility* (45.9%); 00069 *Ineffective Coping* (13.3%); 00132 *Acute Pain* (11.8%); 00044 *Impaired Tissue Integrity* (10.4%); 00099 *Ineffective Health Maintenance* (6.8%); 00011 *Constipation* (3.2%).
We used 20 NOC Outcomes (2007) related to NANDA-I Diagnosis. 3 NANDA-I diagnosis have been associated with more NOC: 00033 *Impaired Spontaneous Ventilation*, 00044 *Impaired Tissue Integrity* and 00099 *Ineffective Health Maintenance*. The most used NOC were: 0300 *Self-Care: Activities of Daily Living (ADL)* (45.9%); 1302 *Coping* (15.4%); 1605 *Pain Control* (11.8%); 1004 *Nutritional Status* (9.3%); 1103 *Wound Healing: Secondary Intention* (9.3%); 0602 *Hydration* (9.3%); 1805 *Knowledge: Health Behavior* (5.4%).

NIC interventions (2007) related, planned and implemented were 22 and the most frequently used were: 1800 *Self-Care Assistance* (45.9%); 5230 *Coping Enhancement* (15.1%); 1400 *Pain Management* (11.8%); 3590 *Skin Surveillance* (10.4%); 3520 *Pressure Ulcer Care* (10.4%); 1120 *Nutrition Therapy* (10.0%); 5510 *Health Education* (6.8%).

The majority of diagnoses, 78.95% (n.15), is associated with a single NIC intervention, usually specific for the diagnosis in the 47.36% (n.9) of the cases. Some NIC interventions have been linked to more than one diagnosis: 5240 *Counseling* with 00138 *Risk for Other-directed violence*, 00079 *Non compliance* and 00072 *Ineffective Denial*; 5230 *Coping Enhancement* with 00055 *Ineffective Role Performance*, 00069 *Ineffective Coping* and 00188 *Risk Prone Health Behavior*. The frequency of NANDA-I 2012-2014 diagnosis, as described specifically in Table 4, it differs in relation to the health of the person, by the type of the operative unit/different setting. In particular:
<table>
<thead>
<tr>
<th>D.I. NANDA I 2012-2014</th>
<th>n</th>
<th>%</th>
<th>NOC 2007</th>
<th>n</th>
<th>%</th>
<th>NIC 2007</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
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<td><strong>00109 Dressing Self-Care Deficit</strong></td>
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<td>0,7</td>
<td>0302 Self-Care: Dressing</td>
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<td>1802 Self-Care Assistance: Dressing/Grooming</td>
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<td>3,2</td>
<td>0501 Bowel Elimination</td>
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<td>77,8</td>
<td>0450 Constipation/Impaction Management</td>
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<td>1608 Symptom Control</td>
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<td>00033</td>
<td>Impaired Spontaneous Ventilation</td>
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<td>1004</td>
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<td>Skin Surveillance</td>
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<td>1302 Coping</td>
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<td>Ineffective Self Health</td>
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<td>0,7</td>
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<td>2</td>
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<td>1601 Compliance Behavior</td>
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</tr>
<tr>
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<td>Code</td>
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<td>Value2</td>
<td>Value3</td>
<td>Value4</td>
<td>Value5</td>
<td>Value6</td>
<td>Value7</td>
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<td>1</td>
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<td>8</td>
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</tr>
<tr>
<td>00095</td>
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<td>0</td>
<td>4</td>
<td>0</td>
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<td>100</td>
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<td>9</td>
<td>6</td>
<td>8</td>
<td>1302</td>
<td>Coping</td>
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<td></td>
<td></td>
<td>1601</td>
<td>Compliance Behavior</td>
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<td></td>
<td></td>
<td></td>
<td>1805</td>
<td>Knowledge: Health Behavior</td>
<td>1</td>
</tr>
<tr>
<td></td>
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<td></td>
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<td>4</td>
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</tr>
<tr>
<td>00132</td>
<td>Acute Pain</td>
<td>3</td>
<td>3</td>
<td>11,8</td>
<td>3</td>
<td>1605</td>
<td>Pain Control</td>
<td>3</td>
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<td></td>
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<td>1400</td>
<td>Pain Management</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>NANDA-I Diagnosis</td>
<td>NOC Result</td>
<td>NIC Intervention</td>
<td>Count</td>
<td>Percentage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>------------</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>00138 Risk for Other-directed</td>
<td>1902 Risk Control</td>
<td>5240 Counseling</td>
<td>2</td>
<td>100,0</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>00162 Readiness for Enhanced Self Health Management</td>
<td>2002 Personal Well-Being</td>
<td>6520 Health Screening</td>
<td>1</td>
<td>100,0</td>
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<tr>
<td>00188 Risk Prone Health Behavior</td>
<td>1812 Knowledge: Substance Use Control</td>
<td>5230 Coping Enhancement</td>
<td>3</td>
<td>100,0</td>
<td></td>
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</tr>
</tbody>
</table>

Table 3 – NANDA-I diagnosis with NOC results and NIC interventions related
- 00044 *Impaired Tissue Integrity* affects 96.7% of users in Home Caring.

- 00069 *Ineffective Coping* had been applied to all (100%) users in Mental Health Services and 20.8% of those in Pathological Addictions,

- 00099 *Ineffective Health Maintenance* was well identified in 39.6% of Pathological Addictions Service users,

- 2 NANDA-I diagnosis, 00085 *Impaired Physical Mobility* with 73.6% and 00132 *Acute Pain* (11.8)% with the 19%, were 92.6% of the overall diagnosis identified in Rehabilitation Services PAI Service.

The initial evaluation of the 279 members, made according to the selected NOC indicators with Likert scale (1 to 5) notes that: 8% has a value of 1, 75% have a value of 2, and only 13.7% presents value 4.
<table>
<thead>
<tr>
<th>NANDA-I 2012-2014</th>
<th>DIP PAT</th>
<th>DOMIC</th>
<th>RIAB.</th>
<th>SAL MENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>N</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>00011 Constipation</td>
<td>3</td>
<td>6,3</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>00033 Impaired Spontaneous Ventilation</td>
<td>0</td>
<td>0,0</td>
<td>1</td>
<td>3,3</td>
</tr>
<tr>
<td>00044 Impaired Tissue Integrity</td>
<td>0</td>
<td>0,0</td>
<td>29</td>
<td>96,7</td>
</tr>
<tr>
<td>00055 Ineffective Role Performance</td>
<td>3</td>
<td>6,3</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>00069 Ineffective Coping</td>
<td>10</td>
<td>20,8</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>00072 Ineffective Denial</td>
<td>1</td>
<td>2,1</td>
<td>0</td>
<td>0,0</td>
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<tr>
<td>00078 Ineffective Self Health Management</td>
<td>2</td>
<td>4,2</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>00079 Non compliance</td>
<td>3</td>
<td>6,3</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>00085 Impaired Physical Mobility</td>
<td>0</td>
<td>0,0</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>00095 Insomnia</td>
<td>0</td>
<td>0,0</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>00099 Ineffective Health Maintenance</td>
<td>19</td>
<td>39,6</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>Count</td>
<td>Frequency</td>
<td></td>
<td>Count</td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td>-------</td>
<td>-----------</td>
<td>-----------------</td>
<td>-------</td>
</tr>
<tr>
<td>Impaired Swallowing</td>
<td>0</td>
<td>0,0</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>Dressing Self-Care Deficit</td>
<td>0</td>
<td>0,0</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>Acute Pain</td>
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<td>0,0</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>Risk for Other-directed violence</td>
<td>2</td>
<td>4,2</td>
<td>0</td>
<td>0,0</td>
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<tr>
<td>Anxiety</td>
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<tr>
<td>Risk for Falls</td>
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<td>2,1</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>Risk Prone Health Behavior</td>
<td>3</td>
<td>6,3</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>48</strong></td>
<td><strong>100,0</strong></td>
<td><strong>30</strong></td>
<td><strong>100,0</strong></td>
</tr>
</tbody>
</table>

Tab. 4 - NANDA-I 2012-2014 Diagnosis, frequency in the different services
The outcome overall rating of NOC users, have been evaluated on the basis of the NOC indicators identified in the PAI: 78.9% (220) of users reached the expected result with an improvement value; 5.00% (14) of users has not reached the expected result with a worsening value; 16.1% (45) of users reported an unchanged evaluation of the initial conditions.

In table 5 the results are described for a single service.

The final assessment described by NOC indicators presents an improvement to the initial assessment of the results, from an initial average of values based on a Likert scale of $2.2222 \pm 0.6466$ to the final $3.0932, 0.9811 \pm, (p = 0.0000)$. 
<table>
<thead>
<tr>
<th>Final Evaluation</th>
<th>DIP PAT</th>
<th>DOMIC</th>
<th>RIAB</th>
<th>SAL MENT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Unchanged</td>
<td>6</td>
<td>12,5%</td>
<td>0</td>
<td>0,0%</td>
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<tr>
<td>Improvement</td>
<td>42</td>
<td>87,5%</td>
<td>21</td>
<td>70,0%</td>
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<tr>
<td>Worsening</td>
<td>0</td>
<td>0,0%</td>
<td>9</td>
<td>30,0%</td>
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<tr>
<td>Total</td>
<td>48</td>
<td>100,0%</td>
<td>30</td>
<td>100,0%</td>
</tr>
</tbody>
</table>

Table 5 - Final evaluation results

In table 6 are presented the difference between the averages for single service.

<table>
<thead>
<tr>
<th>Service</th>
<th>Initial Evaluation</th>
<th>Final Evaluation</th>
<th>p</th>
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<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std Dev</td>
<td>Mean</td>
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<tr>
<td>Path Addict.</td>
<td>1,7500</td>
<td>.4376</td>
<td>2,7292</td>
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<tr>
<td>Home Caring</td>
<td>2,1000</td>
<td>.4026</td>
<td>2,6667</td>
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<tr>
<td>Rehabilitation</td>
<td>2,4195</td>
<td>.6816</td>
<td>3,3391</td>
</tr>
<tr>
<td>Mental Health</td>
<td>1,9259</td>
<td>.2669</td>
<td>2,6296</td>
</tr>
<tr>
<td>Total</td>
<td>2,2222</td>
<td>.6466</td>
<td>3,0932</td>
</tr>
</tbody>
</table>

Table 6 - Differences for service between initial and final assessment on scale LINKERT
Limits
26 nurses on the 50 identified for testing the use of NNN taxonomies have completed the testing with final evaluation. The study is descriptive and it has analyzed data documentation without any association with the characteristics of the person, that could have influenced both the frequency of NANDA-I diagnoses and NOC indicators level.

Conclusions and implications for practice
The use of an organizational care model that provides the referent nurse (primary nurse) and for a specific and selected group of users can facilitate planning nursing care. The gradual introduction and knowledge of NNN taxonomies in care planning in the territory has enhanced the knowledge and the clinical experience of all nurses, promoted continuity of care, standardized the language and behaviors of nurses. It has made it possible to collect and evaluate the nursing results and highlight both an improvement in the vast majority of users and its correlation with the actions taken by the nurses and for the type of person in some cases to provide better caring continuity. For example, in testing users in Pathological Addictions, the identification of nursing NANDA-I diagnoses 00099 "Ineffective health maintenance", 00011 "Constipation" and 00188 "Risk Prone Health Behavior " , that were the most frequently treated nursing diagnoses, and the correlated NIC interventions, have avoided accesses to the Emergency Department for secondary addiction complications. Furthermore, identifying the most frequent priority diagnosis in
the person in different settings can support the development of appropriate training, and research and standardize the best available evidence to be transferred into clinical practice. Surely the support of a computer program for PAI drafting and monitoring, in addition to reducing the recording times, will promote nursing research and multiprofessional sharing.

References


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- Park H (2011) NANDA-I, NOC, and NIC linkages in nursing care plans for hospitalized patients with congestive heart failure dissertation University of Iowa


**Disclosure:** No significant relationships.

**Keywords:** nursing care plan, Nanda-I, NOC and NIC, Nursing documentation, nursing outcomes, Nursing care plans, taxonomies NANDA-I, NOC, NIC, Documentation, Nursing care plan, Nanda-I, NOC and NIC Taxonomies, documentation
2. The nursing care plan with Gordon’s model and NANDA-I, NOC and NIC taxonomies: the experience of service care centres of ULSS 3, Bassano del Grappa

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Introduction

This paper describes the project work and the results obtained from the Health Authority of Bassano del Grappa in the region of Veneto (Italy).

The nursing project was aimed only at guests with dementia, who suffered many health care issues due to a progressive and inexorable degeneration of their cognitive functions, with the purpose to improve the nursing relationship with patients and their family, in the service care centers’ residential structures.

The project started in 2009 with the activities of training and testing of nursing documentation records by 30 nurses from 13 service care centers and the experimental implementation of a nursing care plan care with the use of the theoretical Gordon Model and taxonomies NANDA -I, NOC and NIC.

The success of this pilot training and testing project and the planning of nursing activity in selected service care centers from
2009 to 2011, created the preconditions and the desire to develop and to broaden the planning of nursing care and to address it not only to people with dementia, but also to all the guests of the service care centers. Indeed, we understood the importance to spread the experience developed along the three years project to the entire nursing staff with the scope to share the theoretical model, the method and tools used, so they could become common heritage.

Objectives
The aim of this first step was to determine whether it was possible to obtain an improvement of nursing care and supportive relationship between nurses and elderly people and, in this way, to observe:

- a possible continuation of cognitive, motor and emotional residual abilities of the guests and
- an improvement of instrumental relation with family members and colleagues of the multi professional team.

In the 2012-2013 the project continued with other training and testing of clinical nurses and it was addressed to the guests living in 7 service care centers; some organizations had already participated in the previous project, and chose to train other nurses, others started as new participants.

The aim of this second step was to describe the accuracy of nursing documentation and how knowledge, disposition toward critical thinking, and reasoning skills influence accuracy of nursing care plan.

Specifically, the following paper reports the results on frequency; accuracy and completeness of nursing diagnoses; and on coherence
between nursing diagnoses, outcomes and interventions of this second step of clinical research.

Methods
The implementation of the nursing care plan was held from December 24, 2012 to October 31, 2013.
A system of continuous supervision, with organizational support, training, consulting and data analysis has been adopted throughout the project.
Training and testing were managed by “Formazione in Agora–Health Education School - Padova ”, while the organization was managed by nurse chief of the Residentiality Territorial of Azienda USL in Bassano del Grappa (VI).
The project involved 7 service care centers and initially were selected and trained 30 nurses from those who worked in residential structures. In implementation were involved 20 registred nurses and 7 heads nurse of the several centers. In the trial were included guests who accessed ex - novo in service care centers and each nurse was assigned 1-2 guests at every phase of the project.
This period was characterized by three steps lasting about three months each, and was preceded and supported during its implementation. The clinical nurses tested a nursing care plan (nursing record of 54 pages) with the use of the theoretical Gordon Model and taxonomies NANDA -I, NOC and NIC.
The overall project is described in summary in Table 1.
Results

The project involved the following steps:

1) Training on the use of NNN taxonomies in clinical practice;
2) Development of the Nursing Care Plan with NNN taxonomies: identification NANDA-I nursing diagnoses priority; identification NOC and related indicators of global outcomes and choice of the NIC interventions and related activities.
3) Testing in the clinical setting.

<table>
<thead>
<tr>
<th>Project</th>
<th>Years</th>
<th>Activities</th>
<th>Population, Methods and Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning Training</td>
<td>2009</td>
<td>Planning of care chance and of documentation addressed to the person with dementia</td>
<td>13 Service Care Centers - Involvement of sponsors - Training to 30 nurses selected by access test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Planning and beginning of the training</td>
<td>among all those present in residential structures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Classroom training with theoretical Gordon model and taxonomies NNN</td>
<td>- Training event of 30 hours distributed in 4 days between May and December 2009</td>
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<tr>
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<tr>
<td>Beginning of the project Processing First</td>
<td>2010 - 2011</td>
<td>1st experimentation Development of the nursing care plan to the guests with dementia of the</td>
<td>7 Service Care Centers of Ulss 3 Bassano del Grappa - 13 nurses experimenters - 8 nurses listeners</td>
</tr>
<tr>
<td>Training and first trial</td>
<td></td>
<td>nursing home / RSA, Organization of Field Testing</td>
<td>• Analysis of documentation utilized in the structures.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Experimentation of the nursing care plan for a year.</td>
<td>• Sharing of the documentation to be used during the trial.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Field Testing from 18 November 2010 to 31 December 2011 corresponding to about 350 hours</td>
<td>• Identification of cases of recruitment of older people with dementia.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>with the experimental application of the nursing care plan</td>
<td>• Identification of organizational minimum criteria to ensure the continuity in the trial.</td>
</tr>
<tr>
<td>Event</td>
<td>Year</td>
<td>Details</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>
| Development of the nursing documentation with:                      |      | 1. Initial evaluation and nursing assessment with theoretical GORDON model  
|                                                                      |      | 2. Taxonomy NANDA-I nursing diagnoses  
|                                                                      |      | 3. Taxonomy nursing results NOC  
|                                                                      |      | 4. Taxonomy nursing interventions NIC  
|                                                                      |      | 5. Management of interventions and activities NIC  
|                                                                      |      | 6. Monitoring and evaluation of indicators NOC |
| **Identifying of priority NANDA-I with related priority NOC and NIC** |      |                                                                                                                                                                                                              |
| **4 February 2012 - 1st conference with trial results from 2010 to 2011** |      |                                                                                                                                                                                                              |
| Planning Training                                                    | 2012 | Planning for change of care and for the documentation addressed to the guests of service care centers. Planning and beginning of the training Classroom training with theoretical Gordon model and taxonomies NNN |
| Implementation and adoption of a nursing care plan                   | 2013 | **2nd experimentation Implementation and adoption of a nursing care plan**                                                                                                                                 |
|                                                                      |      | - 7 Service Care Centers  
|                                                                      |      | - Training to 20 nurses  
<p>|                                                                      |      | - Training of 48 hours distributed in 6 training days between October and December 2012.                                                                                                                     |</p>
<table>
<thead>
<tr>
<th>Step</th>
<th>Implementation of nursing health records (1/2013) from December 24, 2012 until February 10, 2013</th>
<th>Nursing health records 18 nursing records entrusted 3 drop out 15 nursing records with the use of the new nursing care plan gave back by nurses coordinators and nurses experimenters (assisted guests: 14 females and 1 male aged between 42 and 92 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>2nd Step: Implementation of nursing health records (2/2013) from April 22 to June 29, 2013</td>
<td>Nursing health records 22 nursing records entrusted, 2 drop out 20 nursing records with the use of the new nursing care plan gave back by nurses coordinators and nurses experimenters (assisted guests: 17 females and 3 males aged between 52 and 93 years)</td>
</tr>
<tr>
<td></td>
<td>3rd Step: Implementation of nursing health records (3/2013) from September 2 to October 31, 2013</td>
<td>Nursing health records 21 nursing records entrusted, 2 drop out 19 nursing records with the use of the new nursing care plan gave back by nurses coordinators and nurses experimenters (assisted guests: 11 females and 8 males aged between 18 and 93 years)</td>
</tr>
<tr>
<td></td>
<td>13 December 2013 - 2nd conference with trial results in 2013</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Planning and testing of the nursing care plan with NNN taxonomies to guests of Service Care Centers.

In this study were enrolled 61 elderly guest, 7 were drop out, for a total of n. 54 (88,52%) people included in the testing.
22 nurses experimenters developed the nursing care plan for their patients and collected that data in their records:
- 67 of 216 possible nursing diagnoses (DI) NANDA International (Ed. 2012 - 2014),
- 71 of 330 possible outcomes nursing NOC (Ed. 2007), with 161 indicators NOC,
- 56 of 514 possible nursing interventions NIC 2007 (Ed. 2007).

Several health problems recurred frequently in 54 people residing within 7 Service Care Centers, expressed in a progressive loss of the ability to manage themselves in the activities of daily life. NANDA-I nursing diagnoses have been identified, were: **Nutrition, Skin integrity, Elimination, Mobility, Self-care, Falls and Infection.** Nursing diagnosis NANDA-I classified in Gordon models n. 9,10 and 11 have been used also.

**The diagnosis Nanda, most frequently used, were:**
- 00133 **Chronic pain**, 4.5% (8),
- 00085 **Impaired Physical Mobility** 5.1% (9),
- 00155 **Risk for Falls** 4.5% (8),
- 00011 **Constipation**, 7.3% (13)

and **the diagnosis of the integrity of the skin, for a total of 16**, specifically
- 00047 **Risk for Impaired Skin Integrity** 2.8% (5),
- 00046 **Impaired Skin Integrity** 3.4% (6),
- 00044 **Impaired Tissue Integrity** 2.8% (5).

**The NANDA–I Diagnosis** allow to identify accurately and to differentiate, within the same model dysfunctional, the problems of
single guest, and this explains the high number of diagnoses that have a frequency of 1-2%.

Nurses in the course of the experimentation, to go on the different phases, demonstrated a growing ability, skill and accuracy in choosing specific and appropriate constituent and differential elements of the nursing care plan.

In addition, the skills learned through the training, the continuous retraining and the continued use of the theoretical model and of the terminology could explain the change from the first phase of the experimentation, where all the diagnosis used were referring to the first six functional Gordon models, except for two diagnosis, while in the second and third phase the diagnosis of all eleven models were used.

In Appendix 1 there are the lists of the diagnosis classified by functional models and their frequency.

The results NOC, in total were 71, listed in Appendix 2, with 161 indicators NOC, and associated from one to more NANDA Diagnosis. The most used were: **0501 Bowel elimination** 8.9% (n.15), **1101 Tissue Integrity: Skin & Mucous Membranes** 5.9% (n. 10), **1605 Pain control**, 4.1% (n.7), **1909 Fall Prevention Behavior** 3.6% (n.6), **0208 Mobility**, 3.6% (n.6), **0004 Sleep**, 3.6% (n.6).

The Interventions NIC most frequently used were: **0450 Constipation/Impaction Management** (7.9%), **6490 Fall prevention**, (6.1%), **1400 Pain management**, (5.3%). As shown for example by the actions related to mobility there is a differentiation of interventions compared to the same diagnosis,
probably correlates to a personalization of care provided to an individual person and the use of the same action for more diagnosis. The interventions NIC used were: **0221 Exercise Therapy: Ambulation** 3.5% (4.), **0222 Exercise Therapy: Balance**, 1.8% (2) **0224 Exercise Therapy: Joint Mobility**, 0.9% (1). **1806 Self-Care Assistance: Transfer**, 1.8% (2), is related to the Diagnosis 00085 **Impaired Physical Mobility** which has a frequency of 5.1% (9), and **1806 Self-Care Assistance: Transfer**, 1.8% (2), is also related to the DI 00090 **Impaired Transfer Ability**, 1.1% (2).

In Appendix 3 there are the lists of the NIC interventions chosen by nurses experimenters and the estimated time in minutes from the professional to perform the given action.

**Professional and organizational results**

The nurses demonstrated a growing competence to develop a plain care tailored to individual needs.

80% of nurses developed core distinctive and in progress competencies to use NNN taxonomies and to develop the care plan, in addition to have gained clarity and awareness of their professional role.

**Results in terms of change**

The results of the experimental period related to changes in structure, process and results, described in Table 2.

**Conclusions**

The project allowed nurses to use daily the model adopted, to provide personalized care to elderly people and to use a global nursing documentation
Table 2 Results in terms of change

From January 2014 to now the 7 Service Care Centers expressed the desire to continue to use this nursing planning model. Among them, some Service Care Centers are now working for a radical organizational change to implement a personalized nursing care; allowing nurses to use the model studied and tested.

The use of a theoretical model (Gordon) and of the nursing standardized terminology NANDA-I identified precisely the care needs of the guests of Service Care Centers, considering not only the biological dimension but also that psychological and relational aspects of the person, essential in people with dementia.

In this way the assistance provided can be customized, the behaviors of nurses can be standardized using the same terminology to describe the problems of the people, the results and the interventions (Toroddsen & Ehnfors, 2007) and to enhance and develop the skills of diagnostic reasoning and the relationship among nurses.

The results confirm the need to:
– change the organizational model by implementing a personalization of care that makes the nurse in charge of the entire process of care of his client.
– support a change with continuing training activities that precedes and continues throughout the project
– design and implement education activities that develop from the existing reality, connected to the results to be achieved for the people assisted and that allows to apply and to revise continuously about the acquired skills and the results related to them.

In addition, as highlighted in the literature, the training and the constant use of terminologies NNN allows to use them appropriately, to acquire competences (Bjorwell et.al. 2002: Muller-Staub 2007) and to respond effectively to the needs of the people.

The use of terminologies NNN correlating diagnosis, results and interventions compared to the person's care plan, improves documentation (Muller-Staub, 2009, 2006), documents the results achieved in relation to nursing care and shows the accuracy and the coherence between nursing diagnoses, outcomes and interventions in the nursing care plan, and supports nurses in planning (Harris et al. 2000; Englebardt & Nelson, 2002; Muller-Staub 2009, 2006).

References


- Johnson M.e coll. (2005 Diagnosi infermieristiche, risultati ed interventi Collegamenti NANDA NOC e NIC” ed. it. a cura di L.A. Rigon, CEA- Casa Editrice Ambrosiana, Milano
• Wilkinson J. (2013) Processo infermieristico e pensiero critico 3ºed, CEA, Milano

**Disclosure:** No significant relationships.  
**Keywords:** service care center, nursing care plan, NANDA-I NOC NIC Taxonomies, key words: service care center, nursing care plan, NANDA-I NOC and NIC Taxonomies, Service care center, nursing care plan, elderly people, NANDA-I, NOC and NIC Taxonomies
Appendix 1 - Frequency of NANDA Diagnosis and classification

<table>
<thead>
<tr>
<th>M.Gordon Model</th>
<th>Nursing diagnoses - NANDA International 2012-2014</th>
<th>Nº</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Health Perception - Health management Pattern</td>
<td>00004 Risk for Infection</td>
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<tr>
<td></td>
<td>00035 Risk for Injury</td>
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</tr>
<tr>
<td></td>
<td>00038 Risk for Trauma</td>
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<td>1,1%</td>
</tr>
<tr>
<td></td>
<td>00039 Risk for Aspiration</td>
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<td>1,1%</td>
</tr>
<tr>
<td></td>
<td>00099 Ineffective Health Maintenance</td>
<td>2</td>
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</tr>
<tr>
<td>2. Nutritional – Metabolic Pattern</td>
<td>00001 Nutrition Imbalanced: More Than Body Requirements</td>
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</tr>
<tr>
<td></td>
<td>00002 Nutrition Imbalanced: Less Than Body Requirements</td>
<td>5</td>
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</tr>
<tr>
<td></td>
<td>00003 Risk for Nutrition Imbalanced: More Than Body Requirements</td>
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</tr>
<tr>
<td></td>
<td>00017 Stress Urinary Incontinence</td>
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</tr>
<tr>
<td></td>
<td>00027 Deficient Fluid Volume</td>
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<tr>
<td></td>
<td>00028 Risk for Deficient Fluid Volume</td>
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<tr>
<td></td>
<td>00044 Impaired Tissue Integrity</td>
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<td></td>
<td>00046 Impaired Skin Integrity</td>
<td>6</td>
<td>3,4%</td>
</tr>
<tr>
<td></td>
<td>00047 Risk for Impaired Skin Integrity</td>
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<tr>
<td></td>
<td>00103 Impaired Swallowing</td>
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<td>00163 Readiness for Enhanced Nutrition</td>
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<tr>
<td></td>
<td>00179 Risk for Unstable Blood Glucose level,</td>
<td>3</td>
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</tr>
<tr>
<td></td>
<td>00195 Risk for Electrolyte imbalance</td>
<td>1</td>
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<tr>
<td>3. Elimination</td>
<td>00011 Constipation</td>
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</tr>
<tr>
<td>Pattern</td>
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<td>Level</td>
</tr>
<tr>
<td>---------------------------------</td>
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<tr>
<td>00029 Decreased Cardiac Output</td>
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</tr>
<tr>
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<td>00040 Risk for Disuse Syndrome</td>
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<td>00085 Impaired Physical Mobility</td>
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<td>00088 Impaired Walking</td>
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<td></td>
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<tr>
<td>00090 Impaired Transfer Ability</td>
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<td>00091 Impaired Bed Mobility</td>
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<td>00092 Activity Intolerance</td>
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<td>00095 Insomnia</td>
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<td>00051 Impaired Verbal Communication</td>
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<td>00127 Impaired Environmental Interpretation Syndrome</td>
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<tr>
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</tr>
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<td>Code</td>
<td>Description</td>
<td>Frequency</td>
<td>Percentage</td>
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<td>-----------------------------------------</td>
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<td>Acute Pain</td>
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<tr>
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<tr>
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<td>Caregiver Role Strain</td>
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<tr>
<td>00054</td>
<td>Risk for Loneliness</td>
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<td>00138</td>
<td>Risk for Other-directed violence</td>
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<td><strong>Readiness for Enhanced Family Processes</strong></td>
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<tr>
<td>------------------------------------------</td>
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<td><strong>Sexuality - Reproductive Pattern</strong></td>
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<td><strong>Sexual Dysfunction</strong></td>
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<td><strong>Compromised Family Coping</strong></td>
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<td><strong>Readiness for Enhanced Family Coping</strong></td>
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</tr>
<tr>
<td><strong>Readiness for Enhanced Coping</strong></td>
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<tr>
<td><strong>Risk Prone Health Behavior</strong></td>
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<td><strong>Values – Belief Pattern</strong></td>
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<tr>
<td><strong>Readiness for Enhanced Spiritual Well-Being</strong></td>
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</tr>
<tr>
<td><strong>Chronic Sorrow</strong></td>
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<td>1,1%</td>
</tr>
<tr>
<td><strong>Readiness for Enhanced Comfort</strong></td>
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<tr>
<td><strong>Total diagnosis NANDA-I used 2012-14</strong></td>
<td>67</td>
<td>177</td>
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</tbody>
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Data processing at 12/13/2013 by: Formazione in Agorà – Health Education School - Padova
## Appendix 2 - Frequency of results NOC

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<th>Cod</th>
<th>Classificazione risultati NOC 2007</th>
<th>Frequency</th>
<th>Percent</th>
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<td>Social Interaction Skills</td>
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<td>1300</td>
<td>Acceptance: Health Status</td>
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<tr>
<td>1402</td>
<td>Anxiety Self-Control</td>
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<td>1404</td>
<td>Fear Self-Control</td>
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</tr>
<tr>
<td>1403</td>
<td>Distorted Thought Self-Control</td>
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</tr>
<tr>
<td>0203</td>
<td>Body Positioning: Self-Initiated</td>
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</tr>
<tr>
<td>1205</td>
<td>Self-Esteem</td>
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</tr>
<tr>
<td>2008</td>
<td>Comfort Status</td>
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<td>1,8%</td>
</tr>
<tr>
<td>0601</td>
<td>Fluid Balance</td>
<td>1</td>
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</tr>
<tr>
<td>0210</td>
<td>Transfer Performance</td>
<td>2</td>
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</tr>
<tr>
<td>2200</td>
<td>Caregiver Adaptation To Patient Institutionalization</td>
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<tr>
<td>2206</td>
<td>Caregiver Performance: Indirect Care</td>
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<tr>
<td>1503</td>
<td>Social Involvement</td>
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<tr>
<td>1602</td>
<td>Health Promoting Behavior</td>
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<tr>
<td>1609</td>
<td>Treatment Behavior: Illness or Injury</td>
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<td>Code</td>
<td>Category</td>
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<td>Percentage</td>
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<td>-----------------------------------------------------------</td>
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<tr>
<td>1909</td>
<td>Fall Prevention Behavior</td>
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</tr>
<tr>
<td>0903</td>
<td>Communication: Expressive</td>
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<tr>
<td>0902</td>
<td>Communication</td>
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</tr>
<tr>
<td>1805</td>
<td>Knowledge: Health Behavior</td>
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</tr>
<tr>
<td>1828</td>
<td>Knowledge: Fall Prevention</td>
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</tr>
<tr>
<td>0204</td>
<td>Immobility Consequences: Physiological</td>
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</tr>
<tr>
<td>0205</td>
<td>Immobility Consequences: Psycho-Cognitive</td>
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</tr>
<tr>
<td>0002</td>
<td>Energy Conservation</td>
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<td>0502</td>
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<td>Coping,</td>
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<tr>
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<td>Self-Care: Bathing</td>
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<td>0310</td>
<td>Self-Care: Toileting</td>
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</tr>
<tr>
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<td>Self-Care: Dressing</td>
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<td>1.2%</td>
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<td>Code</td>
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<td>15</td>
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</tr>
<tr>
<td>0503</td>
<td>Urinary Elimination</td>
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</tr>
<tr>
<td>1204</td>
<td>Mood Equilibrium</td>
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</tr>
<tr>
<td>0202</td>
<td>Balance</td>
<td>3</td>
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</tr>
<tr>
<td>1912</td>
<td>Falls Occurrence</td>
<td>1</td>
<td>0,6%</td>
</tr>
<tr>
<td>0119</td>
<td>Sexual Functioning</td>
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<td>0,6%</td>
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<tr>
<td>0900</td>
<td>Cognition</td>
<td>5</td>
<td>3,0%</td>
</tr>
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<td>Blood Glucose Level</td>
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<td>1,2%</td>
</tr>
<tr>
<td>0703</td>
<td>Infection Severity</td>
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<tr>
<td>1103</td>
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</tr>
<tr>
<td>1202</td>
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<tr>
<td>0602</td>
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<tr>
<td>0908</td>
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<tr>
<td>Code</td>
<td>Description</td>
<td>Count</td>
<td>Percentage</td>
</tr>
<tr>
<td>------</td>
<td>--------------------------------------------------</td>
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</tr>
<tr>
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</tr>
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</tr>
<tr>
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<td>Vital Signs</td>
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<tr>
<td>1604</td>
<td>Leisure Participation</td>
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<td>1.2%</td>
</tr>
<tr>
<td>0407</td>
<td>Tissue Perfusion: Peripheral</td>
<td>2</td>
<td>1.2%</td>
</tr>
<tr>
<td>0408</td>
<td>Tissue Perfusion: Pulmonary</td>
<td>1</td>
<td>0.6%</td>
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<tr>
<td>1918</td>
<td>Aspiration Prevention</td>
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<td>2001</td>
<td>Spiritual Health</td>
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</tr>
<tr>
<td>3014</td>
<td>Client Satisfaction</td>
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<td>0.6%</td>
</tr>
<tr>
<td>0004</td>
<td>Sleep</td>
<td>6</td>
<td>3.6%</td>
</tr>
<tr>
<td>1010</td>
<td>Swallowing Status</td>
<td>3</td>
<td>1.8%</td>
</tr>
<tr>
<td>1012</td>
<td>Swallowing Status: Oral Phase</td>
<td>2</td>
<td>1.2%</td>
</tr>
<tr>
<td>1004</td>
<td>Nutritional Status</td>
<td>4</td>
<td>2.4%</td>
</tr>
<tr>
<td>1008</td>
<td>Nutritional Status: Food &amp; Fluid Intake</td>
<td>3</td>
<td>1.8%</td>
</tr>
<tr>
<td>1007</td>
<td>Nutritional Status: Energy</td>
<td>1</td>
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</tr>
<tr>
<td>0410</td>
<td>Respiratory Status: Airway Patency</td>
<td>1</td>
<td>0.6%</td>
</tr>
<tr>
<td>0403</td>
<td>Respiratory Status: Ventilation</td>
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<td>0.6%</td>
</tr>
<tr>
<td>0005</td>
<td>Activity Tolerance</td>
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</tr>
<tr>
<td>Total</td>
<td></td>
<td>169</td>
<td>100.0%</td>
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</table>

Data processing at 12/13/2013 by: Formazione in Agorà – Health Education School - Padova
## Appendix 3 - Frequency of NIC interventions and their estimated times

<table>
<thead>
<tr>
<th>cod</th>
<th>Interventions Classification NIC 2007</th>
<th>Estimated time professional to single NIC</th>
<th>n.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0180</td>
<td>Energy Management</td>
<td>Nurse</td>
<td>16/30'</td>
<td>2</td>
</tr>
<tr>
<td>0221</td>
<td>Exercise Therapy: Ambulation</td>
<td>Healthcare assistant</td>
<td>fino a 15'</td>
<td>4</td>
</tr>
<tr>
<td>0222</td>
<td>Exercise Therapy: Balance</td>
<td>Nurse</td>
<td>16/30'</td>
<td>2</td>
</tr>
<tr>
<td>0224</td>
<td>Exercise Therapy: Joint Mobility</td>
<td>Nurse</td>
<td>16/30'</td>
<td>1</td>
</tr>
<tr>
<td>0430</td>
<td>Bowel Management</td>
<td>Nurse</td>
<td>31/45'</td>
<td>1</td>
</tr>
<tr>
<td>0450</td>
<td>Constipation/Impaction Management</td>
<td>Nurse</td>
<td>16/30'</td>
<td>9</td>
</tr>
<tr>
<td>0460</td>
<td>Diarrhea Management</td>
<td>Nurse</td>
<td>fino a 15'</td>
<td>2</td>
</tr>
<tr>
<td>0550</td>
<td>Bladder irrigation</td>
<td>Nurse</td>
<td>16/30'</td>
<td>1</td>
</tr>
<tr>
<td>0590</td>
<td>Urinary Elimination Management</td>
<td>Nurse Specialist</td>
<td>31/45'</td>
<td>1</td>
</tr>
<tr>
<td>0600</td>
<td>Urinary Habit Training</td>
<td>Nurse Specialist</td>
<td>31/45'</td>
<td>1</td>
</tr>
<tr>
<td>0840</td>
<td>Positioning</td>
<td>Health Care Assistant</td>
<td>16/30'</td>
<td>1</td>
</tr>
<tr>
<td>0846</td>
<td>Positioning: Wheelchair</td>
<td>Nurse</td>
<td>fino a 15'</td>
<td>1</td>
</tr>
<tr>
<td>1100</td>
<td>Nutrition Management</td>
<td>Nurse</td>
<td>31/45'</td>
<td>3</td>
</tr>
<tr>
<td>Time</td>
<td>Service Description</td>
<td>Provider</td>
<td>Duration</td>
<td>Frequency</td>
</tr>
<tr>
<td>-------</td>
<td>-------------------------------------------</td>
<td>------------------------</td>
<td>----------</td>
<td>-----------</td>
</tr>
<tr>
<td>1120</td>
<td>Nutrition Therapy</td>
<td>Nurse</td>
<td>16/30'</td>
<td>2</td>
</tr>
<tr>
<td>1260</td>
<td>Weight Management</td>
<td>Nurse</td>
<td>31/45'</td>
<td>1</td>
</tr>
<tr>
<td>1400</td>
<td>Pain Management</td>
<td>Nurse</td>
<td>sup. a 60'</td>
<td>6</td>
</tr>
<tr>
<td>1730</td>
<td>Oral Health Restoration</td>
<td>Nurse</td>
<td>fino a 15'</td>
<td>1</td>
</tr>
<tr>
<td>1801</td>
<td>Self-Care Assistance: Bathing/Hygiene</td>
<td>Healthcare assistant</td>
<td>fino a 15'</td>
<td>4</td>
</tr>
<tr>
<td>1802</td>
<td>Self-Care Assistance: Dressing/Grooming</td>
<td>Healthcare assistant</td>
<td>fino a 15'</td>
<td>1</td>
</tr>
<tr>
<td>1806</td>
<td>Self-Care Assistance: Transfer</td>
<td>Healthcare assistant</td>
<td>fino a 15'</td>
<td>2</td>
</tr>
<tr>
<td>1850</td>
<td>Sleep Enhancement</td>
<td>Nurse</td>
<td>16/30'</td>
<td>5</td>
</tr>
<tr>
<td>1860</td>
<td>Swallowing Therapy</td>
<td>Nurse</td>
<td>31/45'</td>
<td>3</td>
</tr>
<tr>
<td>2080</td>
<td>Fluid Management</td>
<td>Nurse</td>
<td>31/45'</td>
<td>3</td>
</tr>
<tr>
<td>2380</td>
<td>Medication Management</td>
<td>Nurse</td>
<td>16/30'</td>
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</tr>
<tr>
<td>3200</td>
<td>Aspiration Precautions</td>
<td>Healthcare assistant</td>
<td>fino a 15'</td>
<td>1</td>
</tr>
<tr>
<td>3520</td>
<td>Pressure Ulcer Care</td>
<td>Healthcare assistant/Nurse</td>
<td>16/30'</td>
<td>2</td>
</tr>
<tr>
<td>Code</td>
<td>Service Description</td>
<td>Provider</td>
<td>Time</td>
<td>Quantity</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------------------------------</td>
<td>----------------------------</td>
<td>--------</td>
<td>----------</td>
</tr>
<tr>
<td>3540</td>
<td>Pressure Ulcer Prevention</td>
<td>Nurse</td>
<td>16/30'</td>
<td>2</td>
</tr>
<tr>
<td>4040</td>
<td>Cardiac Care</td>
<td>Nurse</td>
<td>31/45'</td>
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<tr>
<td>4356</td>
<td>Behavior Management: Sexual</td>
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<td>31/45'</td>
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</tr>
<tr>
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<td>Anger Control Assistance</td>
<td>Nurse Specialist</td>
<td>16/30'</td>
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<tr>
<td>4720</td>
<td>Cognitive Stimulation</td>
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<td>16/30'</td>
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<tr>
<td>4760</td>
<td>Memory Training</td>
<td>Nurse Specialist</td>
<td>31/45'</td>
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<tr>
<td>4820</td>
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<td>31/45'</td>
<td>3</td>
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<td>5100</td>
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<td>31/45'</td>
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</tr>
<tr>
<td>5230</td>
<td>Coping Enhancement</td>
<td>Nurse</td>
<td>31/45'</td>
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<tr>
<td>5250</td>
<td>Decision-Making Support</td>
<td>Nurse</td>
<td>16/30'</td>
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<td>5310</td>
<td>Hope Inspiration</td>
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<td>16/30'</td>
<td>1</td>
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<tr>
<td>5330</td>
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<td>31/45'</td>
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<tr>
<td>Code</td>
<td>Service Description</td>
<td>Provider</td>
<td>Duration</td>
<td>Frequency</td>
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<td>Spiritual Support</td>
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<td>Health Education</td>
<td>Nurse</td>
<td>16/30'</td>
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<td>5612</td>
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<td>16/30'</td>
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<tr>
<td>6460</td>
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<tr>
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<td>7</td>
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<tr>
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<tr>
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<td>Total NIC used</td>
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</table>

Data processing at 12/13/2013 by: Formazione in Agorà - Health Education School - Padova
3. An analysis of the activities of electronic foetal monitoring: antepartum performed by nurse-midwives in Turkey

S. Aydın Ozkan\textsuperscript{1}, Ö. Kulakaç\textsuperscript{2}, F. Erdemir\textsuperscript{3}
\textsuperscript{1}School Of Health Nursing Department, Adıyaman University, Adıyaman/TURKEY, \textsuperscript{2}School Of Health Nursing Department, Ondokuz Mayıs University, Samsun/TURKEY, \textsuperscript{3}Nursing School Of Health, Adıyaman University, Adıyaman/TURKEY

Antepartum Electronic Fetal Monitoring (EFM) to assess foetal health can be applied both during pregnancy (antepartum) and labour (intrapartum). Definition: Electronic evaluation of foetal heart rate response to movement, external stimuli, or uterine contractions during antepartal testing. According to study Estimated Time and Education Level Necessary to Perform NIC Interventions, required time to perform this intervention is more than 1 hour. The most important goal of antepartum EFM is early detect of significant foetal changes needs intervention and prevent the early neonatal deaths. The foetal heart rate response to movement, external stimuli, or uterine contractions during the antepartal testing. Antepartal EFM is performed in many health care centres by nurses and midwives in Turkey. However, to gain a competency in EFM does not seen in the objectives of nursing and midwifery curriculum. Therefore, this practice is not based on scientific license education, more is being learned in the practice placement via observation. Inadequate qualification in this skill can cause in inadequate follow-up on this issue is inadequate and
incorrect assessment, intervention. In this context Nursing Interventions Classification (NIC) antepartum EFM activities can be considered as framework to evaluate performance standards. In this study, Women health care services and clinics that working nurse and midwives that performed Antepartal Electronic Foetal Monitoring will investigate NIC Antepartum EFM activities which use condition and fulfil the condition.

**Purpose**
This cross-sectional study is planned to describe the content of performing nursing intervention of “Electronic Foetal Monitoring: Antepartum” and identify the practice gaps. The main questions of the study were; What is status to perform Antepartal EFM activities and which are the activities most frequently performed and not performed?

**Method**
The sample of study is included nurses and midwives working antepartal EFM units in different hospitals from western, southern, central, northern and eastern regions of Anatolia regions all over Turkey. The NIC intervention of “Antepartal Electronic Fetal Monitoring” and its 31 activities used as a framework to evaluate the performance of intervention. Data were collected a questionnaire developed by using NIC activities. In the first section of from included questions about working and educational characteristics of nurses. Second section included Antepartal EFM and its activities. The directive phrases of NIC Antepartal EFM activities were converted to simple present tense such as “...I do”, “....I evaluate”. The form designed as three point Likert scale
questioning performance status /frequency of each activity. These interventions were previously translated to Turkish Language in the continuous translation studies of NIC book to Turkish by leaded by Erdemir. Every intervention in NIC were translated by in related nurse academicians and a Delphi study conducted to obtain expert opinions and consensus for Turkish names and definitions of nursing interventions, and then made corrections according the suggestions within the context of this translation process. In this study the reorganized version of “Electronic Foetal Monitoring: Antepartum” were used. Study is in the process of data collection.

**Disclosure:** No significant relationships.

**Keywords:** Electronic Foetal Monitoring, NIC activities, Antepartum, Turkey

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**4. Arrangements to use NANDA-I, NOC and NIC terminologies in an electronic nursing documentation system**

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Clinical Nursing Science & Nursing Development, Bethesda Hospital AG, Basel/SWITZERLAND

**Background**

During 2004-2007 primary developments in Switzerland on national collection of nursing data and electronic nursing documentation systems based on NNN-terminologies in clinical
patient information systems started (see Baumberger, Bürki Sabbioni, Abderhalden et al. 2006; Bernhart-Just, Lassen & Schwendimann 2010; Bundesamt für Statistik, Bundesamt für Gesundheit, Schweizerische Konferenz der kantonalen Gesundheitsdirektorinnen und -direktoren et al., 2004). The experience shows that since 2000 several Swiss hospitals have established a clinical information system.

**Object of the project**

Between 2010 and 2011, authorities of the Bethesda Hospital AG decided to establish a clinical patient information system and to document the nursing process based on expert structured nursing assessments and the NNN-terminologies. The Bethesda Hospital AG is a Swiss private hospital with a total of approximately 150 beds and 250 nurses. The medical core competencies of the hospital are woman's health and the musculoskeletal system. With the implementation of the clinical information system and the electronic nursing documentation system, following objectives are pursued: change from a paper- to an ICT-based standardized patient documentation system nursing terminologies for the clinical utilization of nursing diagnosis, outcomes and interventions improvement of patient results as nurses in clinical decision making processes will be supported by evidence-based content from electronic nursing documentation systems provision of services which are relevant to payroll and proof of documentation
**Methods**

In 2012, prearrangements for the integration of the NNN-terminologies in the electronic nursing documentation system started. Experiences from international and national projects e.g. the HANDS-project (see Keenan, Stocker, Geo-Thomas et al. 2002), the ENPDM-project (see Bernhart-Just et al. 2010) and the Swiss Nursing Data Set-project (see Berthou, Junger, Kossaibati 2005) have been included. At the beginning the steps of the nursing process based on the NNN-terminologies, their integral parts and interfaces were defined. For the clinical utilization of the NNN-terminologies, their content needed to be filtered. The NNN-taxonomy and their categories (Dochterman & Jones, 2003) have been used for structuring the content of the NNN-terminologies and the content of the developed nursing assessments. On the basis of the most frequent patient populations the relevant nursing diagnosis, outcomes and interventions have been identified.

**Results**

A nursing documentation model based on the NNN-terminologies as well as population-specific nursing assessments are presented here. At present, the linkages between the NNN-terminologies are predominantly experience based. In the future they will become evidence-based. The project work facilitates the development of population-based nursing care plans and clinical nursing pathways. Through the preparatory work a paper-based nursing documentation exists which is congruent with the use of the NNN-terminologies. It could also be employed if an electronic system failure occurs. The clinical nursing data can be integrated into
internal statistical reports as well as being beneficial to national and international benchmarks. Tests for preliminary model of the electronic nursing documentation system will be carried out in summer 2015. The implementation on all wards is planned for autumn 2015.

**Disclosure:** No significant relationships.

**Keywords:** NANDA, NOC, NIC, nursing process documentation

### 5. Evidence-based care plans based on the classification systems NANDA and NIC

*H.S. Bjerkestrand, A.O. Dobloug*

*Department Quality And Patient Safety, Innlandet Hospital Trust, Brumunddal/NORWAY*

Electronic documentation in nursing can promote good nursing, secure communication between health professionals, foster evidence-based practice and increase patient safety. The legislative basis exists in the *Act relating to health personnel* and Act relating to specialist services (2). In 2007, Innlandet Hospital Trust (IHT) started using clinical documentation in nursing (CDN)(3). IHT is in charge of healthcare services for approximately 400 000 people and comprises 9 hospitals.

Nursing documentation in IHT was previously haphazard, characterized by a low degree of structure and standardization, and interventions were inadequately evaluated. CDN was introduced to
ensure a shared documentation system for nursing service in IHT. The main objectives were more planned, targeted and effective nursing. In 2008, CDN was included among the undertakings in the trust fostering more evidence-practices. In line with the Coordination reform of the government (6), CDN was also expected to contribute to more coordinated and continuous care.

"Guiding nursing care plans" is a key electronic tool in CDN. The plans for recommended nursing address a specific diagnosis or patient group, and are used as a template for individual patient care plans. The individual care plans includes descriptions of the patient's problems and challenges, nursing goals, and descriptions of nursing interventions.

4000 users within the nursing service in IHT are currently using CDN and guiding nursing care plans. All wards in the hospitals have introduced and use CDN and guiding nursing care plans. Nurses can currently choose between 119 different guiding care plans while planning nursing for an individual patient. About 90 of these are evidence-based. Four nursing advisors and one head nurse work with this full time. The advisors assist nurses in developing and updating the guiding nursing care plans. They also teach how to use codes NANDA and NIC (4,5) the care plans, and provide practical and technical instruction. The advisors also revise the general CDN procedures and document templates located in the quality system of the hospital trust. The advisors cooperate closely with the hospital library services, and producers of clinical procedures and clinical care pathways. Regular meetings are held within each of the hospitals, focusing on CDN. In the meetings,
appointed personnel responsible for CDN with the hospital, participate.
After the introduction of the system, the documentation of the nursing processes has become more structured, and it is now easier for nurses to get an overview of the patient's needs and responses. CDN also ensures that nursing documentation in IHT is carried out according to law (1,2). CDN has resulted in:

• Better communication between professions
• Employees can more easily switch between different departments
• More evidence-based nursing
• Greater continuity of care when patients are transferred between hospitals, including easier retrieval of information. (1)

CDN has met several challenges that were not originally foreseen. The nursing care plans, which were original made, were not evidence based. The use of the principles of evidence-based practice, concretized in the Agree tool (7) and methodology report, means that nurses service developing or updating plans have to review their own practice, obtain updated knowledge, and get buy-in from the organization and the wards. Clinician and patient perspectives are actively sought. In line with the health authorities and patients increasingly expecting a more transparent clinical practice, the guiding care plans will be published on the Internet.

Development and updating of guiding nursing care plans, streamlining and coordination, and monitoring the use of CDN, has require more time than anticipated. Terminology and interdisciplinary have been other challenges.
The terminology in the CDN has been perceived as difficult not only by other professions, but also by nurses themselves. The latest versions of NIC and NANDA have not been translated into Norwegian and old versions are used.

In an adjoin project, in 2013 the advisors visited 64 wards in the IHT to improve the use of CDN. Our model of support for quality work was designed to provide managers and healthcare personnel with the opportunity to evaluate and improve the quality of nursing documentation. Based on reports, user guides and clinical procedures, we examined the nursing documentation, focusing on:

- The rate of nursing diagnoses, used in free text instead of NANDA
- The rate of nursing measures, used in free text instead of NIC

The rate of nursing diagnoses, used in free text instead of NANDA

There were differences in the use of free text diagnoses and measures. In those units where guiding nursing care plans was used extensively the use of free text diagnoses and measures was measurably less.

The number of text diagnoses was seen in the context of the number of patients and the use of care plans. If a department had few free text diagnoses and simultaneously low use of individual care plans, it might indicate a lack of documentation. The graphs below show the number of text diagnoses, not percent.
Graph 1: is an overview for the somatic units in IHT and shows free-text diagnosis per hospital. The last column shows the total number for all the wards.

Graph 2: shows an overview of psychiatric units in IHT and shows free-text diagnosis per hospital. The last column shows the total number for all the units.

*The rate of nursing measures, used in free-text instead of NIC*
The extent of free text used is related to the number of patients in the hospital department, as some departments have very few patients, compared to others. If a department has a low number of free text diagnoses, there might also mean that the use of guiding care plans is small. Increase in the extent of free text use could also mean that the department has begun using guiding care plans more actively, but not according to the general procedure.

Graph 3: shows an overview for the somatic units in IHT and show free text interventions. The last column shows the total number for all the units.
Graph 4 provides an overview of psychiatric units in IHT and show free text interventions. The last column presents the total number for all the units.

**Areas for improvement and - measures**

In the quality project, we found that some departments have a very high proportion of free text diagnoses - possibly indicating that many do not know the proper use of guiding care plan or code system. For the future, it is important emphasizing the use of guiding nursing plans as the basis for individual patient care plan. Leaders, nursing advisors in the wards, and other CDN personnel strive to increase patient safety by using the plans, and it is a prerequisite for this aim that as many as possible make use of the system. Continued use of CDN can ensure that care is implemented in accordance with the legislation, documentation requirements and ethical standards.

The use of guiding care plans is harmonized with parent procedures and national clinical practice guidelines. A guiding plan is also coordinated with the hospital's other quality tools such as treatment lines and clinical procedures. The quality of individual patient care plans will be higher, compared to a plan developed by
an individual, trusting one’s own professional judgment, and the random selection of codes in NANDA and NIC.

Our impression is that the use of guiding nursing plans ensures that staff has the same knowledge and the same goals for care of the patient.

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Disclosure: No significant relationships.
Keywords: care plans, classifications systems, NANDA and NIC
6. Evaluation of pressure ulcer scarring treated with low level laser therapy, by means of Nursing Outcomes Classification and Pressure Ulcer Scale for Healing: a care study

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Preliminary results from a case study of a critical patient showed that Low Level Laser Therapy seems to benefit pressure ulcer treatment. The scarring process evaluation was carried out by means of Pressure Ulcer Scale for Healing and Nursing Outcomes Classification outcomes/indicators. Abstract: Pressure Ulcer (PU) is a skin and/or subjacent tissue lesion, generally over a bony prominence due to a kind of pressure, or to pressure along with cutting and/or friction. At the Intensive Care Units (ICU) PU incidence is high due to severity of patients and several risk factors to which they are exposed. The lesion healer is conventional treatment, although Low Level Laser Therapy (LLLT) has been presenting itself as an alternative, which consists of low potency amplified light radiation capable of promoting biochemical, bioelectrical and bioenergetics effects, possibly accelerating the scarring process. However PU evolution and scarring process must be assessed with standardized scales, featuring Pressure Ulcer...
Scale for Healing (PUSH) and Nursing Outcomes Classification (NOC). The objective for this study is to describe the evolution of a PU treated with conventional therapy along with LLLT, by means of a PUSH scale and NOC Wound Healing: secondary intention outcome. This is a descriptive case study developed in a university hospital in the South of Brazil. Data were collected at the ICU, using as sample a patient with PU who fit the study selection criteria in order to be treated with conventional therapy along with LLLT, three times per week, with a predicted five weeks follow-up period. The scarring process evaluation was carried out by means of an instrument that contemplated PUSH scales and NOC Wound Healing: Secondary Intention outcome, with 12 indicators, and a photographic record of the wound. Patient was male, 57 years, paraplegic, hypertensive, diabetic, with PU for a year in the sacrum and gluteal region. PU presented with great tunneling, devitalized tissue, macerated wound edges and extremely fetid odor. Surgical debridement was required in two distinct moments. When we started our research the wound assailed the left gluteus over $42\text{cm}^2$ covered by few granulation tissue, well-demarcated edges, presence of serosanguineous secretion and mildly fetid odor. After the eighth day applying LLLT it was possible to observe, through the NOC scale, a reduction in approximately 84% in lesion size, a side from increase in epithelial tissue, reduction in serosanguineous secretion, reduction in maceration and perilesional erythema. Although the results are still preliminary, the LLLT was concluded to be beneficial to PU treatment. Besides it was possible to detect that the scale with NOC indicators and
outcome – in comparison to the PUSH scale – has presented a better assessment description of the wound scarring process.

**Disclosure:** No significant relationships.

**Keywords:** Laser Therapy, Outcome Assessment, Pressure Ulcer

### 7. Patient responses and nursing diagnoses in psychiatric nursing care

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**Introduction**

In the past, reduction of beds has affected inpatient psychiatry in favour of outpatient treatments (Townsend 2008, Roger & Gray 2009). Nevertheless, inpatient psychiatry is still essential for mental health care. Its facilities provide safe und structured settings including 24-h care for people at risk for jeopardizing themselves or others due to mental disorders (Varcarolis 2009). Four criteria legitimate an hospitalization in inpatient settings: 1) the patients or the relatives are not able to fulfil daily self-care and
need help at different times of the day; (2) the patient is in an acute personal crisis and needs services around the clock; (3) the situation of the patient requires compulsory measures or special treatments which can only be administered in an inpatient setting; and (4) the patient or the relatives need a temporary change of setting (Sauter, Abderhalden, Needham & Wolff, 2011). These patient related circumstances characterize the work of psychiatric nurses that bases on defining care needs, planning interventions and evaluating outcomes (Spichiger et al. 2006). Standardized nursing terminologies describe the content of these three basic elements of nursing care. Their developments support the adequate identification of nursing practice in order to ensure efficacy and to improve continuity (Keenan & Yakel, 2005; Keenan et al., 2008; Müller-Staub, Needham, Odenbreit, Lavin, & van Achterberg, 2007, 2008). The classification set NNN (NANDA-I, Nursing Outcomes Classification, Nursing Interventions Classification) was identified as the widest diffused classification system (Anderson, Keenan, & Jones, 2009; Müller-Staub, Lavin, Needham, & van Achterberg, 2007; Odenbreit, Müller-Staub, Brokel, Avant, & Keenan, 2012). This system best fulfills standardized documentation of the nursing process, generation of standard datasets, and practicability of data exchanges between different electronic data systems (Just et al, 2005). The NANDA-I classification encompasses nursing diagnoses and is one of the three NNN classifications. Validation studies addressed the accuracy of individual NANDA-I nursing diagnoses in different nursing settings (De Souza Viegas, Turrini, & Da Silva Bastos
For the context of inpatient settings Frauenfelder, Müller-Staub, Needham and van Achterberg (2011) identified a high accuracy between patient related phenomena described in the literature and NANDA-I diagnoses. However, a number of important nursing phenomena were not depicted by the classification. Further developments of the NANDA-I classification to be used in inpatient psychiatric settings require additional research, especially based on nurses’ daily work with patients. The present study focused on patient observations documented by nurses in records in adult inpatient psychiatry. The study aim was to explore the potential for further development of psychiatry-specific NANDA-I diagnoses to ensure adequate descriptions of patients’ health responses as the basis for planning nursing interventions and determining nursing outcomes.

**Research Question**
Which of the documented patient’ responses on actual or potential health problems/life processes in inpatient psychiatry are included in the NANDA-I classification?

**Methods**
Setting
The study site was a center for psychiatric adult inpatient rehabilitation in Switzerland encompassing seven wards with an average of 15 beds. All patients suffered from pronounced mental and behavioral symptoms resulting from severe chronic mental health disorders. The treatment of these patients focused on
trainings about functioning in daily life, and disease management to achieve integrations into outpatient psychiatric services as well as into appropriate residential or occupational surroundings (Hoff et al., 2011).

Sample
The present study included unstructured nursing records (called nursing notes). These notes were paper based and handwritten by nurses and represent nurses’ perspective on “daily businesses” on each individual patient. The notes include diverse unstructured information of patients’ state and behavior, occurrences observed by nurses or reported by patients, their relatives or significant others.

During the data collection period between January 1 and June 30 of 2009, 336 patients were hospitalized in the center. From each of the seven wards, 10 patients were randomly selected (total N=70) and three weeks of their total stay nursing notes were analyzed: The first, the middle and the last week. In the case patients were hospitalized shorter than three weeks, all nursing notes were analyzed.

Analysis / Mapping Procedure
In a first step, all included nursing notes were transcribed and paraphrased. A multistep approach using content analysis (Mayring, 2010) by building inductive categories was applied which corresponds with the definition of nursing diagnoses of NANDA-I (Herdman, 2012). In the generalization phase descriptions of patients’ responses (=references) to actual or potential health problems/life processes were located and labeled with key words.
Defining and causal descriptions were identified in the references where possible. In the reduction step, all references with their corresponding defining and causal descriptions were grouped according to key words and repetitions cancelled within each group. In the next step all notes with more than one labeled reference were identified. Based on the original texts, interactions between references within a note were checked, and where possible related to each other.

Using a systematic mapping approach, each reference was then compared with NANDA-I diagnoses.

Results
A total of 1818 entries found in nursing notes were analyzed. The analysis yielded 731 entries reflecting 1021 references on patient responses. These identified references were grouped into 142 different patient responses to actual or potential health problems/life processes. Twenty-nine patient responses with 451 references were recognizable as NANDA-I diagnoses at the level of labels and definitions, 15 responses (316 references) were identified as diagnosis-related factors (defining characteristics, related factors, or risk factors) of NANDA-I diagnoses, and nine responses (130 references) did not match with any NANDA-I diagnosis at all. About 90 mentioned responses (124 references) were indiscriminate and vaguely written so that they could not be mapped.

The most frequently identified patient response was “pain” (N=81) that was recognizable in the NANDA-I diagnosis “acute pain” and “chronic pain”. However, a differentiation between these two
diagnoses was not possible from the nursing notes. The second most frequently identified patient response was “ineffective coping” (N=79) and unambiguously mappable as NANDA-I diagnosis. The third most frequently identified patient responses (N=68) were “noncompliance” and “restlessness”. The first response was mappable as the same-named NANDA-I diagnosis, and the second as defining characteristics of several NANDA-diagnoses (e.g. sleep deprivation, acute confusion, impaired comfort). Further, most prevalent patient responses recognizable as NANDA-I diagnoses or diagnoses-related factors were “insomnia/disturbed sleep pattern” (N=40), “emotional tension” (N=40), and “destructive influencing of interactions” (N=40) as well as “fatigue” (N=34), “odd interpretation of reality” (N=33), and “anxiety” (N=30).

The patient response “repeated negative-emotional reactions” (N=50) was the most frequently identified response that was not recognizable as a NANDA-I diagnosis or as diagnoses-related factors. This response was characterized by the absence of positive perceptions of one’s own person, of fellow human beings, and/or of the surroundings and encompassed feelings of petulance, frustration, and annoyance. The patient response “depressed mood” (N=25) concerned internal personal conditions of sadness and gloominess and the response “difficult social/economic situation” (N=14) were characterized by private social/economic problems (e.g. joblessness, debts, loss of the apartment) which affect the well-being of the patient.

**Discussion**
The present study demonstrates that the NANDA-I classification largely covers essential nursing phenomena of patients suffering from severe chronic mental health disorders in inpatient psychiatric settings. The results confirm the findings of a systematic literature review in the context of adult inpatient psychiatric nursing care (Frauenfelder et al. 2011).

Nevertheless, there is a need for further development of the classification. On the one hand there are identified patient responses that are insufficiently covered by NANDA-I for the purpose of use in inpatient psychiatric nursing care; on the other hand the findings showed responses that were neither mappable at the level of labels and definitions nor as related factors. Although several patient responses could be linked as diagnosis-related factors, the essence of inpatient psychiatric nursing care seems not be reflected by the respective diagnoses. The patient response “restlessness” – as an example – seems to be a common, well-known problem in mental health care described as characteristics of psychiatric disorders (Cassano et al. 2012) or treatments (Kim 2013). NANDA-I includes “restlessness” as defining characteristics of different nursing diagnoses that are no primary issues in psychiatric nursing care (e.g. latex allergy response, ineffective airway clearance, decreased cardiac output) or particular patient responses (e.g. anxiety, decisional conflict, impaired comfort). The identified and described patient response “restlessness” requires pertinent nursing interventions in the context of psychiatric nursing care to ease this symptom and to support the patient. The problematic nature of this response is not adequately captured in
the current classification. Therefore, a nursing diagnosis needs to be developed.
The identified patient response “self-isolation” was neither mappable at the level of labels and definitions nor as related factor. The relevance of this phenomenon for mental health care was described in the literature as an early warning sign of aggression (Fluttert, Van Meijel, Biorkly, Van Leuwen, & Grypdonk, 2012) or as a distinctive patient behavior that can be explained by underlying psychiatric disorders (Tateno, Park, Kato, Umene-Nakano, & Saito, 2012). The relevance of “self-isolation” indicates that a specific nursing diagnosis is needed to describe this patient response in the NANDA-I classification.

Conclusion
Based on the results of this study, further research on psychiatric patient responses is essential. In-depth discussions with well-informed, competent representatives of inpatient psychiatric nursing care are needed. There is a need to study the relevance of the suggested new nursing diagnoses found in this research. Their content, main focus, levels of abstraction and distinctions from existing diagnoses need further consideration.

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**Keywords:** NANDA-I, inpatient psychiatric nursing, content analysis, mapping
Chapter 8 – Decision-Support

1. Standard for clinical decision support systems in EHRs

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**Introduction**

A Clinical decision support system (CDSS) is an interactive decision support system Computer Software, which is designed to assist health professionals with decision-making tasks, such as determining diagnosis of patient data. A definition on CDSS was proposed by Robert Hayward, Centre for Health Evidence: "Clinical Decision Support systems link health observations with health knowledge to influence health choices by clinicians for improved health care". Nursing Process - Clinical Decision Support Systems (NP-CDSS) aim to support nurses in diagnostic reasoning to choose nursing diagnoses, interventions and nursing-sensitive patient outcomes. Intelligent and meaningful NP-CDSSs must contain research-based, pre-defined nursing diagnoses and correct linkages between diagnoses, interventions and patient outcomes. No standard was available to inform IT system developers for implementing NP-CDSS into Electronic Health Records (EHRs).
Object/Aim
The aim was to develop an NP-CDSS standard and to establish its content validity.

Methods
A methodological multi-stage study was performed. First, criteria were derived from the literature and a draft standard was written. Second, based on inclusion criteria an international expert panel (N=9) was composed: Master’s or doctoral degree in Nursing Science/Nursing Informatics, thorough understanding of the nursing process and evaluation as demonstrated by published research articles on the subject, expertise in standard development, knowledge of state of the art nursing documentation systems, knowledge about documentation in practice settings, expertise in developing/implementing electronic nursing documentation systems in EHRs, knowledge about e-Health strategies and meaningful use of standardized nursing languages (SNL). Third, an interview guideline was prepared. Fourth, study participation and informed consent was sought and the draft standard was sent to the experts for review. Fifth, interviews were performed to get expert opinions related to understandability, content, relevancy, meaningfulness and validity of the standard. The interviews were performed by Skype, lasted 55-65 minutes, and were recorded and transcribed. An independent researcher (not included in the standard development) performed the data search and analyses according to Mayrings content analysis approach.

Results:
The new NP-CDSS standard contains 25 items. The experts supported its need and judged it as meaningful to guide NP-CDSS developments. Expert validation was established on its content, understandability, relevancy and usefulness. The following standard dimensions were established: The Nursing Process as the centerpiece, inclusion of SNL, support of the nurse by automated suggestions of research-based content (e.g. assessment analyses results, suggestions for nursing diagnoses, related interventions, nursing-sensitive patient outcomes and evaluation criteria), criteria for data retrieval and evaluations, linkages between patient data and workload measurements, alerts to assure patient-safety and meaningful use of the NP-CDSS.

**Discussion/Conclusions:**
EHRs meeting this standard will allow nurses to interact with NP-CDSSs in determining accurate nursing diagnoses, in choosing evidence-based and effective nursing interventions, which in turn support the attainment of good quality patient outcomes. NP-CDSSs will automatically present output suggestions, and nurses will pick useful information and remove erroneous suggestions. NP-CDSSs will strengthen nurses to interact with the NP-CDSS utilizing both: The nurses’ knowledge and the NP-CDSS to make better analyses of patient data

**Disclosure:** No significant relationships.

**Keywords:** Intelligent expert system, Standard, Advanced Nursing Process, Electronic Nursing Documentation System, Clinical Decision Support Systems, HER
2. Introduction to an electronic health record system with decision support in the whole nursing process

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Summary
The aim of this project is to introduce an electronic nursing documentation (WiCareDoc) based on the NNN-taxonomy, that supports clinical decision in the nursing process. The system guides through every step giving constantly feedback about the quality of the nursing process. The nursing data are interpreted constantly and the system offers a set of adjusted nursing diagnoses, interventions and outcomes and reminds the nurses to evaluate the outcomes. Introduction Evaluations of electronic health record systems show a lack of theory-based nursing process tools (Just, 2006). No systems were available linking theory-based nursing assessments with NANDA-I diagnoses, nor with interventions or nursing goals/desired patient outcomes. Research also shows that nurses miss linking assessment data with diagnoses, which leads to inaccurate diagnoses missing defining characteristics/related factors (Müller-Staub, 2009). To achieve high quality outcomes nurses depend on support tools for assessing patient care needs and for choosing/evaluating effective nursing interventions.
Methods
A multi-step approach was applied to develop an intelligent electronic expert system to support nurses’ in care planning and documentation. First, by using Gordon’s Functional Health Patterns (2006) as a guideline, an assessment tool was implemented and linked with NANDA-I nursing diagnoses based on the NNN-taxonomy (NANDA-I, 2009). The first version contained 55 assessment questions according to NANDA-I defining characteristics. Second, the tool was tested for validity and applicability in clinical practice. As a result, the number of questions was reduced to 26. Third, an intelligent expert system was developed using algorithms based on NANDA-I diagnoses and linked with a database including 3204 free text assessment/diagnostic statements. The defining characteristics of NANDA-I were integrated into the electronic database. The results showed a lack of knowledge about the use of the elements of a NANDA-I nursing diagnoses. In a next step the nursing documentation was analysed to find key words for nursing diagnoses. The nurses often did not used the defining characteristics of NANDA-I, so the database had to be adjusted with the wordings from daily practise.

Results
When the nurse documents free text defining characteristics into the system, it automatically proposes theory-based, hypothetical nursing diagnoses. Next, the system reminds the nurse to evaluate the hypothetic diagnoses related to an in-depth assessment. Hypothetical diagnoses remain hypothetical until the nurse
confirms or denies their validity. WiCareDoc then proposes theory-based nursing goals/desired patient outcomes and NIC interventions. After completion of nursing interventions, the tool supports the evaluation of outcomes by comparisons of pre-and post nursing intervention data.

Conclusions

WiCareDoc is a nursing process documentation system that supports clinical reasoning and critical thinking based on defined linkages of the NNN-taxonomy.

References


Disclosure: No significant relationships.

Keywords: clinical decision process, Nursing diagnoses, critical thinking, electronic nursing documentation
3. Evidence-based research to guide clinical decision support

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It is critical that nurses understand the phenomena of concern to our discipline, which requires conceptual knowledge as well as competency in patient/family/community assessment. Phenomena of concern, for example, include core concepts of nursing practice, such as breathing pattern, caregiver role strain, coping, infection, nutrition, pain, self-care and thermoregulation (Herdman & Kamitsuru, 2014). However, there continues to be a lack of consistent integration of evidence into nursing practice. There may be no area of nursing where this is more startling than the lack of integration of evidence into nursing diagnosis – specifically, how to appropriately and accurately diagnose.

In fact, there are some efforts that may unintentionally be moving the profession away from the use of evidence within the nursing process. The recent focus on standardized terminologies, solely as a method of inputting and retrieving data from computers, as one example, has led to the use of nursing terminologies devoid of evidence; however the accuracy of computerized data is highly suspect if we do not have significant understanding of the way in which these diagnoses present in clinical areas, how they differ
across patient types (gender, age, setting), or the progression of these diagnoses over time. Further, if we do not know what indicators must be present for a diagnosis to be made, a standardized label is meaningless. For example, simply using the diagnosis label of *anxiety* alone has limited, if any, utility. When the label is combined with an evidence-based definition and assessment criteria, however, it becomes a tool that supports the clinical reasoning of nurses. Nonetheless, standardized terminologies are being incorporated into electronic health records. Therefore, the development of decision-support tools is critical to improve nurses’ clinical reasoning abilities and increase diagnostic accuracy. Therefore, a two-phased approach to the development of a clinical decision support tool is underway, led by NANDA International, Inc., in cooperation with the University of Wisconsin – Green Bay (USA). In the first phase, the NANDA International nursing diagnosis e-tool, NurScope™, was designed with four distinct pathways to lead to nursing diagnosis: a diagnosis pathway, taxonomy pathway, diagnostic focus pathway, and an assessment pathway. Standardized tools, such as the Morse Falls Scale and the Generalized Anxiety Disorder 7 Scale (GAD-7), used with permission of the authors, were incorporated into the tool with direct links made to defining characteristics that were clearly aligned with tool responses. In addition, however, the developers wanted to identify decision-support tools to support nurses (students and in practice) in accurate diagnosis, differentiating between similar diagnoses, as well as identification of possibly co-
occurring diagnoses (those that might tend to cluster together in similar patient types).

With this in mind, an ongoing Delphi study was developed to obtain expert opinion on the critical defining characteristics or risk factors for particular nursing diagnoses, their most common related factors, and standardized assessment tools that could support accurate diagnosis. In other words, for selected nursing diagnoses, the study is asking the following of selected experts: “What diagnostic indicators and standardized assessment tools are most relevant to accurately diagnosing this human response?” Additionally, a literature review is being conducted on the focus of each diagnosis, to identify any clinical studies that indicate particular assessment criteria and/or etiological factors. These indicators, in addition to those currently included in the NANDA-I terminology, will be provided to experts for feedback in terms of importance for diagnosis. Additionally, experts are asked to provide user “tips” or insights that could support diagnostic accuracy.

**Expert Panel**

To be considered an expert, the following inclusion criteria were established:

- individuals must have professional standing as a nurse in their country of work
- published at least one peer-reviewed article on the topic of interest (the focus of the diagnosis, not necessarily the diagnosis itself)
- have three or more years of experience in working with/teaching nursing diagnoses
- currently work or teach in the nursing area that includes the topic of interest, OR are currently engaged in university study at the doctoral or
post-doctoral level with the topic of interest (focus of the diagnosis) as the theme of research

- have a minimum of a master's degree in nursing
- have competency in reading English.

Names are being obtained through a search of published authors in the fields of interest, using the CINAHL, PubMed (CINAHL excluded) and Google Scholar databases, and through the CNPq Capes Lattes, a Brazilian information system that contains curriculum vitae of all professors and researchers in nursing within the country, as well as many from other countries. This database is searchable by topic area, and provides an opportunity to quickly identify and contact individuals who have published within particular areas of interest, which will be quite helpful in identifying experts. In addition, experts may be asked to refer others with similar expertise to their own, if necessary.

Experts receive an email to solicit their participation, an email confirming their participation, and a request for the informed consent form to be completed – all of which will be sent from NANDA International. Ethics approval has been obtained from the Institutional Review Board of the University of Wisconsin – Green Bay, for studies involving human subjects. After these preliminaries are completed, experts receive an email from NANDA International, Inc., requesting that they complete the on-line questionnaires through an on-line format, FormSite, using a participant code rather than a name or other defining characteristic. The researchers provide a series of information that could be used for decision-support tools in the app, and experts are
being asked to comment on the decision-support tools currently in place in the e-tool as originally developed, and/or to recommend changes. Subsequent rounds will be used to rank the final decision-support tools in terms of importance for safe practice. At the close of each survey, data is downloaded for review by the researchers, and incorporation into the decision support e-tool.

**Conclusion**

This researcher aims to synthesize the available evidence on the most commonly identified nursing diagnoses in clinical practice, to develop and provide a set of decision support tools to guide nursing students as they learn these disciplinary concepts, and support their clinical decision-making. A literature synthesis was combined with a Delphi study of international experts who have conducted research on these particular diagnoses. Results will lead to the integration of decision-support features into a NANDA-I clinical decision support tool. It is believed that these clinical decision support features will support students’ understanding of how to diagnose, and how to ensure accuracy in diagnosis. Such a change can refocus nurses on diagnosis as an integral component of nursing practice, rather than the recent focus on standardized language as solely a documentation tool.

The presentation will highlight initial study data on expert decision support developed for particular diagnose. The integration of this expert opinion and literature support will be illustrated.
References

Disclosure: No significant relationships.
Keywords: delphi study, decision support, Nursing Informatics

4. Formative and summative usability testing of nursing clinical decision support prototypes

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Introduction
Clinical decision support (CDS) holds great promise for improving patient outcomes. Recent U.S. initiatives have led to increased inclusion of CDS within Electronic Health Records (EHRs). However, clinician usability testing of CDS prior to deployment is uncommon and may explain numerous reports of poor CDS uptake
due to including workflow interruptions, increased workload and low value.

**Specific Objective**

To develop CDS for nurses that is highly useful and usable, robust formative (iterative design phase for usefulness, low errors) and summative usability (to test acceptability, ease of use, usefulness, adoption) tests are needed. The objective of this presentation is to provide an overview of our formal usability testing to develop nursing CDS.

**Methods**

We applied multiple methods to develop and test CDS tools designed to extend HANDS, a nursing documentation software using standardized NANDA-I, NIC, and NOC terminologies. Our CDS messages were derived from 2 years of actual nursing patient-care documentation in four hospitals and developed with a team of data visualization and clinical experts to translate the analytic findings into CDS.

**Results**

After initial design of several prototypes, formative testing began with an expert review (clinical nurse experts) of the prototypes to identify usability problems not detected by the design team. Following their review and prototype redesign, we began usability testing with 30 bedside nurses in iterative cycles of data collection, analysis and redesign. Data collection began with think aloud interviews in which the nurses verbalized their thoughts as they interacted with the prototypes. Think aloud methods expose prototype usability problems and perceived satisfaction; however
they do not measure nurses’ CDS interpretation, which is critical to its safety and effective adoption, or CDS usefulness, which is important to system acceptance in practice. To address these factors, we conducted semi-structured cognitive interviews immediately following the think aloud sessions. We used Morae software to capture the audio and computer interaction video. Analysis methods included a deductive coding schema that marked Morae files for 1) interpretation, 2) usefulness/value, 3) usability and 4) satisfaction. These findings led to the creation of 3 different prototypes with CDS displayed in text, table or graphs that were subjected to summative testing to determine the rate of CDS adoption among a diverse sample of 60 nurses randomly assigned to one of four designs (original HANDS, 3 prototypes) in a virtual simulation setting. The experiment included software orientation, patient scenarios, and instructions for the subject to make decisions about the patients’ nursing diagnosis (NANDA-I), interventions (NIC) and outcomes (NOC) based on the information on the documentation interface. We measured adoption rates for the CDS suggestions and used validated surveys (acceptability, ease of use and usefulness).

Conclusions

Each of the methods (expert review, think aloud and cognitive interviews, and randomized adoption experiment) provided a formal testing approach that has shown value over developer review and informal feedback from clinicians, which is often the current practice for clinical technology deployment. No method
alone would determine if the CDS was highly usable, useful and effective. [DLK1] DW Now 500/500

**Disclosure:** No significant relationships.

**Keywords:** clinical decision support, usability testing, decision support, usability testing, usability methods decision-support
Chapter 9 – Quality of Diagnoses, Interventions and Outcomes Instrument (Q-DIO)


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Background and Purpose

With the development of electronic health records the need of a standardized professional terminology is getting eminent. The Q-DIO is an instrument that evaluates the quality of documented nursing diagnoses, interventions and outcomes. To our knowledge, it is currently the only validated instrument to measure the quality of and the coherence between nursing diagnoses, interventions and outcomes. Furthermore, the Q-DIO has already been applied to measure the impact of educational programs (Bruylands, et al. 2013) aiming at developing the clinical judgment of nurses and might therefore be used as audit tool. Validated versions of the Q-DIO are available in English (Müller-Staub, et al. 2009), in German
(Müller-Staub, et al. 2008) and in Brazilian Portuguese (Da Costa Linch, et al. 2012). To enable French speaking nurses to apply the Q-DIO in their work-environnement, we are currently in process of a cross-cultural adaptation of the instrument in French. The workshop will provide insight in the method of cross-cultural adaptation and present preliminary findings.

**Methods**

The adaptation process for the Q-DIO follows the Guidelines for the Process of Cross-Cultural Adaptation developed by Beaton. We performed an adapted and simplified version of a) translation, b) synthesis, c) backward translation, d) review by a committee of experts, e) pre-testing.

**Preliminary Findings**

At present, we accomplished the steps a)-c). Semantic adaptations are currently discussed with the principal author of the instrument (Müller-Staub) and will then be reviewed by the committee of experts. Finally, a pre-test will be conducted in Home Care institutions with nurses that attended educational programs to base their clinical judgment on nursing diagnoses.

**Summary**

The Quality of Diagnoses, Interventions and Outcomes (Q-DIO), is an instrument that evaluates the quality of the documented nursing process. The purpose of this paper is to present the cross-cultural adaptation process of Q-DIO into French.
Disclosure: No significant relationships.
Keywords: Nursing diagnoses, nursing records, classifications, nursing process

2. Assessment and care plans based on standardized and computerized language: a retrospective study

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Introduction
Care plan documents patient’s care process from the initial assessment to the evaluation of results. The international literature recommends the use of a standardized language, especially if nursing documentation is computerized. In 2011 we conducted the experimentation of a computerized nursing documentation, Gacela Care OESIA, based on 11 Functional Health Patterns developed by M. Gordon and NANDA nursing diagnoses. Since 2013, the computerized documentation was introduced in four other wards and completed with the taxonomy NOC and NIC.
**Aim**

To evaluate if the use of the taxonomies NANDA NOC and NIC and computerized system can improve the quality of nursing documentation.

**Materials and Methods**

A retrospective quantitative survey on handwritten documentation vs. computerized nursing documentation was conducted on a sample of 156 nursing records (87 handwritten paper documentation vs 69 computerized documentation). The documentation, deriving from ordinary admissions of patients with a hospitalization lasting more than two days into the wards of Cardiology of our hospital from April 1st to May 31st 2013 (handwritten records) and same months in 2014 (computerized records), has been analysed in a retrospective fashion. The internationally validated questionnaire called “Q-DIO” has been utilized to analyse the two documentation forms, one diagnose for each record was randomly extracted. Two expert nurses and one nurse student conducted an audit. The items, measures the quality of the diagnostic process by identifying and investigating four areas: ‘nursing diagnosis as process’, ‘nursing diagnosis as product’, ‘nursing interventions’ and ‘nursing results’. Before starting the use of computerized documentation it was designed and carried out a training course of 21 hours. The analysis of the documentation was performed the 5th and 6th month after the implementation.

**Results**
The results in handwritten nursing documentation (2013) show that nursing process wasn’t documented: only 35 risk diagnoses in 87 records were detected. The average score of the Q-DIO was: phase “clinical assessment” 4,758/22, “nursing diagnosis as product” 0,735/32, “nursing interventions” 2,494/12 and “nursing results” 0,528/28. The results in computerized nursing documentation (2014) show: 84 risk diagnoses and 88 actual diagnoses in 69 records. The average score was: “clinical assessment” 8/22, “nursing diagnosis as product” 16/32, “nursing interventions” 5,78/12 and “nursing results” 7,49/28.

**Conclusions**

The 40% of handwritten paper documentation contains diagnose "risk for falls" pre printed, as provided for hospitals guidelines, not always developed adequately. Computerized documentation contains both risk diagnoses and actual diagnoses (average 2,4 for each record). The care process is documented in all its phases. The best results were for “nursing diagnosis as product” and “nursing interventions”.

**Discussion**

The induced attention to diagnose "fall risk", caused by the new protocol in 2011, can be bias to be considered. Nevertheless, the great difference in results between handwritten 2013 records and computerized 2014 records, confirmed the data of international literature, that nursing computerized documentation is more complete than handwritten documentation and can enhance the use of taxonomies. Work must be done to improve the quality of assessment and the nursing outcomes.
Disclosure: No significant relationships.

Keywords: Nursing documentation, computerized, record, Quality

3. Nursing diagnosis *acute pain* interventions and outcome: evaluation of patients’ experience after total hip replacement compared with the nursing record – a mixed methods study

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Summary

Do NANDA-I nursing diagnoses based nursing records demonstrate the actual nursing care received by patients? This study focused on the nursing diagnosis ‘Acute Pain’ with interventions and outcomes after total hip replacement. Based on the instrument ‘Quality of Diagnoses, Interventions and Outcomes’ (Q-DIO), patients’ findings (n=37) showed that many pain relieving nursing interventions were performed, but not documented in the nursing record.
Introduction
NANDA-I is the most extensively implemented nursing diagnoses classification and its use has been shown to improve the quality of nursing records (ICN, 2004; Oud et al., 2005; Stefan, Allmer, & Eberl, 2003, in Müller-Staub, Lavin, Needham, & van Achterberg, 2006). However, there is little evidence relating to aspects of nursing care, as perceived by patients, when NANDA-I nursing diagnoses are used. Pain is a common phenomenon in hospitals that affects patients' well-being and rehabilitation, especially in postoperative situations. The European PATHOS study (Postoperative Analgesic Therapy Observational Survey; Benhamou et al., 2008) reported insufficient pain management in hospitals. Patients reported high pain levels in the early postoperative period after hip replacement surgery (Niemi-Murola et al., 2007, in Joelsson, 2010). The here reported upon study examined patients' experiences of pain and the nursing care given, based on the nursing diagnosis 'Acute Pain' (NANDA-I, 2010) and its interventions and outcomes dimensions.

Objectives/Aims
The study aim was to compare patients’ nursing records following hip replacement surgery, with their responses on pain experiences, the quality of their pain assessments, their received pain relieving nursing interventions and patients’ outcomes. To enable this comparison a further aim was to develop measurement tools based on the instrument ‘Quality of Diagnoses, Interventions and Outcomes’ (Q-DIO) (Müller-Staub, 2008; Müller-Staub et al.,

**Methods**

A mixed methods design was applied by performing an ‘explanatory study as Follow-up Explanations Model’ (QUAN emphasized) (Creswell & Plano Clark, 2011). To evaluate quantitative data, the tested instrument Q-DIO (Müller-Staub, 2008) was further developed to measure the accuracy of the nursing diagnosis 'Acute Pain' (Doenges, Moorhouse, & Geissler-Murr, 2014; Ackley & Ladwig, 2011) and to measure the effectiveness and outcomes of pain interventions in nursing records (Q-DIO-P). Therefore a questionnaire was developed with a panel of nursing experts. The content validity (Posteriori Content Validität) (Waltz, Strickland, & Lenz, 2010) of the questionnaire was tested (I-CVI=.92). First, the questionnaire was pre-tested with five patients and the study was approved by the ethical review committee. Second, patients completed the questionnaire on the quality of pain assessments and the effectiveness of pain-relieving nursing interventions. The sample contained 37 patients on the third postoperative day after total hip arthroplasty. For the quantitative data analysis, the patient survey findings were compared with the Q-DIO-P results by computing intra-class correlations (ICC) (Walter, et al., 1998). After identifying the results for follow-up, five semi-structured qualitative patient interviews and a focus group interview with nurses were conducted for interpretation of the quantitative findings. Qualitative data were
analyzed by content analysis according to Mayring (1990 in Langer, 2000).

**Results**

The patient findings demonstrate that nurses’ accurately diagnosed ‘Acute Pain’ and performed pain-relieving interventions. The most reported pain level was ‘no pain’ (0 on scale 0 - 10). However, 17-50% of patients reported pain levels of three and higher in various situations of motion/ambulation (e.g. walking, lying-down).

**Patient findings (patient questionnaire)**

Within the Q-DIO Dimension ‘Nursing Diagnosis’ the three mostly reported signs of pain between the first and third postoperative day were: ‘verbal expression of pain’, ‘adopting a pain relieving posture’ and ‘sleeping problems’ (Table I). And within the Q-DIO Dimension ‘Nursing Interventions’ all 30 pain-relieving interventions were reported as performed by nurses between the first and third postoperative day. The 12 most pain-relieving interventions (out of a total of 30) performed by nurses are listed in Table II.

**Nursing record results by Q-DIO-P**

Although patients’ reported that nurses’ performed pain-relieving interventions, many interventions were not documented in the nursing record. Within the Q-DIO Dimension ‘Nursing Diagnosis’ the sign ‘describe pain in own words’ of the nursing diagnosis ‘Acute Pain’ was noted in 30% of the nursing records, but the nursing diagnosis ‘Acute Pain’ was not noted in the records. Within the Q-DIO Dimension ‘Nursing Interventions’ there were no planned nursing interventions written in the nursing records,
except for medication. However, sixteen of the thirty pain relieving interventions of the nursing diagnosis ‘Acute Pain’ were noted in the nursing record as performed by nurses between the first and third postoperative day. And within the Q-DIO Dimension ‘Nursing-sensitive Patient Outcomes’ there were ‘pain level assessments’ found in all records and improvements were reported in ‘movement/walking’ (73%), in ‘personal care’ (70%) and in ‘pain relief’ (19%).

**Table I:** Patient questionnaire: Signs of pain between the first and third postoperative day (tested in German language)

<table>
<thead>
<tr>
<th>Signs of pain (S)</th>
<th>&gt;3</th>
<th>2-3</th>
<th>1</th>
<th>0</th>
<th>don’t know</th>
<th>no answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=37 (100%), sorted by arithmetic mean</td>
<td>----</td>
<td>-----</td>
<td>---</td>
<td>---</td>
<td>-------------</td>
<td>-----------</td>
</tr>
<tr>
<td>verbal expression of pain</td>
<td>20</td>
<td>12</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adopting a pain-relieving posture</td>
<td>11</td>
<td>5</td>
<td>5</td>
<td>14</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sleeping problems</td>
<td>3</td>
<td>8</td>
<td>10</td>
<td>15</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Cramped muscles</td>
<td>5</td>
<td>3</td>
<td>6</td>
<td>19</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Use of distracting activities</td>
<td>3</td>
<td>7</td>
<td>3</td>
<td>21</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Other signs of pain</td>
<td>4</td>
<td>4</td>
<td>18</td>
<td>1</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Restlessness, crying, nervousness, (and other)</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>23</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Cold sweats (changes in cardiac cycle)</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>24</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Only focused on myself and my pain</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>25</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Keeping silent about pain</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>19</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Changes in perception</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>30</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>1</td>
<td>1</td>
<td>33</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Patient findings compared with nursing records*
The intervention ‘help to adapt medications’, was the only significant match between patients’ findings and Q-DIO-P results (n=32, ICC=.111, p=.042, CI 95% 2-sided).

**Table II**: Patient questionnaire: The 12 most pain-relieving interventions (out of a total of 30) performed by nurses between the first and third postoperative day (tested in German language)

<table>
<thead>
<tr>
<th>Interventions: Pain assessment / Pain reduction</th>
<th>&gt;3</th>
<th>2-3</th>
<th>1</th>
<th>0</th>
<th>don’t know</th>
<th>answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=37 (100%), sorted by arithmetic mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Giving pain medications as needed</td>
<td>22</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Ensuring a sufficient prescription is available</td>
<td>17</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Encouraging the expression of pain experiences</td>
<td>20</td>
<td>9</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Accepting patient’s pain expressions</td>
<td>17</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Working with patient to prevent pain</td>
<td>21</td>
<td>4</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Assessing pain level(s)</td>
<td>16</td>
<td>12</td>
<td>3</td>
<td>2</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Supporting adaptations of medications</td>
<td>15</td>
<td>8</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Fostering quietness or distraction</td>
<td>14</td>
<td>7</td>
<td>4</td>
<td>7</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Repositioning, back massage, cold/warm therapies</td>
<td>14</td>
<td>5</td>
<td>7</td>
<td>8</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Giving breaks when patient feels exhausted</td>
<td>10</td>
<td>7</td>
<td>5</td>
<td>11</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Instructing pain assessment (NRS)</td>
<td>8</td>
<td>6</td>
<td>11</td>
<td>10</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

**Discussion**

Interviews with patients and nurses confirmed that pain-relieving interventions affecting ‘Acute Pain’ were carried out, but not
documented. Patients had different perceptions around or similar to pain, e.g. they often had problems lying in bed. Nurses were very appreciated: «...I didn't need any more than I got...». The interviewed nurses said, that pain-relieving interventions were carried out, but were not equally reported because of lack of time. Documenting nursing diagnoses and interventions requires additional effort and the documentation was perceived as difficult.

**Conclusions**

The study aim to develop and establish expert validation of the Q-DIO-Pain measurement tool for the NANDA-I nursing diagnosis “Acute Pain”, was reached. Based on the study results, pain assessments and effective pain-relieving interventions, especially before or after motion/ambulation, should be improved and documented. Based on these results it is recommended to implement a nurse led standard ‘Acute Pain’.

**References**


**Disclosure:** No significant relationships.

**Keywords:** Nursing Diagnosis, NANDA-I Nursing Diagnosis 'Acute Pain', Nursing record, Q-DIO-P, Nursing Interventions, Nursing Outcomes
Chapter 10 – Information Systems

1. Discharge planning process: information exchange between registered nurses and district nurses

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Introduction
The discharge planning process (DPP) is an important care process that aims to secure care transitions from the hospital to the community. The DPP has three to four sub-processes [i.e., patient’s arrival at the hospital, performance of discharge planning conference, patient’s discharge from the hospital, follow up at home] that begin when the in-patient arrives at the ward. This process is required when an in-patient requires assistance from the primary healthcare and/or community care following discharge [1]. Multidisciplinary interventions from various professionals are then coordinated to accommodate the patient’s identified needs and wishes.

Background
Changing society demographics, which include an increasing number of elderly people, a reduced number of hospital beds, and shorter hospital stays [2], affect patient flow through the entire
healthcare process. These changes create higher demands for adequate planning, coordination, and exchange of patient-related information in order to facilitate the DPP in a safe and qualitative way. The nurse plays a central role in the DPP by coordinating the information exchange. However, the process is ill-defined in general, and one study [3] showed that there is no consensus among nurses on a definition of the DPP. As information exchange is central to the DPP, delays and gaps in communication between the hospital and primary healthcare, as well as poor discharge documentation, can negatively affect the process [4,]. A lack of information reduces the quality of the DPP with consequences for the patient such as delayed discharge, readmission, inadequate post-discharge care, and reduced quality of life [5]. Information technology can be used to reduce the frequency and consequences of healthcare errors, but its many barriers can also cause errors. Currently, many institutions store clinical information electronically, but often the data are inaccessible or incompatible with other data sources due to format and/or interface issues. Therefore, systems that can communicate with each other are necessary. Because the information exchanged at care transitions can be confusing, inadequate, or even contain errors [6], it is important to investigate the content of the information exchanged from admission to discharge, as well as when and how it is transferred during the DPP [4]. Knowledge of this issue could increase the quality of the DPP. While this issue has been studied for more than twenty years, few studies have clarified the information exchanged between healthcare providers. The study
objective was to describe nurses’ experiences and perceptions of information exchange during the discharge planning process with a particular focus on what, when, and how information was exchanged between the hospital and primary healthcare.

**Methods**

The study was cross-sectional, and a web-based census survey was used to collect data [7]. A questionnaire was distributed to 194 registered nurses (RN) and 67 district nurses (DN). The RNs were from a central county hospital working in geriatric, infection, medical, orthopaedic, rehabilitation, rheumatology, surgical or psychiatric wards in northern Sweden, and the DNs were from 13 primary healthcare centres located within the hospital’s catchment area; all personnel had experience with the DPP. The questionnaire was divided into two sections; the first focused on demographic information, and the second focused on the information provided and received and when and how in the DPP the information was transferred. All participants were provided the same realistic fictitious patient case report, and questions related to 21 specific items of patient-related information were asked. The questionnaire included a free-text response regarding detailed experiences and perceptions of the information exchanges. A descriptive statistical analysis [13] was performed using IBM SPSS statistics predictive analytic software (Version 19.0). The difference between the two groups was assessed using chi-square tests, and the statistical significance was set at $\alpha= 0.05$. The free-text data were analysed using qualitative text analysis [8].
Results

Demographic characteristics
A total of 171 completed questionnaires were returned (RNs, n = 129; DNs, n = 42). The response rate was 66.5% for RNs and 62.6% for DNs (overall response rate: 65.5%). Ninety-six percent of the respondents were female. The age range of participants was 24-66 years among RNs and 38-66 years among DNs. The range of work experience was 1-42 years (mean: 11) among RNs and 4-37 years (mean: 15) among DNs. All invited hospital wards were represented, and response rates varied from 38% to 100% among the wards. All but one primary healthcare centres were represented, and the response rate varied from 30% to 100%. The total mean response rate per clinic was 64%. Comparison of the demographics of the study sample and the respondents clearly shows similarities in age and gender, which indicates that the respondents are representative of the study sample.

Content of patient-related information and when it was exchanged
There was a significant difference in perception between the DNs and RNs regarding the information provided and received during the three sub-processes of discharge planning (DP). These discrepancies differed throughout the DPP. The differences were most significant at the time of admission and became less significant at the discharge planning conference (DPC); perceptions were nearly consistent at discharge (Table 1).

The most substantial reported difference between the information that was perceived to be provided and the information that was perceived to be received existed at the time of hospital admission.
There was a significant difference between the information perceived as provided and the information perceived as received for 20 of the 21 items.

The information exchange during the DPC was examined from two different angles; these consisted of the information provided by the DNs and received by the RNs and vice versa. The DNs perceived that they provided more information in general at the conference than at a patient’s admission. However, for 11 of the 21 items, there was a significant difference between the information perceived as provided by the DNs and the information perceived as received by the RNs. For the opposite information exchange, which consisted of information provided by the RNs and received by the DNs, there was no significant difference for 17 of the items.

At the time of patient discharge, for 13 items, the DNs reported having received more information than the RNs reported having provided. However, no significant differences existed at the time of patient discharge.

*How information was transferred*

During the DPP, patient-related information was electronically transferred between the hospital and the primary healthcare using the uniform medical-record system or the uniform information system, by paper (hard copy), or verbally. The discrepancies between what was perceived to have been provided and what was perceived to have been received were greatest for information transferred electronically compared with information transmitted via paper or verbally. There was a significant difference between the electronically-transferred information that was perceived as
provided and that was perceived as received for 17 items. For information transferred on paper, the only significant difference was for one item; on-going medication. However, both RNs and DNs reported that information transferred on paper was perceived to be limited. Information transferred verbally received the highest rating of the three methods of information exchange. For verbal information, the only significant difference was for the allergies item.

Summary of free-text responses
RNs described the lack of information from DNs at the patient’s admission to be a considerable problem. They reported that they had to search the medical record, ask the patient, or call the DN to obtain information. RNs reported that telephone meetings worked well for information exchange when the DN knew the patient. In contrast, it was often difficult for the RN to come in contact with the DN. However, the DNs reported that they received poor patient information via telephone calls. The RNs’ opinion was that the electronic information system required too many steps and was complicated to use, especially when no education was provided; additionally, they reported that it was not used as it was intended to be used, which resulted in poor documentation and many delays. According to the DNs, electronic documentation was valuable for information exchange regarding non-acute or non-modified interventions. Meanwhile, both RNs and DNs reported that verbal information exchange generally worked well. Both groups of nurses considered face-to-face DPC meetings to be important for information exchange when all participants are present for the
entire meeting, but it was difficult to find a time that suited all participants.

**Conclusion**

Difficulties exist with regards to knowing what patient-related information is required to be provided and what to do when the expected information is not received. There are also difficulties in electronic information exchange, and verbal transfer is an important complement. These results can be used to develop knowledge about roles, work tasks and needs to enhance the outcome of the process and the information exchanged.

**References**


**Disclosure:** No significant relationships.

**Keywords:** Nursing Informatics, quantitative research, discharge planning

Original article Nordmark, Sofi, Söderberg, S, Skär, L. Information exchange between registered nurses and district nurses during the discharge planning process: cross-sectional analysis of survey data. *Informatics for Health and Social Care* 2014, 40(1):23-44
2. Guidelines for the construction of a nursing information system

C. De Pieri¹, M. Casella², M. Fregonara Medici³

Summary
An holistic-multivariate qualitative and quantitative study on implementation of nursing txm and sw has been conducted in two hospitals of Piedmont Region (Italy), to define guideline to design a nursing information system at local and regional level.

Introduction
During 2010 and 2011, a research team of the Piedmont Region conducted an extensive study on the implementation of sw for the in-ward nursing activity documentation.

Goal
To establish regional references for the adoption of electronic information systems for care and workload measurement.

Methods
Before the implementation, a group of expert nurses collected information on sw products in Italy and other countries of Europe. Then they choose two sw (one from Spain and another from Switzerland) for a six months trial in two hospitals. The nurses, naive for caring txm and sw, were trained for both. During the experiment the team did an olistic-multivariate qualitative and quantitative study, based on six protocols, on technical features,
acceptance of the nursing txm and sw, changes in organizational climate and individual burnout, quality of reports achievable, costs/opportunities. They also collected data on the architectures of local and regional information system in different European countries.

Results
In July, 2013, the group delivered the report, containing a guideline with 32 recommendations (see appendix 1) addressed to regional and local decision-makers and nursing managers. The content of the recommendations concerns how to structure and implement an information system for nursing at regional and local level, the criteria for the selection of sw, how to train nurses in the use of txm and sw and, finally, the needs for ongoing monitoring of the quality of output of the END.

Discussion
The recommendations produced with the study are broadly in line with the findings from the international literature on specific variables investigated. However, the holistic multivariate approach allowed to relate the different variables and highlight the underlying link between, for example, the organizational climate, or the will/determination of the management in pursuing the goal, with the level of acceptance of staff about txm/sw introduced. Moreover, the analysis with similar but dedicated questionnaires, showed a close correlation in the level of satisfaction between sw and txm, as the nurses could consider them as one thing. Satisfaction for txm and sw were also linked with job satisfaction. Another interesting finding concerns
the link between the appreciation for the sw and the possibility “in loco” to freely build new features from a predefined framework (e.g., connection between a diagnosis and a new care plan). Further investigations, at one year from baseline, showed a decline in variability (type and frequencies) of NANDA® diagnoses used and the tendency to conformism in their use, with need of corrective action. Finally, while initials opponents have maintained a, a priori, negative attitude both for the sw and txm, subjects who at t₀ showed a positive generic feeling, at distance expressed a more articulated evaluation, worthy of careful analysis.

Appendix 1:
Recommendations of the working group SIA, for the adoption and implementation of sw for use in clinical care Region Piemonte

General issues

1 Vision of care and choice of sw: Before choosing sw, define organization and models of care to be developed in the medium/long term. – R: In choosing an END is necessary to clarify in advance which organizational models and methodologies it will support; otherwise, the sw can quickly become outdated and represent an obstacle to professional and organizational development. The introduction of more advanced models of care can be facilitated by the implementation of dedicated sw and vice versa.

2 Conceptual basis and taxonomies: Define the conceptual basis and txm to use with the sw. – R: The adoption of a conceptual
model and a unique language, facilitates dialogue between professionals, improves the definition of care problems, permits comparisons and measurements, it is advantageous in building a minimum data set, in sw development and is a fundamental requirement for a tidy database.

3 Characteristics of txm: Use txm of wide international circulation, with encodings satisfying ISO, based on solid research basis and proposed from qualified organizations. – R: In lack of an agreement on national and international txm to be used for the nursing, it is useful to adopt pragmatic approaches choosing txm that currently are the gold standard.

4 Level of priority: Assign high priority to the adoption of electronic systems for supporting monitoring of clinical activities – R: The initial investment on an END is justified by the significant savings that can be produced from outputs that allow to govern care system.

5 Structure of the regional information system: Define the characteristics of a regional minimum data set for care activities – R: The upstream definition of the information necessary to ensure good governance of caring activities, may enable to obtain uniform, easy to read, data, that results in reduced costs for sw adaptation and data processing.

6 Sw adoption: Adopt a single sw across the region, for the management of clinical care information – R: The adoption of a single sw for an entire regional context, it would allow the development of one-off feature, to ensure interoperability with other sw, adaptations for different clinical areas and create
formats for supplying the regional information system.

7 Sw features: Adopt sw with high professional specificity. –R: The sw can integrate information produced by different profession, (nurses, doctors, physiotherapists ...,) or be devoted solely to nursing activities. Despite the second solution entails problems to have a complete overview of the patient, generally it result in more specificity. Secondly, it’s more easy to upgrade or change a “stand alone” sw then an ERP.

8 Reliability and dissemination: Prefer sw with good spread and a wide field-testing. –R: A project to develop a sw for nursing at regional level, requires stable political direction, a durable technical core, a solid industrial partner on medium/long term. The current socio-economic instability of many countries argues in favor of the choice of products already developed. The choice of instruments with a high level of conceptual and technical elaboration and with a good testing, avoids errors already done and immediately brings an added value of innovation.

9 Knowledge base: Choose sw based on a conceptual framework and with a team of professional developers that includes nurses –R: The presence of professional contacts within the sw-house, allows a easier dialogue and immediate developments necessary to cover the emerging needs and give more guarantees both on appropriateness of the conceptual framework (knowledge base) and on the coverage of the work-flow.

10 Adaptability: Choose sw "open" modifiable by the k-user –R: Sw that allows health professionals with fair computer skills, to make changes to the libraries used and to act on the pattern to
build new tools, determines greater compliance and acceptance, a timely upgrade and, on medium/long term, significant savings for upgrades.

11 Business intelligence (BI): Prefer sw that provide good masks to build reports. –R: The usefulness of an automated information system is primarily the ability to handle large amounts of data in an easy way. The availability of foreordained tools to make search on linked specific variables, to analyze workloads, perform benchmarking, carry out data-mining, greatly increases the potential information capability.

12 Decision support system (DSS): Choose sw able to provide suggestions and guide. –R: The logical connection between variables and the provision of decision support tools (eg signs and symptoms> possible diagnoses; diagnosis> possible standard plans) can facilitate the choices and prevent the loss of possible alternatives.

13 Ease of use and usability: Prefer easy to use sw –R: The sw must be intuitive, the paths organized in a logical way. Ideally a good sw should be immediately usable even in the absence of preliminary training.

14 Work flow: Choose sw that can manage the continuity of the entire nursing process and, at the same time, ensure flexibility to manage exceptions on the route. –R: The sw must be able to transfer the information from an activity to others related, in a logical and sequential way. All major work processes must be covered. At the same time it must allows to change the schedules and enter data even from intermediate level of the work-flow.
15 **Summary information and details**: Choose sw that can provide relevant, synthetic, upgraded information on all patients assigned to the entire unit and, upon request, full information and details on the individual patient. – *R*: The use of icons with high information content (alerts for potential risk conditions, relevant activities to be carried out) in the main page, is preferable to the use of free text. A good END, must also allow quick zoom on more specific information about subjects or activities. It show patient progression but highlights present situation.

16 **Accountability and Security**: Choose sw that trace the entire activity. – *R*: It is necessary to ensure the accountability of the activities performed in the platform by each operator, with tracking systems. The individual access to the sw, must be protected by a digital recognition systems, to avoid intrusion. At the same time, must allow a smooth use.

17 **Integration**: Choose sw that can integrate information from other applications, – *R.*: The sw must ensure interoperability with other sw of the health sector according to international interoperability standards (DICOM, HL7, CEN).

18 **Output**: Choose sw that can produce prints. – *R*: The use of the prints must be avoided. It should however be provided for the possibility of producing prints of structured data, for the use of third party not in possession of the same application or for legal reasons. Furthermore, it must include the use of formats widely used, for the purpose of archiving information on the long term.

**Introduction of the sw - Regional level**

19 **Coordination**: Establish a regional project group, and sub
groups of specialists for the implementation in different clinical settings. -R: *The adoption of a sw on a regional scale, implies a clear planning and a strong coordination, designed to identify and manage the actions of general interest (one-off development of interoperability tools with other sw, common reports masks), and specific interest.*

**20 Training schedule:** Define standard training programs and establish a regional group of educators/trainers. -R: *At the regional level it is possible to exchange experiences and identify the best human resources and expertise to develop educational programs and transfer knowledge between different contexts.*

**21 Monitoring:** Define a research project for continuous, multidimensional monitoring, starting from the base-line. -R: *The introduction of an END has a significant impact to individuals, groups and organizations. In the early stages, the attempts to prevent or undermine innovation, are frequent, in reaction to request of change habits. Continuous monitoring, allows early detection of problems as well as reprogramming implementation.*

**Introduction of the sw. - Local level R:**

**22 Changes in work organization:** Make an analysis of the organization, in view of the introduction of new working methods and sw and, if necessary change it. – R: *An organization need internal congruence to work well. Any change modifies the internal homeostasis and, as far as possible, one must predict the effects in advance and re-engineer the organization.*

**23 Publicizing:** Provide greater information on the goals, challenges, difficulties and expected benefits with the development
of the project. – R: Before start, is appropriate that the company management advertises the project, with targeted interventions at various levels of the organization, to raise awareness of objectives and benefits.

24 Computer equipment: Equip units of an adequate number of computer equipment, ensure adequate infrastructural support. Prefer tools that enable collection of data at the bedside. – R: The lack of tools or their malfunctioning are serious threats in change. The collection and review of information at the bedside, allows savings and increases safety.

25 System Test: Ensure the proper functioning of the applications, integration with admission register (ADT), the constant backup. – R: Technical problems that may arise, increase uncertainty of operators and fuel the mistrust. They can lead to the refusal to use the system. For this reason it is appropriate to thoroughly test the system before starting.

26 Parallel use of paper: Avoid, from beginning parallel use of electronic and paper documentation. – R: Do not duplicate documents by printing hard copies, except for special needs. Allowing the use of parallel sw and paper give a signal of uncertainty and represents a strong push to go back, generate confusion and risk of data loss, increases the workload.

27 Management: Demonstrate decision, ensure listening, give stability to the management – R: It is necessary that in the initial stage of change, managers at various levels demonstrate unity of purpose and determination. Instability is a threat. At the same time consider that the problems manifested by operators are often
real and need solutions.

**28 Training Goals:** Instruct operators on the nursing language and sw at the same time. –R: *It must be clear from the beginning of training that the purpose of the introduction of the sw is not the use of the sw itself, but a better management of the information of patients, an improvement of working methods and ultimately, ameliorate the quality of care.*

**29 Training Methodology:** Use active methods for training. –R: *In order not to create distances with people that are not used to manage computers, is appropriate to start from clinic. Use of sw can help learning txm. The training period is suitable to identify possible adjustments prior to full installation. The customization promotes adherence to the project.*

**30 Training Contents:** Illustrate general objectives of the project, practical benefits, anticipate problems but, above all, supplies practical training with new tools. People want this. –R: *The best way to overcome fear for new technologies and methods is to use them. Theoretical aspects of computer science and nursing, can be seen as a waste of time.*

**31 Teachers / Tutors:** Provide teachers with experience in the use of txm and sw. –R: *The presence of "colleagues" who have already used the methodology and sw, is not only an essential contribution of concretely lived experience, but also a guarantee with respect to the "feasibility" of the proposed changes.*

**32 Continuous training and development system:** Training must be continuous. –R: *It must be fought the tendency to impoverishment of language and an uncritical use of the*
procedures. Must be carry out clinical audits to verify the quality and reliability of the information produced and to gather useful feedback to the improve system.

**Disclosure:** No significant relationships.

**Keywords:** guidelines, software, taxonomies, acceptance, usability, informations

**Abbreviations:** R = rationale, sw = software, txm = taxonomy, classification, END = *Electronic Nursing Documentation*,


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The evolution of clinical practice for all health professions has progressed over time from rudimentary, intuitive or faith-based interventions to increasingly scientific approaches and models informed through evidence and clinical decision support systems. The purpose of this e-health presentation is to initiate a discussion reframing the concept of “evidence” and progression of how clinicians consider and approach practice within an evidence-rich digital environment. The traditional process of generating health-related evidence is grounded in empirical research, where
translating research data through publication and transitioning into clinical practice can take as long as 7 years, but in fact, may take even longer. Juxtapose the impact of this delayed access to the immediacy of the clinician’s need for information to inform clinical decisions and adjust practice to improve outcomes. As the deluge of information available through electronic health information systems and clinical decision support systems continues to escalate, the clinician is able to adapt their practice in real time in response to patient outcomes and the dynamic information available through these sophisticated systems. Operating in the same way that complex adaptive information systems adjust processes in response to dynamic inputs and feedback, clinicians and clinical practice models must move away from the notion of static evidence and adopt a more responsive approach to practice informed through information. Our expectations and conceptualization of effective practice are still grounded in evidence and linear models of “evidence-based practice”. However, the proliferation of data and information generated through electronic health information systems renders this concept obsolete. Contemporary models of clinical practice must move toward embracing and emphasizing the adaptive aspect of practice within dynamic information environments and continue to demand sophisticated health information systems that provide real time information access to clinicians, effectively decreasing the time from information generation to clinician access. This presentation challenges traditional positions of evidence, offers new insights in evidence, and highlights key trends contributing to the evolution of adaptive
models of practice and how nursing can leverage these to the benefit of clients and professional practice.

**Disclosure:** No significant relationships.

**Keywords:** digital environments, clinical decision-making, evidence-based practice

## 4. eHealth innovations in public health nursing documentation.

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In an era of fast moving epidemics and outbreaks of vaccine-preventable communicable diseases, access to accurate, timely data - in client records and aggregate reports, is critical to providing safe and effective nursing care. This presentation presents an eHealth solution specifically designed to support nursing documentation in public health practice. The 2003 Severe Acute Respiratory Syndrome (SARS) epidemic in Canada exposed a glaring deficit regarding clinical documentation and practices in public health practice. Client data in public health practice was recorded in fragmented narrative notes and often supplemented with post it notes or other ad hoc notations on client records that failed to
inform rapid decision-making and support emergency responses. Where electronic systems existed, they were archaic, cumbersome, and ill suited to provide integrated documentation and responsive aggregation for reports and analysis. The lack of a modern health information management solution resulted in significant adverse impacts on information flow to public and international agencies. The 438 probable cases and 44 deaths in Canada attributed to SARS prompted a national commission and the resulting Naylor Report. The Naylor Report, *Learning from SARS: Renewal of Public Health In Canada*, provided numerous recommendations, including the development of a national public health strategy, the establishment of a public health partnerships program, and a health human resources strategy specifically aimed at public health. Also among these recommendations was a strenuous call for improved information management and collaboration among public health professionals. Panorama is a direct response to the Naylor Report’s recommendation regarding information management systems and interprofessional collaboration. Panorama is a web-based communicable disease management and surveillance solution that links public health nurses, medical officers of health, other public health professionals, physicians, hospitals, and other authorized health stakeholders together into an electronic data network. It provides authorized health professionals with a comprehensive public health-focused documentation approach, enables timely access to key client data and to communicable disease management and surveillance functions, and provides decision support tools designed to help
improve the delivery of public health services to Canadians. The Panorama Solution is organized into seven major components, in addition to the many Shared Services such as Client registration, Clinical Notes, Document Management, Reports Services: ◦ Communicable disease case management; ◦ Outbreak management; ◦ Immunization management; ◦ Family Health; ◦ Materials / vaccine inventory management; ◦ Notifications management; and ◦ Work management. Intense participation by public health professionals from every province and territory, and representing all business areas, in the development of Panorama has helped to ensure the design meets the needs of Canadian public health professionals. Panorama is available for use by all Canadian jurisdictions and is also being adopted in other countries around the world. This presentation will provide a practice application of this unique eHealth solution using immunization management as the nursing documentation focus. Examples from Canada and other international examples will be highlighted.

**Disclosure:** No significant relationships.

**Keywords:** Nursing documentation, public health, eHealth Solutions
Chapter 11 – ICT for Patients

1. Feasibility and acceptability of an interactive ICT-platform in older adults for participatory care.

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Background

The increasing ageing population puts demands on society and particularly on health care system to promote a health related quality of life. Thus, it is necessary to develop strategies that promote self-care among older adults that enable them to live in their own homes as long as possible and to make them feel safe and involved in their care. In order to encourage their participation in their care, new innovative solutions are needed. The market of information-and communication technology (ICT)-based platforms directed to the health care arena has exploded during recent years. Despite the large range of products few are developed with interactive components. In collaboration within a multicenter research group and a Swedish health care company (Health Navigator) an ICT-platform is developed for use in a mobile phone or tablet that includes an interactive mobile application for reporting problems and concerns. This platform is unique through
the real-time communication enabling rapid management of early-detected problems.

**Aim**

The aim with the project is to evaluate an ICT-platform by older adults living in own homes with assistance from home care nurses in a community in Sweden.

**Method**

The study is prospective and has a mixed methods approach advocated for the evaluation of new technologies within healthcare. This includes a quantitative approach to evaluate effects, qualitative methods such as interviews and focus group discussions to evaluate how patients and health care professionals perceive the intervention. The design is underpinned by the Medical Research Council’s complex intervention evaluation framework. Thirty older adults >65 years or above, living in their own homes, with assistance from home care nurses have through an application in a tablet reported health status twice a week and when needed during three months. They have continuous access to evidence based self-care advice directly related to their reported problems and concerns. The risk assessment model sends alarms to involved nurses via text messaging (SMS). This initiates an interaction between the nurse and the older adult who is contacted by telephone to discuss the reported problems. Furthermore, the nurses in charge can also log into a web-interface and view the reports of the participants. Individually interviews with the older adults and focus groups interviews with nurses are conducted after the study period. Questionnaires are given to the older adults.
before intervention, after the study’s completed and after six months with primarily main outcomes as self-care, health literacy and well-being. A control group with older adults 65 years and above is used as a comparison.

Results
Preliminary results will be presented with focus on feasibility, acceptability and benefit of the ICT-platform from the perspective of older adults and home care nurses. Additional logged data on the frequency of symptom reports, alerts, and page views will also be presented.

Summary
An interactive ICT-platform is developed and used by older adults to report problems and concerns which enabling rapid management of early-detected problems. This study aims to evaluate the ICT-platform by thirty older adults living in own home with assistance from home care nurses.

Disclosure: No significant relationships.
Keywords: ICT-platform, Nurses, Older adults
2. Patient participation in system development and use: is healthcare prepared for real action?

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Aims and objective
The aim was to develop insights into involving adult patients and parents of children with disabilities in system testing of a web-based system for individual care planning (ICP). Governed by Norwegian law, ICP is an approach to integrated care intended to increase care efficacy, patient satisfaction and patient safety and satisfaction. A hospital trust and a software vendor conducted system development and testing of a web-based tool (e-ICP) for such planning. The purpose was to ease multidisciplinary and cross-sector collaboration between care professionals and patients in care planning, achieving improvements through the replacement of existing paper-based systems for documenting and communicating care plans.

Methods
We distributed an invitation to participate in ICP system testing to adult patients with severe psychiatric illness and parents of child patients with various disabilities who were entitled to an ICP. Each participating patient or parent had his or her own responsibility group. We established 76 responsibility groups in five municipalities. Each group had a suitable number of care professionals from municipal and hospital care. We used
participatory design (PD) as a method for system testing. Data were collected during the 30-month testing period, comprising both field notes and semi-structured interviews with patients and parents. The chosen analysis model for the collected data was systematic text condensation (STC).

Results

We found that patients and parents involved took either a proactive or a reluctant role in testing. Patients who were active in their care planning provided many suggestions for system development and contributed substantially to system improvement. These proactive users made everyday care planning work by using the e-ICP tool even if care providers did not perform their planning tasks. System access and the availability of information and collaboration together with the users’ own capacity or willingness to conduct the planning made planning work. Patients and parents who were involved in testing had both common and varying needs related to a web-based solution. They also had a variety of previous experiences from health care services that influenced their expectations of a web-based tool for care planning. Their first concern was to gain a tool for knowledge and information retrieval; second, they saw potential for communication and collaboration with the health care services. Finally, the solution could support coping with daily life.

Conclusion

Patient participation in system testing through a PD approach provided valuable insight for further system development and improvement. Adult patients and parents who participated in the
study were a heterogeneous group, providing different insights and expectations that helped to improve the e-ICP solution. They demanded flexible solutions to meet their needs. We also found that equal access to patient documentation and communication between patients and care professionals challenged the user-professional relationship. This may be seen as a step towards patient empowerment. It is also a sign of a change from health care service ownership towards patient ownership in patient documentation. More research is needed to examine possible consequences of such power transition.

Disclosure: No significant relationships.

Keywords: Individual care plan, Integrated care, Participatory design, Norway

3. Can sensors strengthen the assessment of behavioural and psychological symptoms in dementia?

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Clinical assessment of Behavioral and Psychological Symptoms in Dementia (BPSD) in advanced stages of dementia is often based on staff member’s observations and the use of the instrument Neuropsychiatric Inventory (NPI-NH). The main challenge when
performing the clinical assessment is the validity of the observations. Structured information from electronic sensors, measuring patterns of behavior as sleep, physical activity and stress may contribute to overcome these problems by providing relevant accurate information on patterns of behavior. The session presents a study coming from the FP7 EU funded research project “Dem@Care”. The presentation focus on a study conducted in the nursing home setting where the impact and feasibility of using the information from sleep sensors, sensors of activity and sensors of stress, in the clinical assessments based on the NPI-NH instrument.

**Introduction**

In Sweden, as in other parts of the world where elderly people represent a growing part of the population, dementia constitutes a major public health problem. Estimations show that there are 35.6 million people with dementia worldwide and this number increases each year with 7.7 million newly affected persons. The total number of people with dementia is estimated to nearly double every 20 years, to 65.7 million in 2030 (World Health Organization, 2012). The cost of dementia care is high and related to dementia severity as well as the presence of BPSD (Jönsson et al., 2006). BPSD are common and affect more than 90% during the course of the disease (Bergh, Engedal, Røen & Selbæk, 2011; Lyketsos et al., 2002; Zwijsen et al., 2014). Supporting people with BPSD is from a nursing perspective a major and complex challenge that includes understanding and assessing the persons’ needs, and then provides adequate support.
A structured approach to assess BPSD is to use the Neuropsychiatric Inventory (NPI), which is a care provider based instrument developed to assess neuropsychiatric symptoms in people with dementia. It is thoroughly validated and internationally widely used instrument. A special version of NPI for people living in nursing homes has been developed, the NPI-NH (Cummings et al., 1994; Cummings & McPherson, 2001). When assessing BPSD, the staff’s ability to observe and provide validated information is of particular importance as it is often the staff who report behaviors to determine the need for medication and the effect of interventions. However, it is difficult even for professional care staff to understand the needs of the person with dementia whose verbal communication has been impaired (Holst & Hallberg, 2003).

There are several projects that aim to develop digital assistive technology and sensors to provide individualised and person-centred care for elderly with cognitive impairment. The common approach is to monitor, communicate and give meaningful feedback on relevant situations, conditions and activities of the users. Examples of technologies used to support people with dementia in their homes include floor alarms, door alarms, security alarms, GPS (Miskelly, 2001) and video calls communication between family members and people with dementia (Sävenstedt, Brulin & Sandman, 2003). There is, however, limited research that has studied the usage of sensors in nursing homes in a later stage of the disease and in relation to BPSD. The aim is therefore to test the
impact of using sensorised information in the assessment of people with BPSD living in nursing homes.

**Design**

Dem@Care (www.demcare.eu) is an ongoing project where multiple sensors are used to contribute relevant information to the systematic assessment and monitoring of people with BPSD in nursing homes. The sensors that are used in this project are actigraphy; galvanic skin conductance; and sleep pattern sensor. The included sensors measure physical activity, stress and sleep pattern and will in the Dem@Care project be tested and validated against the domains of the NPI-NH instrument and other relevant instruments. There will be both wearable sensors and sensors placed in the participant’s room.

**Method**

The study has a design of a comparative study and is conducted with one intervention group and one control group. Participants in the study are recruited from people with BPSD living in nursing homes where the staff members are trained and familiar with using the NPI-NH instrument in their daily work when assessing symptoms and evaluating care intervention for people with BPSD. The study is carried out in northern Sweden where residents from two units serves as an intervention group and are equipped with sensors for monitoring patterns of sleep, physical activity and stress. Participants residing in two similar units serve as control. The structured assessments involves a process of NPI-NH assessment, analysis of problem, interventions, and evaluation of the results, which is carried out at the beginning, in the middle and
at the end of a two month’s cycle. In the intervention group nursing staff gains access to sensor data that focuses on sleep patterns, physical activity, and stress when they are assessing BPSD with NPI-NH. The control group does not gain access to sensor data when assessing with NPI-NH.

The hypothesis is that the use of sensor data on sleep patterns, physical activity and stress in clinical assessments performed with the assistance of the NPI-NH will have an impact on the quality of the assessment and as a consequence of that also on the level and duration of BPSD. Power calculations show that in order to have a probability of 80% to reach a 9 points difference in the comparison of score in the NPI-NH (Kaufer, Cummings & Christine, 1996), the minimum size of the group must be 32 participants. In total 32 individuals are estimated to be included in both the intervention and control group, a total of 64 people during the time period of 2 years. Qualitative data is also collected in the form of audio recordings during the assessment. The focus in the analysis is on the pattern of change of total scores and on the scores of the different elements of the NPI-NH instruments over the time period of the trial. The impact will also be analysed in the verbal discussions during the assessment.

**Preliminary results and conclusion**

Preliminary results show that sensors can provide meaningful information that can be useful in the assessment process of people with BPSD. The results indicate that access to sensor information on patterns of sleep, physical activity and stress can have an impact on the quality of the clinical assessment process for people with
BPSD and on the evaluation of care interventions. The understanding of patterns of behavior can improve and as a consequence the efficiency of care interventions. The results suggest that the process of assessing BPSD, using proper interventions and evaluating them can be improved by adding structured sensor information on patterns of sleep, physical activity, and stress.

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Disclosure: No significant relationships.

Keywords: dementia, BPSD, sensors, Nursing, Intervention
4. COPD patients most vulnerable to the deterioration of health condition.

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**Introduction**

In recent decades the development of knowledge and technology applied to health have improved diagnosis, treatment and control of disease progression, leading to increased prevalence of chronic diseases, increased life expectancy and the aging population in developed countries. The control of the progression of chronic diseases and the maintenance of health status, independence in self-care and quality of life are closely associated with the skills of patients to self-care management. The self-care management is a dynamic and continuous process of self-regulation, which is inherent in self-care (OREM, 1993) of each patient in a chronic health condition, which implies the need for the patient to adopt new behaviors and develop cognitive and instrumental skills to self-control symptoms, the treatment regimen, the physical, emotional and social consequences of the disease (Padilha, 2013).

Often chronic diseases and chronic obstructive pulmonary disease (COPD) in particular, imply the adoption of a treatment regimen that can be perceived as complex by the patient. The concept of complex treatment regimen (ICN, 2011) refers to a disease
treatment program which has challenges for patients in their integration with fluency and mastery (Meleis, 2000) in everyday life (Padilha, 2013). This treatment program includes pharmacological and non-pharmacological components, which are intended to the treatment or prevention of disease and the maintenance or restoration of autonomy in self-care activities, and which is perceived by the patient as a challenge, for which can not gather the necessary skills to face him at a certain point (Padilha, 2013). The challenges that patients with chronic disease and complex therapeutic regimens face in daily, expose them to the vulnerability (Meleis, 2000), which makes them more susceptible to disease progression and the consequent deterioration of health condition and leads to increased use of health care resources. The complexity of the therapeutic regimen is a contributing factor to ineffective self-management (Eiliot & O’Callaghan, 2011) of health condition. This can negatively influence the level of health, quality of life, and the direct and indirect costs of health care. COPD by insidious form of its progression has local and systemic effects that negatively influences the energy available to the patient achieve the activities of self-care. The reduction of the available energy to achieve the self-care actions can generate deficit in self-care, which can be compensated by the action of nurses. Patients with COPD are challenged to develop skills in self-care domain to maintain autonomy in self-care, monitoring of disease progression and quality of life. The local and systemic effects on the body processes of COPD progression, associated with aging, often lead to the existence of multi comorbidities that pose the biggest
challenges to patients, families and the health system. Insufficient skills to self-manage the therapeutic regimen is one of the competing factors for exacerbations of COPD (GOLD, 2014) and consequently to greater use of emergency services and hospital admissions.

Objective: Contribute to the continuous improvement of quality of care through the development of a more systematic intervention by nurses in promoting self-care management in patients with COPD in the hospital, through the characterization of the hospitalized patients who did not use outpatient nursing consultation for patients with COPD.

Materials and Methods
This study was part of a broader path of Action Research, where a constructivist approach was used. We used a quantitative approach to collect and analyze data from the NIS in use. The study took place in an inpatient service, attended by 46 patients with a diagnosis of COPD, who had at least one episode of hospitalization in the period between September 2010 and February 2011. We used the following inclusion criteria: patients admitted with a diagnosis of COPD; with cognitive ability to learn and who agreed to participate. The study was conducted in a medical inpatient service of a Portuguese central hospital. The data were provided by the information systems service of the hospital.

Results/Discussion
Participated in this study 46 patients, 30 males and 16 females. Patients had an average of 70 years (Med.:71; MO.:81; SD±10.08; Min.: 47; Max.:85), and had an average of 1.24 episodes of
hospitalization (Med.:1; MO.:1; SD±0.43; Min.:1; Max.:2), with an average stay of 13.6 days (Med.:11.5; MO.:9; SD±7.88; Min.:3; Max.:36). These patients have an average of 46.42% FEV₁ (Med.:46.05; MO.:45; SD±15.7), which indicates a "severe" disease condition (Gold, 2014), and 78.2% (n=36) have associated comorbidities, being the cardiovascular disorders the most common. Regarding the education of patients, we found that 8.7% had not attended the education system, 69.6% had schooling of 4 years and the remaining more. Eleven of these patients lived alone and 14 had low economic resources, 8 patients referred simultaneously live alone and have low economic resources.

With regard to tobacco consumption, 9.2% had smoking assets. Patients with active smoking were on average younger than the others (average:64.4; Med.:60; MO.:47; SD±14.6; Min.:47; Max.:85).

Regarding to nursing care needs 91.9% (n=34) of this patients had dependence of individuals and 8.1% (n=3) dependence on resources to achieve some self-care activities. These data show the strong impact of the disease on the body processes and the challenges that these patients experience to preserve the autonomy and quality of life. All of these patients returned to domicile after admission in this period. Upon returning home 93.5% of patients had nursing care needs in the area of self-care management, having been sent (after agreement) to the nursing consultation in the hospital. Of patients referred for hospital nursing consultation, only 39.5% attended it, the remaining 60.5% justified the lack of consultation with the inability to move, the lack of economic resources and significant others to follow.
We emphasize that identified patients (n=46) had 104 admissions (average:2.26;Med.:2;MO.:1;SD±1.58;Min.:1;Max.:7) and 215 episodes feature the emergency department (average:5.1;Med.:3.5;MO.:2;SD±4.61;Min.:1; Max.:21) for the period from September 1, 2010 and February 29, 2012. Patients with more hospitalizations and episodes of use of the emergency service had attitudes that hindered the development of an effective self-care management (management styles of the therapeutic regimen of "abandoned" type) (Backman, & Hentinen K, M, 1999) and had low self-efficacy perception to manage the therapeutic regimen.

We identified as being most vulnerable patients who: live alone; report low economic resources; have management styles of the therapeutic regimen such as "abandoned"; have low self-efficacy perception for self-care management; and have greater difficulty of develop skills to manage therapeutic regimen. The data presented reflect the challenge that patients with COPD experience from day to day and the need to develop new monitoring solutions that meet their daily needs. In particular, we found that regardless of a more systematic action of nurses in the hospital, monitoring of these patients requires the use of better multidisciplinary solutions that enable the effective monitoring of these patients at home.

**References**


Disclosure: No significant relationships.

Keywords: COPD, Self - management, Self - Care, Nursing Diagnosis
5. Aging in place: people’s perceptions of aging in place whilst living in remote areas.

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Introduction
This study was conducted within the RemoDem project; the transnational collaboration involving partners in Scotland, Sweden, Norway, Faroe Islands, and Greenland. A common theme among these countries is that they all have remote areas where the access of specialist health and care services is considered as challenging. For people living in remote areas the long distances to urban locations where services or professionals are based is both time-consuming and expensive. For people who are aging and for people with dementia, who need to access qualified health professionals, the long distances is considered as a problem in everyday life. To meet this challenge, the RemoDem project is aimed at studying and develop support which allows people to continue living in their current homes and aging in place (RemoDem, 2015). In this study, which was carried out in the north of Sweden, we asked healthy older people in remote communities in northern Sweden reason about aging in place related to dementia.

Background
Today the north of Sweden can be said to be in a process of change. The former active communities mainly dependent on agriculture and forestry are changing in to communities where in many cases
almost all people are in the age of retirement. For policy makers in northern Sweden, ‘ageing in place’ has been a key component of the policy on older people and housing. Supporting older people to ‘age in place’ at home is seen to benefit the quality of life and also provide a cost-effective solution related to an expanding population of very old people (Sixsmith & Sixsmith, 2008).

When asked, older people themselves often express a positive attitude to the concept ‘aging in place’, and according to Wiles et al. (2012) who studied older people’s perceptions of the concept, older people said that aging in place gave a sense of security and familiarity. Meanwhile the vulnerability of older people in declining rural communities is said to lie in risks of loneliness and isolation. In a population study among older people in Finland it was shown that loneliness was more common among rural elderly people than among those living in cities (Savikko et al., 2005). Issues of safety and security in navigating in the outdoor environment in the community and accessibility to support to improve the safety and security was shown by Keady et al. (2012) to be of importance and similar idea was described by Blackman et al. (2003) who put forward the possibility of creating a dementia friendly community. Research has shown that the use of assistive technology (AT) can improve the perceived ability to perform everyday activities for people ageing with disabilities as well as increased feelings of safety (Gitlin, Winter, Dennis, Corcoran, Schinfeld, & Hauck, 2006; Petersson, Kottorp, Bergström, & Lilja, 2009; Scherer, 2005). Living with dementia in rural and remote communities reveals that there often exist a discrepancy between a common view of the rural
idyll and the challenges of aging in place. There is a general lack of knowledge on challenges related to aging in place, dementia and receiving support services in remote areas (Blackstock, et al., 2006). Remote areas in the north of Sweden are changing from active communities into communities consisting of a majority of older people. The challenge lies within the possibility of being able to provide relevant and optimal support services. The aim of this study is therefore to describe how healthy older people in remote and rural communities in northern Sweden reason about aging in place related to dementia.

Method
To gain first-hand knowledge concerning people’s perceptions on aging whilst living in remote areas we conducted a qualitative designed study. Group interviews with participants from different selected communities in northern Sweden were performed, and analyzed with thematic content analysis. The study took place in small villages in two sparsely populated remote municipalities of northern Sweden. The general trend in the area is that the populations of the small remote communities’ decreases and most service facilities are concentrated in a central urban location. In this study the two municipalities consisted of a central urban setting and many small remote villages that administratively were grouped together. The general demographics of the area show that about 30 percent of the population is above 65 years of age. Social service support was accessible but the distance to the primary health care facilities were often 40-50 km. In the recruitment of participants key informants in each municipality were asked to
identify active community groups in the different villages. The leader of nine groups was contacted and informed about the study and invited to participate. Four groups in each municipality gave their informed consent to participate. The criterion for participating was elderly healthy people, living in remote areas, willing to share their experiences. Totally 28 women and 20 men, aged 58-90 years (Md=72 years, M=72.56 years), participated. Eight group interviews (cf. Patton, 2002) were conducted during December 2013. The interviews took place at the local community centers except of one that took place in two of the participants’ home. The interviews started with a reading of a vignette describing two cases related to aging in place and then the discussion was preceded. The interviews were guided first to focus on the participants’ general experience of aging in place related to dementia and was then continued with the question: What is your thought whether it was you living with dementia in this kind of situations in the context of a remote area. The interviews lasted between 90-120 minutes and were digitally recorded and later transcribed verbatim. In the analysis the entire text was used. The text was read several times in order to get a sense of the whole and later divided into meaning units. The meaning units were condensed and sorted in categories according to similarities and differences, and then formulated in themes (cf. Patton, 2002). To ensure trustworthiness, the analysis process was stored in NVivo 9 which supports the control of the data and provides an audit trail in every step of the analysis. The study was approved by a Regional Ethical Review Board. Written and oral information about the
study were given and the participants gave both verbally and written informed consent and the participation were voluntary.

Results

The overall impression is that the participants have concerns about having access to the public funding and an equal distribution of community services. It can be understood as if the guarding of personal integrity and receiving a diagnosis is interconnected due to not being abandoned in the community. In the discussions participants pointed out the value of being able to live in their own homes as long as possible and technical devices was considered as a way of being able to live a good life and feeling safe.

The remote areas where discussed as neglected in comparison with urban areas and the depopulation as well as an increasing population of elderly was discussed as an ever present matter. The participants discussed economic incitements as a superior matter and their concern about the future care was evident. In the group discussions participants expressed concerns about establishing an unworthy system where the care does not manage to target human needs and support individuals. In the discussions participants pointed out the value of being able to live in their own homes as long as possible and technical devices was considered as a way of being able to live a good life and feeling safe. Technical devices was seen as a way to being able to continue with interests and daily activities, getting access to nature surroundings and being part of the community. A technical device such as a GPS was given as an example which could provide safety both for persons with dementia and their relatives. In contrast the participants were also
expressing concerns related to technical devices as an intrusion of the private space, and there was a fear in being monitored and loosing human contact by replacing staff with technical devices. In the group discussions there where reasoning about the importance in viewing the support of elderly persons with dementia as a common cause in the community. Although the discussions showed that the participants described that no one is ever alone in a small community there were simultaneously concerns about the fact that spontaneous visits among neighbors was declining. Loneliness was discussed as troublesome both from the perspective of being a close relative caring for a person living with dementia but also from a personal perspective of being alone and growing old.

**Discussion and concluding remarks**

The overall impression is that healthy elderly people have concerns about gaining access to the public funding on an equal distribution of community resources due to living in sparsely populated remote areas. It seems like there is a value in being able to live at home as long as possible and technical devices was considered as a way of being able to live a good life and feeling safe. The result indicates that people are concerned with not being abandoned and lonely in the community. The issue of loneliness relates to a multitude of aspects which correlates with the stigma of dementia in itself (Innes, Morgan and Kostineuk, 2011). Technical devices was here seen as a way to being able to continue with interests and daily activities, getting access to nature surroundings and being part of the community. According to Innes et al. (2006) there is a neglect related to the dementia service in remote areas. The difficulties of
providing sufficient services related to distance, cost of services and shortage of relevant staff.

References


6. Technological literacy and information needs of people with diabetes: potential uses of ICT.

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Summary
This original research paper reports how we can develop ICT strategies in healthcare, has an opportunity for information access, to help person with diabetes and their families to become more
independent and confident in dealing with this disease in their day-to-day.

**Background**

The development of new ICT in healthcare have provided, to the general public, an opportunity to access to timely health information updated and relevant, which can improve the efficiency and effectiveness of health care. However, remain unanswered to important empirical issues at all levels, about how effective are these technology resources and how people actually use them.

Portugal is no exception to this reality. The latest results from LINI (2010), Obercom (2012) and INE (2013) show us that the new technologies are already part of the reality of Portuguese households and the demand for information is one of the activities carried out on the Internet that has been growing. These reports show that the population between 16 and 74 years has seen a greater increase in the use of the internet to access health information, currently 45% of this population seeks or has sought health information on the Internet (INE, 2013). However, some studies demonstrated that a large number of people living with a chronic illness still remain offline in an increasingly online world. There are several studies that indicate that people with chronic diseases and with low literacy in health, have a poorer level of health, lower adherence to therapeutic regime and, consequently, greater use of health services, which entails extra costs (Spain, 2013; Kanavos, Van der Aardweg and Schurer, 2012; IDF, 2011; Fox and Purcell, 2010; Boren, 2009).
The question that arises focuses on how information targeted to specific contexts, particularly for people with chronic diseases and low health literacy that need information to help them to live with this situation, with better quality of life.

Diabetes is one of this chronic diseases, which in the last century, has become a serious global public health problem, either by the number of people affected, either by the high mortality and morbidity. Costs and personal suffering related to late complications cannot be quantified, however, the economic costs of this disease are currently a significant proportion of spending on health of a country.

Living with Diabetes goes far beyond the framework of the disease and its pharmacological treatment. Education can improve knowledge about the disease, the perception of positive and negative factors of its development, the adherence to the therapeutic regimen, including medication regimen, and the disease control programs, relevant aspects to the overall reduction of costs and improvement quality of life. Access to information by the person with diabetes and their families can help them to become more independent and confident in dealing with this disease in their day-to-day.

One of the focus areas of educational technology is the ability to build interactive components to help health professionals in the educational process, and citizens in learning. These interactive educational technologies can be important resources to provide educational content aimed at the citizen, by the need to structure programs that are in line with the realities and needs of the target
audience. The efficiency of education can be enhanced when, in addition to the technological aspects, is behind a planned communication strategies, with appropriate educational content and a compatible communication style.

**Aim**

To identify the potential of ICT for people with diabetes listed in National Programme for Diabetes Control in Family Health Units of Local Health Unity of Matosinhos, in a strategic context to develop educational content mediated by the needs and technological literacy level of the target population, considering the person's ability to access, understand and act when confronted with aspects related to health information.

**Materials and Methods**

We conducted an exploratory, cross-sectional descriptive study with a quantitative approach. The sample included 388 patients with diabetes who were listed in the National Diabetes Control Program in the ULSM Health Centers, from a random sample of the population (with a tolerable sample error of 5%), with dial-up, based on the following stratification criteria: Family Health Unit, age and gender.

Data was collected from a survey, based on technology acceptance model (Davis, 1989) and the perception of ease of use theoretical model of Venkatesh (2000), applied through telephone contact.

**Results**

The sample consists of 388 patients, 53.4% female, with a mean age of 65.7 years (standard deviation±12.4; Mode=65; Median=67; Min=15 years and max=92 years). Concerning the level of
education, 6.2% patients has no schooling, more than half of the participants (52.3 %) completed only the first cycle of basic education, and only 9.8% completed higher education.

For the overall characterization of technological literacy four variables were used:
1) ability to use the telephone/mobile phone; 2) ability to use SMS/Email; 3) ability to use the video/DVD; and 4) ability to use the Internet. These variables were assessed on a Likert scale of four points: 1 - A lot of difficulty; 2 - Some difficulty; 3 - No difficulty and 4 - Much Facility. The mean value of technological literacy was 2.90 (SD ± 0.70; Mo = 3; Med = 3; Max. = 4; Min. = 1). The data presented allow to know the potential use of these technologies in the access of health information.

The results show us that the male participants with lower age and more schooling are participants with a higher technological literacy and greater literacy in health. In addition, it was found that participants who reported not having other complications associated with DM, have greater technological literacy, but lower health literacy, except as regards the knowledge of the drug regimen. The DM post-diagnosis time influences the technological literacy, but negatively. Another factor to consider is that patient with “medication regimen: insulin” has greater technological literacy and greater literacy in health of all participating groups.

From the results obtained it was found that people over age and less education are those with less technological literacy, limited access to information resources, as well as less use of those members associated with a higher difficulty of use. They also
presented lower intention of using ICT and make fewer demands of health information on the Internet. At the same time these participants showed more information needs and less health literacy. Younger participants and with high level of education preferred the use of electronic resources (Internet and email) as a source of health information.

For the characterization of the overall health literacy we used variables that evaluate the perception about the quality of the available information in the following categories: 1) knowledge about diabetes; 2) knowledge of the drug regimen; 3) behaviors to be integrated into everyday life; and 4) community resources. These variables that constitute each of the categories were evaluated in a four-point Likert scale: 1 - Poor; 2 - Fair; 3 - Good; 4 Very good. The average of Literacy in Health was 2.62 (SD ± 0.345; Mo = 2.75; Med = 2.75; Max. = 3.25; Min. = 1.7). The data presented allow to understand the perception that participants have about the quality of information available to them.

Regarding the evaluation of the quality of information available to them (very good/good/fair or poor) being able to give answers along the process of health/disease, it was found that the category relative to community resources is the one that gets worse score ("fair"), while in all other categories the participants qualified the information held by them as good. However, in all categories of the management of Diabetes, about one third of the participants described their information as “fair or poor”, what matters from the point of view of developing resources that provide information targeted to these specific contexts.
The evaluation of the potential user shows to be a highly useful for the development of information resources made available in line with technological literacy and appropriate to the information needs of people.

Towards the demand of health information on the Internet we saw that the male participants, younger and with high level of education referred the use of this technological resource in the access of health information. At the same time, these participants are those who show greater intention to use the Internet and text message devices (email and SMS) to access information about their health condition. The medication regime returns to play a decisive role, since only patients who use oral antidiabetic medication for the control of diabetes are who seek less health information on the Internet and who manifest no intention of using either the Internet or the devices writing messages to access health information.

Conclusions
The individual's intention for the use of ICT, according to the acceptance model Davis technology can be influenced by the perceived usefulness and the perceived ease of use. In this study, perceived usefulness has a more significant relationship with the effective use of ICT than the perceived ease of use. This premise of perceived usefulness is the basis of intention to use showed by the participants in using different technologies for access to information on how to deal with diabetes. Although only 28.9% of the participants referred that know how to use the Internet, when we asked them about the intention to use the Internet platform to make available information on how to deal with the diabetes, it was
observed that 39.4% of participants showed intent to use this technological tool, with an increase of over 10%, which can be justified by the perceived usefulness that participants have about the use of this tool.

The results of this study pointed out that people with chronic disease, which is associated with older age, are actually offline, in a society that has in the information one of its most important resources and in the Internet one of the most promising vehicles which facilitate the access to this information. The non-use of this technological tools that make the access to health information at one-click access, can lead to a worse level of health, a lower adherence to therapeutic regime and consequently greater use of health services.

References


**Disclosure:** No significant relationships.

**Keywords:** Technology Literacy, Health Literacy, Diabetes, Information and Communication Technologies.
7. The utilization and applicability of the nursing intervention *parents education: infant* in Turkish care settings by Turkish nurses.

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**Introduction**

Nursing Interventions Classifying System (NIC) is important for the purposes of to build up a common language on nurse care plans and permanency of care. Use of present nursing interventions provides the opportunity of forming practice standards across the world, communicate it at international level, certification, communication and continuity of care. For this reason, arguing the performing limitations of interventions included NIC in different countries and care environments could provide development of nursing practice, evaluating the scope of nursing service and sustaining of society’s care requirements.

When standardized nursing language is used universally, nursing documentation across healthcare facilities will be comparable. This will mean better communication among nurses and between nurses and patients, improving the quality and continuity of care for patients. As patients move along the healthcare continuum, there will be a standardized way to communicate nurses' plans for their
patients and the results (outcomes) expected and obtained. Use of standardized languages will ensure that nursing has a presence in the computerized patient record. This is important, since it will facilitate an evaluation of the effectiveness of nursing care in achieving patient outcomes, as well as provide a basis for reimbursement for care provided by nurses.

“Parent education: Infant” is nursing intervention in NIC with its definition of “instruction on nurturing and physical care needed during the first year of life”. Nurses work in the field of pediatric and community health could use this intervention commonly. In Turkey, while the health system is changing very rapidly without a declared nursing manpower plan, most of the nurses works in acute hospitals and there is an underemployment in community health field, this care needs of parents could be disregarded and unmet.

**Purpose**

This cross-sectional study was planned to describe the utilization and opinions on applicability of nursing intervention of “Parent education: Infant” of nurses works in pediatric services in Turkey.

**Method**

Data were collected by a questionnaire form included two parts prepared by researchers. First part was consisted of questions about working and socio-demographic characteristics of nurses. Second part was included 3-point likert scale questionnaire which consisted of the activities of “Parent education: Infant” Intervention and aimed to measure the practicability and usability of activity. The applicability of intervention and its 40 activities was
evaluated as “1=not at all appropriate, 2=I’m not sure 3=very appropriate; Then the utilization / performing status of Intervention/activity is evaluated as “1=I have never used, 2=I used few, 3= Used various times/still using”.

A pilot study carried out with 10 nurses to assess the understandability and applicability of the questionare. Then, the forms attached to an e-mail included explanation about purpose and methods of study, and deadline for response had been sent to participants. Questions on by who it was issued and how it will be used were explained on the front page of the questionnaire and the fill out has been accepted as consent. After three week second e mail sended as reminder.

The data questionnaires were sent to pediatric nurses registered in the official database of pediatric nurse association via e-mail and to nurses without a membership to the association the questionnaire was delivered by uploading it to the website www.surveey.com. In order to increase participation to the study, announcements were made on social network that used by nurses. Feedbacks have been obtained via e-mail and from the result section of the website. At the same time questionnaires were delivered to some nurses via mail. The study participation was based on volunteerism. Thus, the properly filled out questionnaires by 195 out of 218 pediatric nurses constituted the sample of the study. (23 forms with missed data were excluded from the study)

In the data evaluation process, activities which were evaluated as “very applicable” by more than 90% of nurses, was considered as “the most appropriate” activities. Regarding the use of these
activities, activities which were not used by 25% or more nurses was discussed as “least used activities” and activities, used by 50% or more as “most used activities”.

Data analysis was performed using the Statistical Package Program for the Social Sciences (SPSS 17.0). The data was evaluated by using frequency and percentage distributions were used in the study.

Results
93.3% (n=182) of pediatric nurses that participated in the study were female and their average age was 30.96±7.931. 40.5% (n=79) of nurses had bachelor’s degree and 12.8% (n=25) had their master’s degree. 34.9% of participants work in the pediatric services and 27.2% in the baby room. 51.3% of nurses work as pediatric nurse for 1-5 years, 27.7% for 6-10 years and 21% for more than 11 years. 85.1% (n=166) of nurses reported that they had a check-list on which they control their applied care practices. While 19.5% of these nurses stated that they found this form sufficient, 51.5% found it partially sufficient and 13.8% found insufficient.
Table 1. The Most and Least applicable activities of “Parent education: Infant” intervention according to nurses

<table>
<thead>
<tr>
<th>Activity/ Intervention Activities of “Parent education: Infant”</th>
<th>Opinion about applicability of activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very applicable</td>
</tr>
<tr>
<td>Instruct parent(s) on how to treat and prevent diaper rash</td>
<td>91.8</td>
</tr>
<tr>
<td>Demonstrate ways in which parent(s) can stimulate infant’s development</td>
<td>92.3</td>
</tr>
<tr>
<td>Reinforce parent(s)’ ability to apply teaching to child care skills</td>
<td>90.8</td>
</tr>
<tr>
<td>Provide information on newborn behavioral characteristics</td>
<td>92.8</td>
</tr>
<tr>
<td>Monitor parent skill in recognizing the infant’s physiological needs</td>
<td>90.8</td>
</tr>
<tr>
<td>Reinforce caregiver role behaviors</td>
<td>90.3</td>
</tr>
<tr>
<td>Provide parent(s) with information about making home environment safe for infant</td>
<td>90.8</td>
</tr>
</tbody>
</table>

After having analyzed the usage of “Parent education: Infant” intervention activities, it was determined that most of these activities were evaluated as “very appropriate” by 71.3-92.8% of nurses. It was reported that the activities, which were seen as the most appropriate by nurses, participated in the study are “Instruct
parent(s) on how to treat and prevent diaper rash” (91.8%), “Demonstrate ways in which parent(s) can stimulate infant’s development” (92.3%), “Reinforce parent(s)’ ability to apply teaching to child care skills” (90.8%), “Provide information on newborn behavioral characteristics” (92.8%), “Monitor parent skill in recognizing the infant’s physiological needs” (90.8%), “Reinforce caregiver role behaviors” (90.3%), “Provide parent(s) with information about making home environment safe for infant” (90.8). It is remarkable that the activities, which were deemed by nurses as most appropriate for use are generally activities regarding the support of parenting role in meeting the physical and safety requirements of the baby.

It is seen that the least used activities (25 % or more) by participant nurses in the study, are “Encourage parent(s) to attend parenting classes” (36.9%), “Instruct parent(s) on appropriate fluoride supplementation” (34.9%), “Place follow-up telephone call 1-2 weeks after encounter” (32.8%), “Discuss alternatives to a bedtime bottle to prevent nursing bottle caries” (28.7%), “Provide information about safety needs of infant while in a motor vehicle” (27.2%), “Provide parent(s) with written materials appropriate to identified knowledge needs” (26.7%), “Provide anticipatory guidance about changing elimination patterns during the first year” (25.1%).
**Table 2.** The Least used activities of nursing intervention “Parent education: Infant” by nurses

<table>
<thead>
<tr>
<th>Activity/ Intervention</th>
<th>Utilization of the activity</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never used</td>
<td>Sometime used</td>
<td>Frequent used</td>
</tr>
<tr>
<td>Encourage parent(s) to attend parenting classes</td>
<td>36.9</td>
<td>34.9</td>
<td>28.2</td>
</tr>
<tr>
<td>Instruct parent(s) on appropriate fluoride supplementation</td>
<td>34.9</td>
<td>43.1</td>
<td>22.1</td>
</tr>
<tr>
<td>Place follow-up telephone call 1-2 weeks after encounter</td>
<td>32.8</td>
<td>36.9</td>
<td>30.3</td>
</tr>
<tr>
<td>Discuss alternatives to a bedtime bottle to prevent nursing bottle caries</td>
<td>28.7</td>
<td>38.5</td>
<td>32.8</td>
</tr>
<tr>
<td>Provide information about safety needs of infant while in a motor vehicle</td>
<td>27.2</td>
<td>32.8</td>
<td>40.0</td>
</tr>
<tr>
<td>Provide parent(s) with written materials appropriate to identified knowledge needs</td>
<td>26.7</td>
<td>42.6</td>
<td>30.8</td>
</tr>
<tr>
<td>Provide anticipatory guidance about changing elimination patterns during the first year</td>
<td>25.1</td>
<td>42.1</td>
<td>32.8</td>
</tr>
</tbody>
</table>

The politics and unaweeness about the floroid usage in our country and lack of expectation from nurses as a legally and institutionally related with this issue could be a reason of underusing (34.9%) the
activity of “Instruct parent(s) on appropriate fluoride supplementation”. It is required that the nurses and the other health care professions should be apprehend the importance of fluoride for dental care and should provide necessary information to the patient/parents in this regard. Accordingly, the project has been initiated by Ministry of Health in Turkey in order to increase the usage of fluoride. The first steps of project was taken with prepared "fluoride application guide". In the same way, it is remarkable that the usage of “Encourage parent(s) to attend parenting classes” activity by nurses is less (36.9%). This result can be explained as "parent classes" are not common in Turkey.

It is determined that the activities, which were mostly used (50% or more) by nurses, who participated in the study “Provide information on newborn behavioral characteristics” (56.4%), “Monitor parent skill in recognizing the infant’s physiological needs” (53.8%), “Reinforce caregiver role behaviors” (53.3%), “Provide parent(s) with information about making home environment safe for infant” (52.3%), “Reinforce parent(s)’ ability to apply teaching to child care skills” (51.3%), “Instruct parent(s) on how to treat and prevent diaper rash” (51.3%), “Demonstrate ways in which parent(s) can stimulate infant’s development” (50.3%)
Table 3. The most frequently used activities of nursing intervention “Parent education: Infant” by nurses

<table>
<thead>
<tr>
<th>Activity/ Intervention</th>
<th>Utilization of the activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never used</td>
</tr>
<tr>
<td>Provide information on newborn behavioral characteristics</td>
<td>10.3</td>
</tr>
<tr>
<td>Monitor parent skill in recognizing the infant’s physiological needs</td>
<td>15.4</td>
</tr>
<tr>
<td>Reinforce caregiver role behaviors</td>
<td>10.3</td>
</tr>
<tr>
<td>Provide parent(s) with information about making home environment safe for infant</td>
<td>17.9</td>
</tr>
<tr>
<td>Reinforce parent(s)’ ability to apply teaching to child care skills</td>
<td>14.9</td>
</tr>
<tr>
<td>Instruct parent(s) on how to treat and prevent diaper rash</td>
<td>16.4</td>
</tr>
<tr>
<td>Demonstrate ways in which parent(s) can stimulate infant’s development</td>
<td>13.8</td>
</tr>
</tbody>
</table>

Conclusion
When standardized nursing language is used universally, nursing practice across healthcare facilities would be comparable, deficiencies and problem areas in practice could be described, more
competent care provided to infants and their families. When deliberating the nursing intervention of “Parent education: Infant” in NIC, it is seen that this intervention reflects a family centered framework and holistic approach to nursing care of infants. Performing this NI and its activities competently, many potential problems of infant and family could be prevented. In this context, it is important that activities needed in the context of individualized care of infant and family should be well known and competently practiced by nurses. In this study, which deliberated to the utilization of the "Parent education: Infant" intervention, it can be said that the care activities, which were expressed by nurses as used at minimum levels, were the universal needs of infants. In other words, not applying these activities means not caring for these related needs of infants and families. The utilization of common language in the nursing practice may also provide international standardization in practice. Otherwise, the relative factors such as health care policy and expectations will be effective instead of professional values in the quality of nursing practice. The standardization of the nursing interventions in terms of the international standardization and consistency of care may affect the health services presentation in a positive way.

This is a pilot study related to the utilization of the nursing interventions in Turkey and it is considered that it would be a basis for the extensive studies.
References


Disclosure: No significant relationships.

Keywords: Nursing intervention, infant, parent
8. Nursing role and inter agency communication demonstrating requirements for future models of care.

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Timely access to health information to co-ordinate, and provide integrated patient centred care is essential for effective health care delivery. Defining requirements for care co-ordination and mapping of processes with emerging nursing roles ensures the approach to EHR development is clinically pragmatic. The potential for the profession of nursing in defining requirements for future eHealth delivery is significant. As the largest stakeholder group in healthcare delivery, nurses understand the clinical context, practice independently often assuming the role of patient advocate in addition to participating as part of the multidisciplinary team. This presentation illustrates a use case developed for discussion with key stakeholders in health service provision in Ireland. It provides evidence of the specific uniqueness that nursing provides in one area in Dublin and demonstrates how the profession manages nurse to nurse, and nurse to MDT inter agency communication to support front line care to older persons. This use case considers the journey from the perspective of an older persons discharge from acute services and the subsequent issues that arose which are managed by nurses to avoid hospital readmission. The document was developed as a Health Informatics
Society of Ireland Nursing and Midwifery Group (HISINM) deliverable, whose core mission is to establish a national profile for nursing and midwifery informatics in Ireland. The objectives of this use case were: To provide subject material to justify resource allocation on Subject Area Model(s) which involves nursing communication in Ireland. To improve the impact and cost effectiveness of the eHealth Strategy with a validated Subject Area Model which relates to nursing care and MDT communication with older person services. To inform the uptake of profiles for eHealth standards development in Ireland in accordance with the HSE ICT Strategy and EU CEN TC 215 Working Group 1. Five distinct nursing roles are identified in this Use Case Scenario; Community Interventions Team Nurse, Partnership Nurse, Community Liaison Nurse/Clinical Case Manager, Clinical Nurse Manager 3 and the Advanced Nurse Practitioner Role. This Use Case describes the complexity of inter-agency communication and highlights the dual role that nursing engages with independently and as part of a co-ordinated multi-disciplinary team. Key advantages which the aforementioned roles provide include; 1. Early detection of health issues requiring nursing interventions or referral to MDT. 2. Reduced length of stay in acute service. 3. Reduced readmission by early detection of health and social care issues. 4. Effective Medication Prescribing/Adjustment management. 5. Effective symptom management, patient education and patient advocacy. Future design and technology requirement specifications will be required to be cognisant of the various roles that nursing provides in health service provision. Determining what is core and what is
unique from the wide range of services and experiences that nursing engages with is critical for successful deployment of eHealth systems. Focused commitment by nursing on the design brief for future Electronic Health Records is necessary to safeguard the often subtle but critical role(s) that nursing provides. The report is available to download from the following link http://doras.dcu.ie/19996/1/Final_PARTNERS_Report_170614.pdf.

**Disclosure:** No significant relationships.

**Keywords:** Use Case, Nursing Role, Electronic Health Record

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For the last 30-40 years EMR has been on the agenda in healthcare. Then, why is it not the impressive success, that everybody wants it to be? Because the systems are created to deal administrative problems and not clinical problems.
Primarily the problem of hospital administration has been a problem of administering resources, so EMR software was focused on resources and not patient treatment and because it is basically useless to convert paper records to electronic records this area has been at a standstill.
What doctors need is a simple way to document the medical history and to document the results of treatment and to reuse these data in clinical quality assessments. This simple concept was “invented” in 1830 by Pierre-Charles-Alexander Louis ¹, to prove that bloodletting was dangerous to patients. This is not only valid today; it is the most important part of the doctor’s medical records.
He did this by establishing the time of onset of a group of patients with pneumonia, duration of disease and the frequency of death by
timing the first bloodletting. He found that bloodletting increased mortality by $3/7$ (44%). Despite his proof, bloodletting continued until the beginning of the 1900 century.

This basic concept is still true, but the way it’s done in the paper version cannot be translated to useable electronic records without a deep understanding of computers.

So, the basics are:

- Re-useable data
- A searchable medical history
- And a searchable results of treatment

That’s what doctors’ need; that’s what nurses need; that’s what hospitals need for continuing progress and improvement.

Pierre-Charles-Alexander Louis had his information on paper and used manual methods to extract the information he needed to visualize the problem.

We have our information on the computer and need new methods to extract this information.

Our information today is basically the same as that of Pierre-Charles. But he knew that 5 meant days after onset, that 38 meant years old and that information written on the first piece of paper belonged to patient number one etc.

The computer does not know this. So either we have to enter all the relevant information very time or we need an application that

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1 (Comment: I purposely use the concept of medical history rather than diagnosis, because medical history includes age, sex, comorbidities and many other factors that contribute.)
automatically allocates the number 38 with years, when the age is entered in the computer. Actually every piece of information we enter must be defined specifically so that, when queried the correct information can be retrieved. This is the purpose of archetypes. Archetypes 2) are defined entities that are defined down to the last thinkable piece of information.

As an example body temperature, a seemingly simple measurement.

If you do research on temperature measurement the following questions pop up.

- What is the clinical context? Fever monitoring, ovulation cycle monitoring, hypothermia?
- Where was the temperature measured? Mouth, axillary, skin, urinary catheter, nasal, intravascular etc.?
- What were the environmental conditions? Indoors room temp. Outdoors, exposed?
- What was the condition of the subject? Resting, exercise.
- What apparatus is used?
- What physical method is use for measuring? (Infra-red, termolink etc.)

So to record a body temperature measurement that is useful on a larger scale, these data must be included in the EMR when recording temperature. Archetypes make this simple.

In the clinical setting the responsible clinician defines the default parameters and all that has to be done is enter the temperature value in the correct box. The computer automatically includes all the necessary information.

This makes data reusable in the department, in the clinic, in the hospital or at a national level.
So if a country like Norway (long shore line, cold water) wants to study patients admitted to hospital after near drowning and want to know the temperature at time of admittance this is easy to achieve and to compare to survival rates.

The archetype 2) is in principal an application that includes all thinkable information on temperature measurement or on other defined observations.

But the use of archetypes goes beyond data recording of observations and this is what makes archetypes interesting. Archetypes can be configured to record any type of information. When you have archetypes on instructions, actions and evaluations (reflections) it is possible to study the processes in patient treatment and this can lead to better treatment and better procedures.

![Kobls learning cycle](image)

Figure 1 Kobls learning cycle 3).
There are many models for investigation and learning. The important factor is the cycle that includes reflection. Figure 1 shows Kolb’s learning model. The health care staff observes and reflects on the clinical problem. This leads, through conceptualizing, to actions that again lead to a result (experience) that is reflected on. With archetypes it is possible to record all these steps or the steps that are necessary to understand the process. Archetypes are still under development that is supervised by an organization openEHR. OpenEHR is a non-profit organization in collaboration with University College of London that have developed archetype through the last 15 years. Archetypes are constructed to be software developer independent. This also means that the information stored is software developer independent and now can belong to the public.

OpenEHR statement:

*Clinical process including guidelines, workflow and pathways* 4

The aim of all this work is to support the automated processing of health information to assist people and their health care providers in achieving the best possible health outcomes. A great deal of work and research has gone into establishing the means of providing this assistance. With openEHR, it is possible for the first time to express the process statements that depend on health information (such as take prednisolone 50mg daily if the peak flow measurement drops below 200 L/min on two consecutive mornings) in formal terms. This is because openEHR has a
language for querying the record that allows statements to be made based on the archetypes that specify the information.

Conclusion
To be able to take advantage of the powers that lie in computer we have to understand what information the computer need, so that we can get the information we want.

How information is defined and how to model the questions we want answers for.

We are seeing a new dawn and the beginning of a useful electronic medical record that will benefit health care works as patients.

References

2) An archetype is a computable expression of a domain content model in the form of structured constraint statements, based on some reference model. openEHR archetypes are based on the openEHR reference model. Archetypes are all expressed in the same formalism. In general, they are defined for wide re-use, however, they can be specialized to include local particularities. They can accommodate any number of natural languages and terminologies. www.openehr.org


4) http://www.openehr.org/programs/clinicalmodels/

Disclosure: No significant relationships.

Keywords: patient quality, safety, efficiency, archetypes, EHR, Quality, Safety, Archetaypes, Efficiency
2. Impact of electronic health records in nursing care description using ICNP and in time spent on documentation.

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Summary
This original research paper reports the evaluation of the impact of Nursing Clinical Information System changes in nursing care description level using ICNP® and in time spent on documentation.

Background
A permanent question on debate about health care information systems is the time spent by nurses in producing the documentation. Documentation is an essential part of nursing practice and accounts for a substantial portion of the nurses’ time (Hendrich et al., 2008). Nurses spend the majority of their time providing direct care to patients (Westbrook et al., 2011) and hope that an electronic nursing information system could increase the patient-interaction time and consequently the quality of care delivered. And for this, Electronic Health Systems will need robust processes driven by nurses to improve efficiency and reduce time dedicated to documentation (Hendrich et al., 2008).

The experience of use International Classification for Nursing Practice (ICNP®) in Electronic Health Systems shows us that “as
more the system is open, more time is needed to produce documentation”. So, we need to think about the balance between the level of nursing care description that we want to have and the time spent by nurses to produce documentation.

We have to take in attention that clinical users are very sensitive to changes in process that affect how they spend their time (Choi et al., 2006). In Portuguese culture, nurses are always feeling that documentation does not express totally the extent of care they provided to their clients. In clinical practice, nurses deal with many subjective and very personal issues. Many of those issues and the interpersonal relationship that characterizes nursing care are not possible to describe by words on a formal clinical record. So, the question is not about how can we document everything, but at which we assign more value to be documented.

We document activities related with nursing care because a set of reasons. Maybe the intention of promoting the continuity of care is the most important of them. So, the challenge for nursing information systems is about creating specifications, and tools that help nurses to improve their competencies to plan and document nursing care more and more significant for people. For this, it’s necessary a consensus about the adequate level of granularity in nursing interventions.

The quality of the terminology system makes the difference because it standardizes the level of granularity of nursing interventions. Because of its relevance for the continuity of care, we are more interested on deepen the description in the patient’s condition to support the nursing diagnoses, than in the exaggerated granulation
of the description of interventions at one level that, clearly is not needed in clinical practice.
It was used a strategy, adopting an action-research methodology, in order to formalize the development of the Clinical Decision Support System for nursing process that provide decision support automatically as part of nursing clinician workflow and integrate it into the structure of Nursing Data Model in the Clinical Information System in use. So, we have proceeded to some changes: in the “assessment component” (to establish a database about the client’s response to health concerns or illness and the ability to manage health care needs); in actions related with the patient surveillance; and in the level of granularity of nursing interventions. Based in our experience of using ICNP two major rules were introduced: 1) All actions related with assessment and patient surveillance must be granulated because each intervention triggers the record of the data obtained when the parameter was evaluated in patient (for instance: Assessing ability to communicate by talking; Identifying sensory impairments; Identifying obstruction to communication; Monitoring pulse, Surveying wound characteristics); 2) We separated two types of interventions: a) those that are actions to be performed directly to the client (for instance: "Positioning patient in bed") b) and those that are essentially a declaration of an intention (for instance: promote a safety environment).
At the same time we have proceeded to some changes in the main components of the decision support system: knowledge base, inference engine and user interface. In the knowledge base some
domain expertise (represented as clinical guidelines, decisional rules, actions related with the patient surveillance, actions to be performed directly to the client...) were integrated. An inference engine was developed which processes information using systematic inference steps, similar to the decisional steps employed in the human thought process, and uses one or more reasoning methodologies.

**Aim**

To evaluate the time spent on nursing documentation to perform the various activities associated with nursing process and the use of Electronic Clinical Information System.

**Materials and Methods**

This study reports the evaluation of the implementation of some changes in the Nursing Data Model in the Clinical Information System in use (namely in level of nursing care description using ICNP®) in time spent on documentation.

He did a pre- and post-fact study, with an exploratory analysis of the time spend by nurses in on nursing documentation to perform the various activities associated with the use of Health Information System: 1) Consult data needed for planning care; 2) Nursing care planning; 3) Nursing records; 4) Prepare information for exchange (data changes planned at discharge); 5) Printing documents; 6) Audit the process of nursing documentation.

For the analysis of the changing impact in nursing time documentation we used the automated registered times of users on pre- and post-implementation. To calculate the time spent for the realization of electronic records in the system we analyzed the time
differences between the moment of entry and exit system during each shift. We examined the time spending by all nurses, during a week, in documentation on a medical ward of a hospital near Porto (Portugal). To calculate the percentage of time spent by nurses in the documentation process we considered the total number of nurses by shift, the number of hours of nursing care. We have also in attention the number of patients existing in the ward during the week in analysis.

**Results**

We analyzed the registered times of Electronic Health Records from nurses’ users on Clinical Information System pre- and post-implementation.

On the pre-implementation changes:

- The nurses from the Medicine ward spend 5439 hours for one week to perform the various activities associated with the use of NCIS.
- During this period the ward had 30 patients admitted continuously.
- Number of nurses/shift: 8AM-2PM (Mean=5.5 nurses), 2PM-8PM (Mean=3.5 nurses), 8PM-8AM (Mean=3 nurses).
- The average time spending for documentation by nurse was 15.2% of the global time for nursing care.

On the post-implementation changes:

- The nurses from the Medicine ward spend 4955 hours for one week to perform the various activities associated with the use of NCIS.
- During this period the ward had 20 patients admitted continuously.
- Number of nurses/shift: 8AM-2PM (Mean=5 nurses), 2PM-8PM (Mean=3 nurses), 8PM-8AM (Mean=2 nurses).
- The average time spending for documentation by nurse was 16.7% of the global time for nursing care.
The comparison between the time spending by nursing in the documentation in pre- and post-implementation changes allows to verify a slight increase of time spent in the documentation. However, the increase in the number of nursing diagnostic activities allows a better description of the patient condition. The quality of the data allows a better referential integrity of the data (defining characteristics and related factors) for an adequate definition of nursing diagnoses and outcomes.

The total percentage of time spent in patient-care documentation differed between the shifts (less time spent in the shift 8AM-2AM). It also differed from the week-end (Saturday and Sunday with less of the time spend on documentation) to the others days of the week. The study showed that overall, the percentage of time spent on documentation was about the same before and after the implementation of changes in NCIS.

**Conclusions**

To improve efficiency and reduce time dedicated to documentation it's necessary a consensus about the adequate level of granularity in nursing interventions. We think that the quality of the terminology system can makes the difference if it standardizes the level of granularity of nursing interventions. The nursing documentation is relevant for the continuity of care. Because of its relevance, we have to be more interested on deepen the description in nursing diagnosis of the patient’s condition, than in the exaggerated granulation of the description of interventions at one level that, clearly is not needed in clinical practice.
References


Disclosure: No significant relationships.

Keywords: Nursing documentation, nursing clinical terminology, terminology system, Evaluation, time spent
3. Users’ satisfaction with an electronic nursing information system in an Oporto hospital.

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Background

Nurses in management and leadership functions have increased responsibility as part of the clinical governance of health services, particularly in the successful implementation of information systems, to foster a constant culture of continuous quality, with real time performance of quality indicators that allow giving visibility to the contribution of nursing to health gains of citizens. The evaluation of the success or effectiveness of information systems is critical to understanding the value and effectiveness of management strategies and investments in the information systems.

Information systems are a precious resource in change management and organizational success as strategy, including the development of continuous quality improvement programs to detect training needs, enhance the development of knowledge, facilitate the research, as well a governance strategy at different scales.

In Portugal, there are about two decades that we invest in research related to the Electronic Nursing Information Systems (ENIS), with the innovative and pioneers works of SILVA (1995, 2001) and
SOUSA (2006), focusing on design and mapping of the structure, or to the focus on its potential for continuous improvement programs of quality of nursing care, like the study of PEREIRA (2007). The extensive re-engineering process of the ENIS emanating from the researches of SILVA (1995, 2001) and SOUSA (1999), included four axes as the cornerstone: a) the use of a classified language - International Classification for Nursing Practice - ICNP®; b) a customization for each care unit; c) the inclusion of principles of referential integrity of the data or items of information; d) the gradual integration of ENIS in the Portuguese Health Information Network.

SOUSA (2006, p. 33) states that "in the context of modern society, information has a great importance and in health, and it is not surprising a growing concern as the development of efficient information systems allowing the maximizing service management and promote improvements in the quality of health care".

The evaluation of the success or effectiveness of information systems is critical to understand the value and the effectiveness of management strategies and investments in information systems (DELONE & MCLEAN, 2003).

However, assessing global and objectively the "success" of an information system is complex and difficult to implement, because it's a multidimensional and dynamic concept, floating and evolves over time and can be set by different ways (BERG, 2001; AMMENWERTH, et al. 2003; VAN DER MEIJDEN, et al. 2003;
The updated model of DELONE & MCLEAN (2003) argues that there are three major dimensions of quality: the "system quality", the "information quality" and the "service quality" that can be evaluated in an isolation way or together. These evaluations, alone or combined, have a decisive influence on the "use" or "intention to use" and "user satisfaction". As a result of the "use" and "user satisfaction", benefits are generated, that can be positive or negative. The impact of these benefits influences directly the "use" and the "user satisfaction" of the information system.

One of the main dimensions to be evaluated to measure the success of an information systems is the "user satisfaction", because through this dimension is possible to assess, in the user perspective, the other model dimensions (DELONE & MCLEAN, 1992, 2003; OROVIOGOICOECHEA, et al., 2008). The significance of this dimension is that, higher level of user satisfaction are related with better performance, thereby contributing to improving the quality of stored information, and consequently for success of the information system and for the organization " (KOSITANURIT, et al., 2011).

**Aim**

To evaluate the nurses satisfaction while users of an electronic Nursing Information Systems, in the Centro Hospital de São João EPE.
Materials and Methods
Based on the DELONE & MCLEAN model (2003), a questionnaire using a Likert scale between 1 to 5, where 5 means "most satisfaction", was applied. A quantitative, descriptive and cross-sectional research was performed using a non-probabilistic convenience sample of 636 nurses. Data was subjected to statistical analysis, using descriptive and inferential procedures.
In our study, the Cronbach's alpha coefficient was 0.979, which aligns with the finding in the study of CAMPOS (2012), α=0.972.
To facilitate the analysis of the data, we made the factor analysis. From this process resulted 11 dimensions, grouped in 5 domains: i) Nursing Process and benefits; ii) Information sharing; iii) Support and training; iv) Graphics and security; v) Computers: processing speed, quality, quantity and easy to use.
We also grouped the dimensions resulting from the factor analysis in the dimensions of the DELONE & MCLEAN model.

Results
Our sample consisted of mostly female nurses with an average age of 35.7 years. Related with the time in functions in the current service", the average is about 8.6 years. The majority of nurses (60.6%) had training to use the ENIS.
The global average satisfaction with the systems was 2.52 (SD=.59). We found the following averages of satisfaction, grouped by domain – dimension (factor analysis), and by dimension (DELONE & MCLEAN model) – dimension (factor analysis).
Regarding with the factor analysis:
a) "Graphics and security" as the domain with the highest score (mean=2.81; SD=.68), above of the global median satisfaction level (2.52):
   i. Security and data protection (mean=2.97; SD=.74) as the highest score;
   ii. Graphics (mean=2.68; SD=.84);

b) "Nursing process and benefits" (mean=2.57; SD=.66), also above of the global median satisfaction level:
   iii. Nursing process (mean=2.77; SD=.75);
   iv. Clinical decision support (mean=2.61; SD=.81);
   v. Update information / contents (mean=2.58; SD=.73);
   vi. Benefits (mean=2.41; SD=.74);

c) "Information sharing" (mean=2.47; SD=.71):
   vii. Intra-institutional information sharing (mean=2.64; SD=.76);
   viii. Inter-institutional information sharing (mean=2.21; SD=.83);

d) "Support and training" (mean=2.40; SD=.72):
   ix. Support and training for the ENIS (mean=2.40; SD=.72);

e) "Computers: processing speed, quality, quantity and easy to use" (mean=2.11; SD=.78):
   x. Processing speed and easy to use (mean=2.17; SD=.83);
   xi. Quality and quantity of computers available for nursing records (mean=1.97; SD=1.01).

Regarding with the DELONE & MCLEAN model (2003):

a) The "Information quality" was the dimension where nurses were more satisfied (mean=2.77; SD=.75), above of the global median satisfaction level;
   a.1 Nursing process (mean=2.77; SD=.75) (iii);

b) The "System quality" (mean=2.53, SD=.65):
b.1 Security and data protection (mean=2.97; SD=.74) (i);
b.2 Graphics (mean=2.68; SD=.84) (ii);
b.3 Processing speed and easy to use (mean=2.17; SD=.83) (x);
b.4 Quality and quantity of computers available for nursing records (mean=1.97; SD=1.01) (xi);
c) The "Net benefits" (mean=2.47; SD=.65):
c.1 Intra-institutional information sharing (mean=2.64; SD=.76) (vii)
c.2 Clinical decision support (mean=2.61; SD=.81) (iv);
c.3 Benefits (mean=2.41; SD=.74) (vi);
c.4 Inter-institutional information sharing (mean=2.21; SD=.83) (viii);
d) The "Service quality" (mean=2.47; SD=.65):
d.1 Update information / contents (mean=2.58; SD=.73) (v)
d.2 Support and training for the ENIS (mean=2.40; SD=.72) (ix)

Conclusions
The results have the potential to contribute decisively in the leadership strategies of nursing departments, in the creation of a cumulative tradition of knowledge about the evaluation of the success and policy related with the ENIS.

The main summaries point to some ideas:
a) The systems which use a really "nursing process" and have in their structure a clinical decision support system are the systems with the highest level of satisfaction;
b) All information systems tended to have high satisfaction levels on "security and data protection", which should reassure us;
c) We still have to work hard to; i) produce indicators related with the nursing professional exercise; ii) share health information between health institutions. These are areas with low levels of satisfaction;
d) The area with the lower levels of satisfaction are related with the hardware available to record the nursing data and the support given by the team responsible for the ENIS.

It was evident that in several areas of analysis, the more satisfied nurses were those who used the ENIS for longer. Finally, we realize that it is "necessary to give time" for the changes to be consolidated, so that people take ownership of them and internalize.

References


Disclosure: No significant relationships.
Keywords: Information systems, Nursing; Evaluation, User satisfaction

4. Agreement, correctness and accuracy of nursing diagnoses: a randomized trial.

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Summary
A group comparison pilot study on the effect of using standardized nursing diagnoses in an electronic health record measuring agreement, correctness and diagnostic accuracy. Differences were detected and assumptions made, however results were not significant. Follow-up study including qualitative analysis is recommended.

Background
Current developments in Electronic Health Records (EHRs) use structured documentation and Standardized Nursing Languages (SNL). However, little is known on the impact of electronic systems on nursing documentation when using SNL.
Aim and research question(s)
The primary objective of this study was to explore the effect of an EHR with SNL on the documentation of nursing diagnoses (NDx). Research questions were: What are the differences between groups in: (1) correctness, as presented in written cases, for sets of NDx; (2) agreement between nurses on sets of NDx; (3) accuracy of NDx as in diagnostic label, etiology, signs and symptoms or risk factors per single nursing diagnosis and per nurse.

Materials and methods
A randomized controlled pilot trial was performed by using a convenience sample of two groups of nurses (n=28) working in a University hospital in the South West region of the Netherlands. Two cases were developed following Lunney’s method for case development. The validated set of NDx per case was defined by three clinical experts. The intervention group used EHR based care plans with NANDA-I nursing diagnoses to define nursing diagnoses for two written cases. The control group used handwritten care plans in the PES-format. Study parameters were Lunney’s scale for accuracy, Jaccard Index for correctness, and percentage agreement to measure agreement between nurses.

Results
Using parametric tests no group differences were detected between the intervention and control group in both cases for correctness of NDx (p .854, p .627) and diagnostic accuracy (p.134, p.180). However, the total number and the number of incorrect NDx in one case were significantly higher in the intervention group (p .029 and p.006). Agreement in NDx between nurses varied from 6.6 to
66.7% with higher percentage levels for nurses using the EHR. Nurses of both groups defined a wide variety of NDx, and a trend was detected in favor of the correct NDx or NDx similar in concept using the EHR.

**Conclusion**

Using the EHR had no statistically significant effect on correctness of NDx and in diagnostic accuracy compared to free text PES structured nursing care plans. The ordered presentation of SNL in the EHR could have influenced the selection of NDx by nurses, since the intervention group chose more diagnoses. Nurses’ agreement levels were low to moderate, which raises questions concerning diagnostic reasoning skills of the participating nurses since they are in contrast with the literature were moderate to good agreement levels were described. Due to the pilot design of the study and the lack of a power calculation, the results shouldn’t be generalized.

**Recommendations**

Follow-up research with a bigger sample is recommended in combination with qualitative analysis of the NDx defined by nurses.

**Disclosure:** No significant relationships.

**Keywords:** Agreement, Nursing Diagnosis, Accuracy, correctness, Electronic Health Record, Standardized Nursing Languages

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Chapter 13 – Education

1. Experiences of the use of eLearning in HHSI education.

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Introduction
eLearning, also called Web-based learning, online learning, distributed learning, computer-assisted instruction, Internet-based learning, technology enhanced learning or distance learning, has evidenced its many benefits and has become a powerful and effective way of learning and teaching [1-4]. Based on the various synonyms and related terms the concept of eLearning is not new [5], and it has been defined e.g. as “an approach to teaching and learning, representing all or part of the educational model applied, that is based on the use of electronic media and devices as tools for improving access to training, communication and interaction and that facilitates the adoption of new ways of understanding and developing learning”. It is obvious that eLearning requires development of different technologies for learning and teaching. [6]
eLearning has proven to be an excellent tool for teaching and learning. According to a review of the effectiveness of online eLearning for health care students, positive changes in knowledge,
skills, attitudes and satisfaction were found [7]. Even more efficient benefits were found when a combination of eLearning and face-to-face learning was used as a teaching method [3]. Still one of the most rewarded element of eLearning – independence and flexibility of time and place – is brought up by students and teachers in various studies. In addition student’s personal guidance and support makes eLearning popular among students [2].

Ubiquitous evolved web-based technology demands schools and universities to implement different technologies and eLearning possibilities. It brings new educational responsibilities to lecturers and professors, but also responsibilities to students in forms of eSkills [4]. Also hospitals need to be facilitated with the new eLearning environments. To gain nurses to use web-based learning, the user interface has to be user friendly. Also the system quality is important [8].

The aim of the paper is to discuss and give examples about the eLearning environment used for teaching an introduction course in Health and Human Services Informatics (HHSI) for master’s degree students of which roughly half are exchange students. The especial aim is to deepen the knowledge of the use and usage of eLearning as a teaching method. The example course uses mixed methods to facilitate learning.

**Master’s degree programme in Health and Human Services Informatics**

The internationally accredited Master’s degree programme of HHSI at the University of Eastern Finland offers several virtual learning courses for both Finnish and international students [9].
The curriculum of the two year programme (120 ECTS) is based on the Recommendations on Education in Biomedical and Health Informatics by the International Medical Informatics Association (IMIA) [10]. From the beginning (2000) it was obvious that the perspectives of these two important service sectors – health and social care – should be joined in the educational program because of the development activities taking place in the Finnish society. Since 2000 the program has engaged mostly nurses but also other health and social care and IT professionals.

In this context the master program Health and Human Services Informatics is aiming to produce professionals and researchers in information management for the needs of social and healthcare. Health and human services informatics is understood as the management of information resources of an entity, e.g. an organisation, covering the activities, actors and methods in the production of health and welfare services for the public and private sectors and organizations. Resources are understood as data warehouses, programs, devices, communication arrangements and people as sources and users of information [11].

eLearning is widely used in the programme. The introduction course in HHSI is a part of the core knowledge and skills area in the curricula. It is also a part of the HHSI minor available to all students from various majors e.g. computer science, nursing science, health management and social management. The course is also available for exchange students. It is scheduled in the first term. However, due to heterogeneous background of students it is
essential that students have knowledge about the health and social care service system before the course starts.

**Introduction Course as an example of e Learning**

The course “Introduction to Health and Human Services Informatics” is based on the recommendations by the IMIA and has been developed along the years based on advances in the field. The mixed teaching methods include two introduction lectures, several individual and group assignments using eLearning platform, and an individual assignment in the form of an essay. The learning outcomes consist of basic concepts of informatics, use of ICT and information systems in social and health care, basic principles of data security and the means and use of electronic communication. All teaching and learning material is available through the eLearning platform along with instructions, as well as references and links. Students can also ask help and guidance or support during the course through the discussion forum of the platform. Individual and group assignments of various topics require students’ active interaction. Each student activity is followed and commented by the tutors appointed to groups with some six to eight students.

The topics for individual essays are instructed by the paradigm of health and human services informatics consisting of the core concepts: data, action, technology and actors, to be regarded as the body of knowledge in HHSI. The core concepts are defined as follows: **Actors** means the users or producers of social and health services, **data** is the hierarchical continuum from data to knowledge, **action** means the planning, implementation and use of
services, and **technology** means social and technical procedures used in processing, analysing, storing and retrieving data related to actions. By joining the concepts four major research areas were formulated: steering and organizing of information management in work processes, use of information technology, knowledge management and informatics competences, and data models and structures. (Figure 1.)

![Figure 1. Students’ areas of interest of the paradigm of Health and Human Services Informatics](image)

The paradigm is guiding the students to choose their topics for the essays. Over the years the most often selected topics focus on the area of use of information technology. Topics like confidentiality and data security, information system implementation and various technological applications are of high interest among international students. From the area of steering and organizing of information management in work processes students devote their energy to discuss about possible solution to share health information jointly with citizens. It is obvious that ICT education among health
professionals also interest students. The area of Data models and structures has seldom been at the focus of interest in students essays. This can be argued with the complexity of content requiring profound knowledge of the area.

A web-based structured evaluation form is emailed to students by the academic administration system. In November 2014 71 % (n=33) of the students gave their course evaluation. (Table 1.) The course evaluation is discussed jointly with the students at the final day of the course. The students valued the guidance and support given by the tutors and were satisfied with the content.

Table 1. Course feedback

<table>
<thead>
<tr>
<th>Question/statement</th>
<th>Av</th>
<th>SD</th>
<th>Med</th>
<th>Freq</th>
</tr>
</thead>
<tbody>
<tr>
<td>My understanding of the subject increased.</td>
<td>3.95</td>
<td>0.95</td>
<td>4.0</td>
<td>22</td>
</tr>
<tr>
<td>The studying atmosphere was encouraging.</td>
<td>4.05</td>
<td>0.79</td>
<td>4.0</td>
<td>22</td>
</tr>
<tr>
<td>The content of the course corresponded to the set goals.</td>
<td>4.3</td>
<td>1.14</td>
<td>4.0</td>
<td>21</td>
</tr>
<tr>
<td>I knew the person to contact when I had troubles during the course</td>
<td>4.59</td>
<td>0.59</td>
<td>5.0</td>
<td>22</td>
</tr>
<tr>
<td>How useful did you find the lectures?</td>
<td>3.91</td>
<td>0.87</td>
<td>4.0</td>
<td>22</td>
</tr>
<tr>
<td>E-learning by Moodle suits me better than lectures</td>
<td>3.18</td>
<td>1.22</td>
<td>3.0</td>
<td>22</td>
</tr>
<tr>
<td>I experienced to learn new things</td>
<td>4.24</td>
<td>1.13</td>
<td>4.0</td>
<td>22</td>
</tr>
<tr>
<td>The learning material was of high quality.</td>
<td>3.95</td>
<td>0.9</td>
<td>4.0</td>
<td>22</td>
</tr>
<tr>
<td>Moodle supported interaction of the course</td>
<td>4.14</td>
<td>0.83</td>
<td>4.0</td>
<td>22</td>
</tr>
<tr>
<td>Topics of the seminars were useful.</td>
<td>4.36</td>
<td>0.79</td>
<td>5.0</td>
<td>22</td>
</tr>
</tbody>
</table>

1 = Least agree with - 5 = Most agree with
The students also valued the eLearning environment, however, some of them needed a lot of support in the beginning, as the platform was unfamiliar to them.

**Conclusion**

The students participating in teaching represent geographically the whole Finland, and most of them are adults studying beside their daily work. They are grateful of possibilities to study whenever and where-ever it is possible for them. For exchange students the HHSI course is a new subject and the eLearning environment is highly valued by them. Although students are highly motivate to accomplish the assignments and essays targeting to obtain new knowledge. According to the course feedback most of them agreed that eLearning supported the interaction of the course, the learning material was of high quality, their understanding of the subject increased, and they experienced to have learned new entities. However, most of them also prefer to have more contact teaching.

The eLearning environment allows students to study and learn online easily regardless the time or the place. The advantages to access learning assignments and references and interact with teachers, tutors and fellow students offer vast amount of possibilities for distance and online learning. Both universities and health care organizations should guarantee that e.g. professors, lecturers and clinical teachers as well as students have readiness to implement, sustain and use online learning and eLearning tools.
References


Disclosure: No significant relationships.

Keywords: eLearning, informatics, Education, Curricula, eHealth
2. eHealth nursing competencies: enhancing nursing informatics education.

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Nursing program curriculum committees engage in ongoing content review and evaluation to determine the currency of the curriculum. Experts agree that program review to determine the adequacy of nursing informatics content in curricula is essential to assist faculties to plan for program enhancements and improvements related to nursing informatics competencies; thereby, contributing to safe, effective, quality patient care. The aim of this presentation is to report on the findings of a project to determine the extent to which nursing informatics competencies are being addressed in associate degree and RN to BS completion curricula at one college as reflected in nursing course documents. The project was conducted to ensure undergraduate nursing curricula at this campus explicitly address the essential beginning level nursing informatics competencies described in the literature. The model upon which the project is based is an adaption of the Information Management Model of Staggers and colleagues and the TIGER Initiative. The methodology is a content review of documents. All nursing courses in both curricula (associate degree, n = 6 and RN to BS Completion, n = 13) scheduled for Fall 2014
semester were reviewed along with any elective courses not offered in the review semester. The documents reviewed included course syllabi, handouts, activities, clinical evaluation tools, etc. The tool used is an adapted research-based tool used in a previously published curriculum evaluation. The tool reflects the nursing informatics competencies originally identified by nursing informatics experts via Delphi study, the results of which continues to be widely accepted and used. Analysis includes descriptive statistics and qualitative textual analyses of the documents. Both the quantitative and qualitative findings are discussed in relation to the nursing informatics competencies applicable to beginning level nurses. Conclusions include the need for ongoing review and enhancements to ensure the adequacy of included content that addresses beginning level nursing informatics competencies. Recommendations will be shared. The nursing education implications of this review are specific to nursing education program improvement or enhancement related to nursing informatics. Practice implications are directly related to workforce preparation and reasonable expectations that clinical agencies can have of new or beginning nurses. Nursing organizations and informatics experts agree that new nurses prepared to use health information systems are essential to the delivery of safe, effective patient care.

**Disclosure:** No significant relationships.

**Keywords:** Nursing Informatics Competencies, Nursing Education, Curriculum Review
3. ICT in education: fostering integrated knowledge and clinical reasoning through the use of case scenarios.

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Introduction

GACELA-University is a software developed from a clinical electronic system (GACELA-Care) that is used in more than 120 hospitals both in Spain and Italy. GACELA-Care is a nursing management tool focused on the Nursing Care Process with more than 15 years of experience, used by around 50.000 health care professionals. This software is developed by OESIA, a multinational consultancy group specialized in technology, and settled in Spain and Latin America that has developed projects for customers in different European Countries, America and Asia. Faculties from the Health Sciences Faculty Blanquerna from Ramon Llull University in Barcelona (Spain), together with professionals from OESIA-Group have designed different case-scenarios to be used in an educational environment with the software GACELA-University. The use of software to learn the Nursing Process, Nursing Methodology and Nursing Languages, fosters also the learning of other content from the Nursing Curriculum, facilitating an integrated way of learning. Integration of contents both knowledge and abilities acquired in different areas throughout the Nursing Curriculum is highly recommended by the
European Space of High Education for undergraduate education. This communication aims at presenting how the system works by using a demonstration with a case-scenario.

**Objectives**
To demonstrate the use of GACELA-University to learning the Nursing Process. - To identify how the use of GACELA-University contributes to learning clinical reasoning and critical thinking. - To identify learning objectives that can be achieved by the use of GACELA-University, other than those related to Nursing Process and Nursing vocabulary.

**Materials and Methods**
One case-scenario has been chosen and, by analyzing the possibilities offered by GACELA-University software, learning objectives from other areas of the Nursing Basic curriculum have been identified. Different processes for evaluation of the student fulfilment of knowledge have been identified; both automatic responses by the system and ad-hoc responses by teachers can be used for the evaluation of student progress.

**Results**
GACELA-University proposes a system that fosters an integrated way of learning. The fact that the software has been developed from a clinical system, which requires a very high level of complexity, gives de educative tool a range of possibilities in the education area that are difficult to find in other systems developed specifically for education.
Conclusions
Bringing closer the learning experience and the actual clinical experience will improve the learning processes in nursing basic education. Case scenarios must be very conscientiously designed to include learning experiences from different areas in nursing basic curriculum. The utilization of electronic systems in basic education opens a completely new scenario for nursing education in the near future.

References

Disclosure: No significant relationships.

Keywords: ICT Nursing, Nursing Education, Nursing Languages, Clinical Reasoning
4. Austrian and Swiss nurses’ attitudes toward the advanced nursing process.

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Introduction
The attitudes of nurses influence the application of the “Advanced Nursing Process”. The Advanced Nursing Process contains validated assessments, accurate nursing diagnoses, evidence-based nursing interventions and outcomes and is based on nursing classifications (e.g. NNN-taxonomy). International nurses’ demonstrated positive attitudes toward the nursing process (Oliva et al., 2005; Hasegawa et al., 2007; Romero-Sanchez, 2013), and training measures positively influenced their attitude (Cruz et al., 2006; Collins, 2013). However, empirical evidence of nurses’ attitudes in German speaking countries was missing.

Objective
The study aim was to evaluate the effect of educational trainings in nursing diagnostics on nurses’ attitude on the Advanced Nursing Process.

Methods
A quasi-experimental intervention design was applied. The Austrian sample contained 193 clinical nurses participating in a three day in-hospital training on the Advanced Nursing Process. The Swiss sample contained 124 nurses participating during five
days of training. Before and after the standardized educational intervention nurses of both groups (N=317) rated their attitudes with the German instrument “Positions on Nursing Diagnosis” (PND). The PND measures nurses’ attitude towards nursing diagnoses and contains 20 items with 40 bipolar (positive-negative) adjectives on a 7-point-scale; whereas higher scores demonstrate more positive attitudes. Psychometric testing of the original US American PND scale showed good results.

**Results**

Before the educational intervention the top three positive adjectives demonstrating nurses’ attitude towards the Advanced Nursing Process were: Important (5.8, SD 1.2), useful (5.6, SD 1.2), meaningful (5.6, SD 1.2). The lowest scores were allotted to easy (3.3, SD 1.4) and uncomfortable (3.6, SD 1.4). After the educational intervention the average attitude rating of all items became statistically strongly more positive (p< 0.0001). The average attitude of the Swiss nurses measured before the intervention was significantly more positive in 19 of 20 items compared with the Austrian colleagues (p< 0.0001). The average difference between the first and second measurement in the Austrian sample of all item scores was 0.84 (SD 0.9); in the Swiss sample 0.45 (SD 0.7). The effect of the training on nurses’ attitude nearly doubled in the Austrian sample compared to the Swiss sample (p< 0.0001).

**Discussion**

The effect of the Austrian educational intervention (17.3 points) is second highest compared with previous results. The intervention of Collins (2013) resulted in a change of 25.8 points. However, Collins
study intervention lasted 12 hours and focused on Critical Thinking. Generalization of results is limited because the attitude scores are self-reported, and social desirability and sample differences could influence the findings. The Austrian sample contained qualified nurses of one hospital and the educational intervention was obligatory. In the Swiss sample, experts of different institutions voluntarily participated. The higher pre-intervention scores in this sample seem to be related to group characteristics, as was reported in a previous US study.

**Conclusions**
The positive results support that educational interventions effect nurses’ attitude towards the “Advanced Nursing Process”. In future studies the influence of nurses’ attitude on the quality of assessments, on accuracy of nursing diagnoses, effectiveness of nursing interventions and on patient outcomes have to be investigated.

**Disclosure:** No significant relationships.

**Keywords:** Nurse attitudes, Advanced Nursing Process, Positions on Nursing Diagnosis Scale, Evaluation, Quasi-experimental design
5. Evaluation of the competence of nursing informatics in the information management master degree program in Laurea UAS Finland.

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Abstract
In recent years changes in information management in working life has been one of the most important development areas among the societies of the world. Humans need to embrace new knowledge, skills and competences at an ever increasing pace. Therefore need for new kinds of study programs to cover this knowledge and competence gap. The purpose of this paper is to describe the results of the master degree students’ competences they have achieved in health informatics during the Master’s Degree program of information management.

Introduction
Changes in information systems and information management will necessitate new types of expertise. New service systems will require innovative management and control tools in order to enable changes. The role of technologies in future work environments is constantly growing. (Raij 2007.)

The master’s degree program of Knowledge Management of the Future in the Social and Health Care Sector offered by Laurea University of Applied Sciences (UAS) is intended for persons
responsible for knowledge management and development in organizations, or those aspiring to such tasks. The education provides key competences in knowledge management, nursing and health informatics and foresight from the perspective of customer insight (Fig. 1). (Laurea UAS 2013)

Figure 1. Structure of the Knowledge Management of the Future Master’s programme

The degree structure is based on the two-cycle model in Finland. The first cycle is 210-270 ECTS in Bachelor-level (EQF Level 6) degree. The second cycle consists of Master’s degrees (EQF Level 7) and postgraduate degrees are third cycle degrees. (The Bologna process 1999.) In Finland 22 UASs offer master’s programs (60-90
ECTS) in social and health care. Laurea University of Applied Sciences (UAS) has started to organize the Master´s Degree program in Knowledge Management of the Future in the Social and Health Care Sector in autumn 2013.

In the Social and Health Care there are two regulations guiding the Master´s Degree programs. The statutory duties of the UAS include research and development, regional development and pedagogical duties. The duties of the law of Health care require strengthening of the primary health care field and improving the health care operators, various municipal departments between other actors in cooperation with the health and wellbeing as well as organizing health and social care.(Ahonen, Meristö, Ranta & Tuohimaa 2014.)

In Laurea there are two Master´s programs of health informatics; The first one focuses on the knowledge management of the future in the social and health care sector and the second one on the client driven eHealth service planning. The Master program focusing on knowledge management is intended for people responsible for knowledge management and development in organisations. The education provides key competences in knowledge management and foresight from the perspective of customer insight. The programme of the knowledge management of the future in the social and health care started in autumn 2013 and ends in the end of 2016. The organized training lectures are scheduled to last 1.5 years but the students are able to get through the programme in three years. 27 students started the program and 19 of them were nurses and 8 Bachelors of social services. Eight students
discontinued the studies during the first semester. (Laurea UAS 2013.)

Students of the program develop expert skills in evaluating the management of health care customer’s information as part of information management services, customer insight, basics and methods of future information management and foresight and future management. Their studies include information system architecture ranging from basic social and health care to specialist care and the private sector. They focus on controlling information management services as well as on application and development documentation competence in national and international contexts.

The thesis is a very important learning process and by it students can personalize their studies and career planning (Laurea UAS 2013, Koski and Mahlamäki-Kultanen 2014).

Laurea UAS has a special learning environment and action model called Learning by Developing (LbD). The Learning by Developing action model received a Finnish Higher Education Evaluation Council award. (Raij 2007, Raij 2013.)

The statutory duties of UAS include research and development, regional development and pedagogical duties and will promote lifelong learning. (Finnish Legislation, Act 932/2014). In Laurea, productive integration of these duties is seen as playing a key role.

The learning outcome is competence manifested as new operating methods and techniques that also enable workplace renewal in sectors relevant to the degree. LbD takes place in real-life project environments, in which the students, teachers, business and
industry experts as well as the customers work together to seek and develop innovative solutions (Raij 2007, 2013.)

The aim of this paper is to present the results of the evaluation of nursing and health informatics competences the student have achieved in the Master's Degree program of information management.

**Method**

The data consists of quantitative and qualitative data. The quantitative data was gathered with an e-questionnaire and was prepared using the core of study unit’s content and general master's degree competences. The qualitative data consisted of open ended questions of the study units performance and contents. The instrument consisted of five parts: basics and methods of future information management (4 variables) and research and development (2 variables) and customer orientedness service and customer insights (2 variables) and foresight and future management (2 variables). Variables of the instrument were ordinal. Competences were measured with the 5-step Likert scale. The scale measured the competence level from not important to very important.

The respondents (n=15) of the e-questionnaire were Master’s students of the program. The data was transferred from e-questionnaires directly to a conversion program using PASW program version 22.0 and it was converted to the required format for statistical processing. The data was analysed using statistical parameters and percentages. The information of questionnaire is presented in parameters and figures.
Results
In the questionnaire students were asked to evaluate the different kind of competences of nursing and health informatics they have achieved during program and how the program has supported the creation of working life skills and how the program should be developed further. Altogether 15 of 19 students answered the e-questionnaire. They were aged from 30 to 60 years old. The results will be described according to courses from the beginning of studies. The study consists of courses of customer-oriented development of new services. They analysed diverse health care services with blueprint processes and gap analysis. The student got an idea of the gap of the informatics service they have chosen to analyse. After that they created a data model and process with the service blue print model. One of the most important and interested course was treatment chains and process flows of the future. Most of the students assessed that the course was important or very important (Fig 2).
Next step of the training process was to renew of the information data package for customer and they were able in cooperation with experts to develop and design new e-services in a customer-oriented manner. They extend their knowledge of social and health care sector information management services as a whole. The study unit of information management architectures aimed to offer a conceptual foundation for the using information technology in developing social and health care processes. Students rated the study unit quite a good entity. (Fig. 3).
Students became familiar with hardware platforms, information networks, applications and user interfaces as components of the information system and service-oriented architecture (SOA). They were satisfied with the learning process (Fig. 3). Eight students out of 15 assessed change control and management skills as very important expertise in working life. During the course visualization of future and foresights students developed their skills and competence with working methods and techniques of the future.

In the beginning of the program students choose a development target they will focus on. The thesis challenges the students to use the ability to limit and discuss the selected development target, a capacity for development-oriented thinking, command of theories
and research and development methods they will need in their work. One of the students commented on the entity and the content of the program with following words.

“The training responded to the needs of working life and that was essential.

“LbD was good education and broadening method.”

At the end of program the students mentioned that they had achieved new co-creation and learning skills, innovation competence with development work. They also learned to consider ethical issues in development work

**Discussion**

The evaluation of the program was organized in the end of the studies. The program was carried out for the first time and data collection has not been made before with this instrument. In this study, a new instrument has been created and the survey sections consisted of the training modules. Reliability was calculated by Cronbach's alpha (.83) (Burn, Grove and Gray 2011). This indicates that the research method measures the desired issue and can be reproduced. According to the results the skills like cooperation with parnters, ethical skills, research, development and innovation skills, of the students had developed during the program. This program meets the future challenges of producing new kinds of expertise, and competence and enriched developing cooperation with working life.

**References:**

Ahonen, O., Meristö, T., Ranta, L. & Tuohimaa H. (2014). Project as a Pathwork Quilt. From Study Units to the Regional Development. In

**Disclosure:** No significant relationships.

**Keywords:** Competence, Master Degree, Nursing Informatics, Information Management
6. An analysis of the activities of postpartum care performed by nurse-midwives in Turkey.

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Introduction
Providing care to a woman during the 6-week time period beginning immediately after childbirth is defined as postpartum care. Due to focusing on needs of the newborn in the postpartum period, care needs of mothers are mostly overlooked. In Turkey, mother's are discharged early in the postpartum period for various reasons, such as such as short hospitalization politics, bed occupy limitations and therefore they cannot benefit enough from health services and are faced with many health problems. In Turkey, according to the National Maternal Mortality Reports in 2005, maternal mortality rates in pregnancy, birth and the postpartum period is 38.3 per 100,000 live birth and the 54.1% of this ratio is occurs in the postpartum period. It is well known that nurses and midwives can play an active role in reducing maternal mortality in the postpartum period by meeting the care needs of mothers. The nurses and midwives may contribute to mother’s health in the postpartum period by continuing home visits with mothers from the very first days of postpartum period. Postpartum Care is an intervention under the domain of Family, class of Childbearing care In the Nursing Intervention Classification (NIC). The definition of
Postpartum Care is “Providing care to a woman during the 6-week time period beginning immediately after childbirth” and includes 39 activities related physiological, psycho-social, sexual, care of woman and her baby.

**Purpose**

This cross-sectional study is planned to describe the content of performing nursing intervention of “Postpartum Care” and identify the practice gap between what should be done according to NIC Postpartum Care and what performed. The main questions of the study were; What is the status of postpartum care interventions activities in fulfillment in hospitals and family health centers? What are the activities performed / not performed?

**Method**

In order to reflect the overall structure of country, this research was planned to carrying out in three postpartum clinics of hospitals and family health centers in the west, south and north regions of Anatolia. Data were collected a questionnaire form included questions about working and educational characteristics of nurses and postpartum care nursing intervention and its 39 activities. In order to determine the which of the activities of NIC Postpartum care were done either in hospital or in the home visits, the form designed as three point Likert scale questioning performance status /frequency of each activity. Postpartum care activities directive structure was converted into simple present tense such as "... I do" and "....I evaluate" in the research. Study is in the process of data collection.
Disclosure: No significant relationships.

Keywords: NIC activities, Postpartum care, Turkey

7. Students’ diagnostic competencies in Turkey: a case study based quasi-experiment.

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Introduction

Nursing diagnoses ensure that nurses use a professional language by applying the nursing process and in determining standards for information sharing, organizing information, decision making, nursing practice, and designating appropriate patient outcomes (Carpenito 2004). Nursing diagnoses guide nurses when assessing patient problems, risk states or needs for health promotion, the planning of nursing care and its implementation. Standardized nursing diagnoses which are a part of the nursing process as a problem solving method help to correctly determine the problem, plan interventions and achieve expected patient outcomes/results.
When using validated Standardized Nursing Language (SNL) the term “Advanced Nursing Process” is used. The state of the art nursing process bases on nursing classifications providing valid, standardized concepts, and therefore is named advanced (Ackley & Ladwig, 2014). Standardized concepts e.g. nursing diagnoses, interventions and patient outcomes are called Standardized Nursing Language (SNL) (Jones, Lunney, Keenan, & Moorhead, 2010). The Advanced Nursing Process was defined as: “The advanced nursing process consists of defined, validated concepts. It includes assessment, nursing diagnoses, nursing interventions, and nursing outcomes that are rooted in scientifically based nursing classifications” (M. Müller-Staub, Abt, Brenner, & Hofer, 2015), page 16.

The Nursing Interventions Classification (NIC) is useful for clinical documentation, communication of care across settings, integration of data across systems and settings, effectiveness research, productivity measurement, competency evaluation, reimbursement, and curricular design (Bulechek, Butcher, Dochterman, & Wagner, 2013).

Students learn each phase of the nursing process and skills regarding nursing diagnoses and nursing interventions during their clinical practices. The educational process is important for the development of these skills. To increase the use of standardized nursing language in Turkey, research on the use of nursing diagnoses and interventions is needed in both education and practice (Lunney, 2006, 2008).

**Purpose**
This study was planned as a descriptive quasi-experimental study for the purpose of determining the ability of students in their fundamentals nursing course to identify nursing diagnoses and their ability to determine nursing interventions.

**Methodology**

*Design and sample*

The research population consisted of the first year students (N=60) in nursing fundamentals at the department of nursing in a Turkish university. Students started to perform practice in the clinic for 16 hours a week (total 7 week) as from the second term and prepared care plans by using NANDA-International nursing diagnoses (NANDA-I) and nursing interventions during clinical practices (NANDA 2003, 2007; Bulechek et al., 2013; Herdman, 2012).

*Instrumentation*

Students were given a sample patient case, which was prepared by their instructors, at the end of their course and clinical practice. The nursing diagnoses determined by the instructors were: Health maintenance, Ineffective; Nutritional imbalanced, less than body requirements; Infection, risk for; Self-care deficit syndrome; Mobility, impaired physical; Disturbed sleep pattern; Impaired comfort; Anxiety; Powerlessness; Fatigue; Verbal communication, impaired.

*Data collection and analysis*

The data were collected in two phases. In the first phase; data were collected at the end of the 7 week “fundamentals in nursing” course; and in the second phase data were collected 7 weeks after
students’ clinical practice. The case was verbally read to the students by the instructor for once, an explanation was made regarding how to assess it, and they were required to find out and write down the nursing diagnoses and nursing interventions of the case, which should be determined. The forms were received back from students after an average of 30-45 minutes. Nursing diagnoses were assessed and compared with NANDA-I diagnoses and NIC as gold-standards. Numbers and percentages of correct diagnoses and interventions were calculated in the data analysis.

**Findings**

Sample characteristics: The age of the students was between 18-22 years. Most of the students were female.

Nursing diagnoses: Students found all nursing diagnoses, which were previously determined in the case by the instructors. While some diagnoses were more determined at the end of the nursing course, some diagnoses were more determined at the end of the clinical practice. The results are presented in table 1.

Table 1. Distribution of Nursing Diagnoses Determined by Students (N=60)

<table>
<thead>
<tr>
<th>Nursing Diagnoses</th>
<th>First phase</th>
<th></th>
<th>Second phase</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Disturbed sleep pattern</td>
<td>57</td>
<td>95%</td>
<td>51</td>
<td>85%</td>
</tr>
<tr>
<td>Mobility, impaired physical</td>
<td>51</td>
<td>85%</td>
<td>53</td>
<td>88.3%</td>
</tr>
<tr>
<td>Self-care deficit syndrome</td>
<td>46</td>
<td>76.6%</td>
<td>54</td>
<td>90%</td>
</tr>
<tr>
<td>Powerlessness</td>
<td>43</td>
<td>71.6%</td>
<td>52</td>
<td>86.6%</td>
</tr>
<tr>
<td>Impaired verbal communication</td>
<td>43</td>
<td>71.6%</td>
<td>44</td>
<td>73.3%</td>
</tr>
</tbody>
</table>
Anxiety | 36 | 60 | 40 | 66.6
---|---|---|---|---
Risk for falls | 36 | 60 | 39 | 65
Impaired comfort | 35 | 58.3 | 36 | 60
Fatigue | 33 | 55 | 27 | 45
Health maintenance, Ineffective | 14 | 23.3 | 15 | 25
Nutrition imbalanced, less than body requirements | 11 | 18.3 | 40 | 66.6
Infection, risk for | 10 | 16.6 | 43 | 71.6

The highest number of students’ identified nursing diagnoses the end of the nursing course was “disturbed sleep pattern” (95%) and “mobility, impaired physical” (85%) and “self-care deficit syndrome” (76.6%). The lowest number was “infection, risk for” (16.6%), “nutrition imbalanced, less than body requirements” (18.3%). The highest number of students’ identified nursing diagnoses the end of clinical practice was “self-care deficit syndrome” (90%), “mobility, impaired physical” (88.3%) and “powerlessness” (%86.6) (Table 1).

Nursing interventions: The students’ identified nursing interventions of the NIC at the end of the nursing course and the end of clinical practice. These nursing interventions were Self-Care Assistance, Infection protection, Sleep Enhancement, Exercise Therapy: Ambulation, Fall Prevention, Positioning, Vital Signs Monitoring, Active Listening, Anxiety reduction, Pain management, Nutrition management.
The students’ also identified activities of NIC nursing interventions. These nursing activities of self care assistance include monitor patient’s ability for independent self-care, monitor patient’s need for adaptive devices for personal hygiene, dressing, grooming, toileting, and eating, provide desired personal articles (e.g., deodorant, toothbrush, and bath soap), assist patient in accepting dependency needs, provide assistance until patient is fully able to assume self-care, encourage patient to perform normal activities of daily living to level of ability.

The nursing activities of infection protection include monitor for systemic and localized signs and symptoms of infection, maintain asepsis for patient at risk, inspect skin and mucous membranes for redness, extreme warmth, or drainage, promote sufficient nutritional intake, encourage fluid intake, as appropriate, teach the patient and family about signs and symptoms of infection and when to report them to the health care provider.

The nursing activities of vital signs monitoring include monitor blood pressure, pulse, temperature, and respiratory status, as appropriate, monitor blood pressure while patient is lying, sitting, and standing before and after position change, as appropriate, monitor blood pressure, pulse, and respirations before, during, and after activity, as appropriate, monitor skin color, temperature, and moistness, monitor for clubbing of nail beds, identify possible causes of changes in vital signs.

The nursing activities of sleep enhancement include determine patient’s sleep/activity pattern, approximate patient’s regular
sleep/wake cycle in planning care, monitor/record patient’s sleep pattern and number of sleep hours, adjust environment (e.g. light, noise, temperature, mattress, and bed) to promote sleep, assist to eliminate stressful situations before bedtime, monitor bedtime food and beverage intake for items that facilitate or interfere with sleep, instruct patient to avoid bedtime foods and beverages that interfere with sleep.

The nursing activities of anxiety reduction included explain all procedures, including sensations likely to be experienced during the procedure, seek to understand the patient’s perspective of a stressful situation, stay with patient to promote safety and reduce fear, administer back rub/neck rub, as appropriate, listen attentively, encourage verbalization of feelings, perceptions, and fears, instruct patient on the use of relaxation techniques, assess for verbal and nonverbal signs of anxiety.

**Discussion**

The students’ identified nursing diagnoses the end of the clinical practice more than at the end of the nursing course. Students showed to be able to plan the nursing care of patients and to determine patient’s health problems in clinical practice. Students can able to integrate theoretical knowledge and clinical practice.

Students that had taken the fundamentals in nursing course have included nursing process, health assessment, vital signs, asepsis and infection control, medication administration, intravenous therapy, safety, hygiene and self care, mobility, nutrition, respiratory function, bowel and urinary elimination, sleep and rest, pain management and stress, coping and adaptation.
A study by Abbasoğlu, Hakverdioğlu, and Erdemir (2003) showed that students’ most often used nursing diagnoses and interventions in clinical practice were anxiety (59.3%), pain (46%) and risk of infection (45.2%). Other studies showed similar results, with anxiety and pain as the most often stated nursing diagnoses in clinical practice (Müller-Staub, Lavin, Needham, & van Achterberg, 2006; Müller-Staub et al., 2008).

To enhance nursing diagnoses use, authors strongly suggested to focus more on nursing diagnoses and diagnostic reasoning in undergraduate programs (Lunney, 2008; Müller-Staub et al., 2008). The use of actual patient cases and/or case studies is supported in the literature (Lunney, 2009; Müller-Staub, Meer, Briner, Probst, & Needham, 2008). And fostering critical thinking and clinical reasoning has shown to have a significant impact on diagnostic accuracy, on intervention effectiveness and revealed better patient outcomes (Bruylands, Paans, Hediger, & Müller-Staub, 2013; M Müller-Staub, Needham, Odenbreit, Lavin, & van Achterberg, 2010; M. Müller-Staub, Needham, Odenbreit, Lavin, & van Achterberg, 2008; Paans, 2010).

**Conclusions:** Even though the students were first class nursing students who had their first experience of clinical practice, they were successful in determining correct nursing diagnoses and nursing interventions. Teaching the use of NANDA-I diagnoses and NIC interventions in the first semester was successful. Further studies are needed to evaluate long term-effects of teaching and by using more than one patient case study in future research.
References


4. Bruylands M, Paans W, Hediger H, & Muller-Staub M. (2013). Effects on the quality of the nursing care process through an educational program and the use of


Disclosure: No significant relationships.

Keywords: interventions, Nursing, diagnoses, nursing student
8. eLearning for nursing and health professionals in university: an overview.

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Introduction
A technological revolution is challenging higher education’s model also for nursing and health care education. An explosion in online learning, like a revolution has deeply modified the traditional education (Button et al., 2013) also in terms of necessity of sharing of space and time, that in the years constituted an archetype of the formative moment (Finke et al., 2005).

The key features of e-learning are, as indicated by Ganino (2009): use of an internet connection and a technological device (computer, tablet, smartphone); enhancement of multimedia; independence from the constraints of physical presence and specific times (always and everywhere); continuous monitoring of the level of learning through self-assessment; interactivity with teaching materials, faculty members, tutors, and other students; enhancement of social and collaborative learning.

Objective
To conduct an overview of reviews about e-learning in nursing and other health professional students education.

Search strategy
The databases, PubMed and CINHAL were searched for e-learning, using a combination of terms that include, ie distance learning (E-Learning, "computer-assisted instruction" "education, distance", Web-based learning, "virtual learning" and "Web-based education") and the reference population ("Nursing","nurse","nursing, students"). Only integrative and systematic reviews published in the period 01.01.2003-31.12.2013, focused on e-learning in the academic environment for the nursing profession and health professionals were included (Figure 1).

Two reviewer independently extracted data and assessed quality of each review according to the AMSTAR criteria. Minimum score for the inclusion in this overview was four.

**Results**

The literature search identified 9732 articles (PubMed, 3108 articles, CINAHL 6624).

After checking duplicated, titles and abstracts against the inclusion and exclusion criteria, we finally included 41 reviews eligible for inclusion. Subsequently were excluded 19 additional reviews for lack of AMSTAR Score.

In this overview were taken into consideration, 22 reviews (Figure 1).
Of the 22 articles selected for the study, 17 were systematic reviews and 5 were integrative reviews; all included studies met the eligibility requirements set.

The 22 reviews examined different study populations (nursing students, students of all health professions and faculty members) as indicated in Figure 2.
<table>
<thead>
<tr>
<th>Authors</th>
<th>Titles</th>
<th>Years</th>
<th>Journal</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilkinson et al.</td>
<td>Measurement of information and communication technology experience and attitudes to e-learning of students in the healthcare professions: integrative review</td>
<td>2008</td>
<td>Journal of advanced nursing</td>
<td>Nursing Student and Faculty</td>
</tr>
<tr>
<td>Cook DA et al.</td>
<td>Internet-based learning in the health professions: a meta-analysis.</td>
<td>2008</td>
<td>JAMA</td>
<td>Health professional student</td>
</tr>
<tr>
<td>Bloomfield JG</td>
<td>Using computer assisted learning for clinical skills education in nursing: integrative review.</td>
<td>2008</td>
<td>Journal Adavanced Nursing</td>
<td>Nurses and nursing student</td>
</tr>
<tr>
<td>Carroll et al.</td>
<td>UK health-care professionals' experience of on-line learning techniques: a systematic review of qualitative data.</td>
<td>2009</td>
<td>Journal of continuing education in the health professions</td>
<td>Health care professional</td>
</tr>
<tr>
<td>Mancuso JM</td>
<td>Perceptions of distance education among nursing faculty members in North America.</td>
<td>2009</td>
<td>Nursing and Health Sciences</td>
<td>Nursing Faculty</td>
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<tr>
<td>Authors</td>
<td>Title</td>
<td>Year</td>
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<tr>
<td>Booth et al.</td>
<td>Applying findings from a systematic review of workplace-based e-learning: implications for health information professionals.</td>
<td>2009</td>
<td>Health Information and Libraries Journal</td>
<td>Physician, Nurses and Health care students</td>
</tr>
<tr>
<td>Cook DA et al.</td>
<td>What do we mean by web-based learning? A systematic review of the variability of interventions.</td>
<td>2010</td>
<td>Medical Education</td>
<td>Physician, Nurses and Health care students</td>
</tr>
<tr>
<td>Cook DA et al.</td>
<td>Instructional design variations in internet-based learning for health professions education: a systematic review and meta-analysis.</td>
<td>2010</td>
<td>Academic Medicine</td>
<td>Nurses and Nursing Students</td>
</tr>
<tr>
<td>Cook DA et al.</td>
<td>Time and learning efficiency in Internet-based learning: a systematic review and meta-analysis.</td>
<td>2010</td>
<td>Advanced in Health Science Education</td>
<td>Health care professional students</td>
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<tr>
<td>Kleinpell et al</td>
<td>Web-based resources for critical care education</td>
<td>2011</td>
<td>Critical Care Medicine</td>
<td>Health care professionals and students</td>
</tr>
<tr>
<td>Mari L.</td>
<td>Impact of e-learning on nurses’ and student nurses knowledge, skills, and satisfaction: A systematic review and meta-analysis.</td>
<td>2012</td>
<td>International Journal of Nursing Studies</td>
<td>Nurses and nursing students</td>
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<tr>
<td>Authors</td>
<td>Title</td>
<td>Year</td>
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<tr>
<td>Graafland m. et al</td>
<td>Systematic review of serious games for medical education and surgical skills training</td>
<td>2012</td>
<td>British Journal of Surgery</td>
<td>Physician, Nurses and Health care students</td>
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<tr>
<td>Patterson BJ</td>
<td>Student Outcomes of Distance Learning in Nursing Education</td>
<td>2012</td>
<td>CIN: Computers, Informatics, Nursing</td>
<td>Nursing students</td>
</tr>
<tr>
<td>Rowe M et al.</td>
<td>The role of blended learning in the clinical education of healthcare students: A systematic review</td>
<td>2012</td>
<td>Medical Teacher</td>
<td>Nursing students</td>
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<td>Wolbrink TA et al.</td>
<td>Internet-Based Learning and Applications for Critical Care Medicine</td>
<td>2012</td>
<td>Journal of Intensive Care Medicine</td>
<td>Physician, Nurses and nursing students</td>
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<tr>
<td>Didy B. et al</td>
<td>E-learning &amp; information communication technology (ICT) in nursing education: A review of the literature</td>
<td>2013</td>
<td>Nurse Education Today</td>
<td>Nursing Faculty and nursing students</td>
</tr>
<tr>
<td>Frehywot et al.</td>
<td>E-learning in medical education in resource constrained low- and middle-income countries</td>
<td>2013</td>
<td>Human Resources for health</td>
<td>Physician and health care professional</td>
</tr>
<tr>
<td>Authors</td>
<td>Title</td>
<td>Year</td>
<td>Journal</td>
<td>Target audience</td>
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<tr>
<td>Jio-Ying F. et al</td>
<td>Systematic Review of Effectiveness of Situated E-Learning on Medical and Nursing Education</td>
<td>2013</td>
<td>Worldviews Evid Based Nurs</td>
<td>Physician and health care professional students</td>
</tr>
<tr>
<td>Du S et al.</td>
<td>Web-based distance learning for nurse education: a systematic review</td>
<td>2013</td>
<td>International Nursing Review</td>
<td>Nurses and nursing students</td>
</tr>
</tbody>
</table>

Figure 2. Review included
<table>
<thead>
<tr>
<th>EVALUATION</th>
<th>METHODOLOGIES</th>
<th>POPULATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT Acceptance learning/acceptance methods</td>
<td>Blended Game/ 3D/Situated Learning</td>
<td>Students</td>
</tr>
<tr>
<td>Comparison</td>
<td></td>
<td>Faculty</td>
</tr>
<tr>
<td>Cook et al. (2010)</td>
<td>Cook et al. (2008)</td>
<td>Cook et al. (2010b)</td>
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<td>Nevill et al. (2013)</td>
<td>Rowe (2012)</td>
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<td>Patterson, 2012</td>
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<td>Petty (2013)</td>
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<td>Rowe, (2012)</td>
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<tr>
<td>Tathi et al (2013)</td>
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<tr>
<td>Wilkinson et al. (2009)</td>
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</table>

Figure 3. Thematic Areas identified
Identification of themes

The included reviews were widely different in terms of structure and content; however, it was possible to identify recurring themes (Figure 3): population (faculty and students), methods of e-learning (blended learning, the Game / 3D, PBL and situated learning and -learning evaluation.

Population

Students


The factors that contribute to improve e-learning by Carroll et al. (2009): communication; flexibility; support; validation of knowledge; design. Such factors are commonly found in other studies (Booth, 2009; Du et al., 2013) and represent the most attractive aspects for students residing in areas distant from the university educational centers.

One of the particularly examined in the literature is that of the basic computer skills for the use of e-learning technologies (Wilkinson, 2009). Frequently highlighted the need to make specific training in how often preliminary interactive content are not at all easily managed and where the student had not provided adequate knowledge of basic, this could lead to frustration and act as a barrier to learning (Booth et al., 2009) especially for clinical expertise (Kleinpell et al., 2011; Row, 2012). An interesting data, perhaps in the same context with traditional academic
learning is that female students have better result than male (Button et al., 2009) also obvious reasons due to time and work (Petty, 2013).

Faculty
Faculty members, also in nursing fields, are approaching many challenges, including the transition to digital and news educational environments, other than normally regularly used in the past (Mancuso, 2009).

Faculty members, expecially “old generation”, seems to show some issues about e-learning methods. They have necessity of new innovate skills, different time consuming approach, new configuration and distribution of work hours during the week, new methods for student's evaluation, and new systems for distribution of digital contents. Faculty should be involved from the earliest stage of e-learning course planning and development (Rowe, 2008; Mancuso, 2009; Button et al., 2013).

Methodologies
Methodologies of course are very heterogeneous. E-learning range from simple remote support (digitization educational material) to different levels of web based training with high levels of interaction, synchronous vs asynchronous education, simulated lab scenarios and the Game / 3D, available in multi-platform format and in mobile or desktop version.

Blended Learning
Blended mode is the most widely used e-learning approach that combines “face to face” presence and online training activities. This approach have benefit for university (limited necessity of space), faculty (at same time face-to-face and online instruction) and for student (preserving social and instructional interactions) (Petty, 2013).

Game/3D & Situated Learning
More studies referring a special interest to virtual scenarios, mobile applications, games, simulation and situated learning for health professional education (Feng et al., 2013).

The application of digital games for training nursing professionals is on the rise. The games represent also a way to prevent errors in nursing practice. Digital application can be high cost of development, but the results, in terms of cost effective-care efficacy, provide a important argument for investing in development of health digital games (Graafland et al., 2012).

These educational strategies have the potential to add value presenting complex problems of the real world, but digital games used and developed for this purpose need to be validated before integration into nursing teaching curricula. (Feng et al., 2013).

Evaluation of e-learning

The examined reviews showed the presence of a complex variety of web resources related to e-learning, also divided by areas of specialization (eg. critical area, infections), but is not simply and easily find and have access to this online course and provide accurate evaluation of digital contents. In many situations, e-learning was also intended as a simple integration of computer technology in the traditional process of learning / teaching, including through the simple digitalization of teaching material or only a method of distribution of educational contents (Glen, 2005; Button et al., 2013; Booth et al., 2009).

A number of reviews indicate that e-learning can be effective to increase the capacity of training in rural settings, where there is difficulty of using the traditional methods for lack of human resources and equipment. Methods such as audio narration, video and interactive models can
increase the life time of learning, but at the same time facilitate the knowledge and satisfaction. So the time is positively correlated to the results in terms of knowledge (Patterson et al. 2012, Cook et al., 2010c). Rigorous evaluation methods to offer online nursing course as a permanent alternative to the traditional education were necessary (Glen, 2005; Patterson, 2012).

Some studies, that compares e-learning courses with traditional education, showed no evidence of statistically difference regarding knowledge, skills and satisfaction, both for nursing students in undergraduate or post-graduate levels (Cook, 2008, Bloomfield, 2008, Feng, 2013).

**Discussion and Conclusions**

This review clearly show that currently there are multiple form of e-learning in the universities. Peraphs, no stronger evidence of best technologies/modality of e-learning exist in terms of impact on the acquisition of skills and knowledge for students and faculty.

An interesting fact about e-learning is related to the reduction of costs for staff and management, compared to traditional training. Berke et al. (2004) estimated that with the extensive use at e-learning can lead to the cost reduction of at least 25%, in addition to a more efficient use of faculty members time, reducing the commitment from 60% to 25% compared to traditional class education.

This review showed the lack of quantitative studies and RCTs to generate evidence on attitudes and experience of health professionals as part of e-learning process (Ainsley 2009; Cook DA. Et al. 2010a; Cook DA . et al. 2010b; Wilkinson et al., 2009). It is also a need for greater clarity and rigorous evaluation of results and the acquisition of skills through
participation in such training courses in order to proceed to a stabilization of this type of offer (Bloomfield et al., 2008; Lahti M. et al., 2013, Patterson et al., 2012). In clinical education, were also found few studies to assess a minimum standard for e-learning course; Also in this case, further studies are needed before decide a unified criteria (Rowe et al., 2012).

The unresolved key issues are related to proper planning of activities, the specific training of faculty members and, as well as, the complexity of production of interactive-digil learning contents and practical laboratory activities. Also is necessary to establish specific control and criteria for distance verification systems, comparing with the traditional systems. At the end, e-learning activities do not come in a “one size fits all” package that will work in all settings for nursing and health care education. In fact, the challenge when implementing e-learning is to ensure that its integration takes into consideration local context and accounts for specific instructional needs of nursing students and health care population needs in a more effective way. It’s necessary in different countries a reflection serious moment about nursing and health professional education.

References


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**Disclosure:** No significant relationships.

**Keywords:** overview, Nursing, e-learning
Chapter 14 – Workload

1. Staffing requirement calculations from routine data.

D. Hunstein¹, M. Fiebig², B. Sippel³

Summary
Staffing requirement calculations are an area of considerable debate. Minimum staffing specifications are not adequate for this purpose. This presentation outlines an alternative approach, in which staffing requirements are calculated from data taken from standardized routine documentation.

The challenge
The calculation of reasonable staffing levels has been a hotly debated policy issue for some years. The intensity of the discussion results from the differing perspectives of the various actors on what constitutes an appropriate and reasonable staffing level: a clinical manager has a different viewpoint from that of the qualified nurse on the ward, and health policymakers have yet another perspective on the question. In many countries (e.g. USA, GB, D, CH), minimum staffing levels are increasingly under discussion, or have already been specified. However, a formal specification of this kind ignores both the actual need for nursing interventions and the
requisite qualification levels. Specifications of minimum staffing levels, as in the current RN4CAST study (Aiken et al., 2014), are always subject to the major risk that this minimum will then be regarded by the management of the health care facility in question as sufficient. Accordingly, a value actually intended as a danger signal becomes redefined as a maximum quantity (cf. Ball, 2014).

Solution approach
This presentation proposes a method for using routine data from the electronic health record, particularly nursing process data for calculating reasonable nursing staffing levels according to the actual need. For this purpose, standardised tools characterising patient status, as measured with the ePA-AC assessment tool (Hunstein, 2009; Hunstein, Dintelmann & Sippel, 2005), and nursing interventions, as classified according to LEP N3 (Maeder, Bamert, Baumberger, Dubach & Kühne, 2006), are combined with DRG data. This triangulation between patient status data, nursing intervention data and diagnosis data allows realistic nursing staff planning, based on the actual need. The distinctive feature of this approach of using a standardised routine data set is that, as well as allowing the calculation of the staff requirement, it also provides the basis for reporting on the quality of nursing outcomes. This is illustrated using the examples of mobility restoration and continence. This means that, in future, it will also be possible to provide cost benefit ratio reporting. Literature: Aiken, Sloane, Bruyneel, Van den Heede, et al. (2014). Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study. Lancet, 383(9931), 1824-1830

Disclosure: No significant relationships.

Keywords: Staffing requirement, Routine Data, Nursing Assessment, Realistic Nursing Staff Planning, ePA-AC
2. Predicting nursing workload in DRGs factoring in additional drivers of nursing care.

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Summary

DRGs provide a merely limited explanation for nursing workload. Empirical investigations suggest that patient care needs characteristics combined with DRGs, significantly improve the prediction of nursing workload. This enhancement enables transparent, effective and service performance related targeted remuneration within a flat rate DRGs payment structure.

Introduction

The core task of a hospital is caring for and treating patients. For this reason, nursing workload triggers a large proportion of the hospital’s income and must be investigated when assessing the quality of the DRG classification system [1]. Nursing workload for individual patients within a DRG case group should equilibrate each other. However, international studies show high variability in nursing workload suggesting a lack of nursing care drivers. This issue could be a contributing factor in the variability of the nursing workload within the DRG system [2].
Purpose
The study aims to investigate whether the explanation and prediction for nursing workload within DRGs could be supplemented with an assessment of the individual patients care drivers derived from existing nursing documentation.

Methods
The sample from the University Hospital Zurich comprised of 942 patients, presenting circulatory conditions, distributed across 15 DRG case groups. The DRGs were created using the SwissDRG classification [3]. The nursing care drivers were collected using the nursing care focus assessment for acute care (ePA-AC) and the nursing workload using LEP Nursing classification [4, 5]. Robust statistical methods were applied [6]. The SwissDRGs were set as "de-facto standard". Using a partial F-test, the models "small" (SwissDRG case groups only) and "large" (SwissDRGs plus nursing requirement-based characteristics) were compared [7]. The statistics software R was used for the data analysis [8].

Results
Four nursing care drivers, in addition to the set of SwissDRGs, were found to effect nursing workload significantly: general physical and mental competence, exhaustion, functionality of urination and pre-admission care provision. The robust regression model explains 43% of the variability in nursing workload (R² = 0.43). The comparison between the small and the large regression models shows a difference of R² = 0.04. Depending on how the SwissDRGs and the four nursing care drivers are combined, substantial differences can be predicted for
nursing workload, e.g. between 56 and 131 LEP hours for the SwissDRG F32Z (coronary bypass operation without invasive cardiology diagnosis, without complicating procedures, without carotid procedure, without intraoperative ablation).

**Discussion**

The results confirm that classifications developed from both a medical and a nursing care perspective complement each another and work most efficiently in combination rather than as alternates [9]. They allow an analysis of nursing care services comprising of autonomous nursing initiated actions as well as medically mandated nursing interventions [10].

With 43% of the variability, only the smaller proportion of nursing workload can be explained. Around 57% of the variability remains unexplained and could be related to other impacting variables or to random fluctuations [7].

The substantial differences between the forecast values for nursing workload, according to how the SwissDRGs and the four nursing care drivers are combined, have a financial impact. For example, if the nursing costs for a case are calculated at a cost rate (accounting code) of EURO 60 per LEP hour, the (point) forecast for the care costs in SwissDRG case group F32Z is between EURO 3,372 and 7,902. Independently of a performance-related DRG flat rate remuneration, forecast values for the nursing workload can assist management with technical arguments for the different levels of nursing workload within SwissDRGs, and can also be used as a tool for differentiated budget and human resources deployment planning.
For the purposes of this study, the focus was intentionally restricted to the SwissDRG classification and to some specific nursing care drivers. Further variables need to be examined in order to explain a more substantial proportion in the variability of the nursing workload. Over a long period of time a variety of possible variables have been published which could influence the nursing workload in addition to DRG classification criteria and nursing care drivers [11].

References


**Disclosure:** No significant relationships.

**Keywords:** DRGs, assessment, prediction, Diagnosis-related groups, Nursing Assessment, prediction of nursing workload, robust regression
3. Exploring communication in stressful situations among nurses at a pulmonary medicine unit: a correlation study.

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Background

A healthy work environment can improve patient outcomes and registered nurse turnover, creating cultures of retention and fostering healthy work places. Participation, good communication, conflict resolution, and empowerment are reported to be related to patient outcomes. This was examined in a study aimed to increase the quality in nursing documentation and implement nursing diagnoses. How nurses respond to stressful situations will influence on the quality of the documentation related to these situations.

Aims

To explore the factors that characterizes the work environment, with focus on communication among nurses at a Pulmonary Medicine Unit.

Method

Of the 101 nurses and assistant nurses working at the Pulmonary Medicine Unit N= 70 (69 %) filled in and returned the questionnaire according to two different perspectives, “normal daily communication within unit” and “communication under stress”. The Systematizing Person-Group Relations method was
used for gathering data and for the analysis. The method seeks to explore what aspects dominate the particular work environment identifying challenges, limitations and opportunities.

**Results**

There were significant differences in 8 of the 12 vectors, the stressful situations were characterized by low values on task-orientation, caring, criticism, loyalty, and acceptance, engagement and empathy, only the vector creativity had higher scores. The respondents described the stress situation as significant different at several factors which can indicate that the work environment is perceived different in stressful situations and can influence on how these situations are solved.

**Discussion**

The stressful situations are more characterized by spontaneous and not compliant problem solving on your own, than task orientation and inviting others. When stressful situation occur one could assume that there will be a need for collaboration and working together to solve the problem, but findings from this study indicate that the respondent in stressful situations perceive this different, they seems less concerned with working together and having a task-oriented behavior. Collaboration has in other studies been associated with attachment to organization. When stressful situations are characterized by creative and spontaneous behavior, not by task orientation and engagement, this is potential a risk for patient safety. Findings in earlier studies show that nurses experience work-related injuries that are attributed to the stressful nature of their jobs.

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Implications for Nursing Management
There is a need to develop health care personals behaviour in these situations to a higher level of maturity in both analytical and task oriented behaviour related to both independent work and collaboration. Nursing leadership and organization must focus on healthy work environment to be able to change engaged communication in stressful situations and then also increase patient safety.

Disclosure: No significant relationships.
Keywords: Communication, Work environment, Nursing, Interaction, Stressful situations

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**Background**

The aging population, increased dependence, the chronicity of conditions and a reduced family support network are resulting in increased demands on healthcare systems by patients and their families. Simultaneously, the resources available to these healthcare systems are being reduced by the financial crisis.¹ In with this situation, optimisation processes are being built as a necessary although insufficient solution for performing, at least, an effective distribution of available resources and for maintaining the standards of quality and safety required by healthcare services.² Data collection, analysis and interpretation and decision making based on continuous observation have been related to results in patients sensitive to nursing practices.³
Numerous studies have quantified the importance of human resources for nursing in improving the quality of these processes, indicating that patient overload can cause a 4% to 10% increase in mortality, morbidity and failure to rescue.\textsuperscript{4,5,6}

One of the main problems we face is the lack of availability of an instrument that enables us to adjust the nurse to patient ratio based on the complexity of care that hospitalised patients require. Since 2006, our research group has worked on developing a tool (INICIARE: \textit{Inventario del Nivel de Cuidados mediante Indicadores de la clAsificación de Resultados de Enfermería}, Inventory of the Level of Healthcare using Indicators of the Classification of Nursing Results), which is capable of quantifying the healthcare needs of hospitalised patients. This tool would be sensitive to changes in the patient’s condition for use as a tool to manage healthcare and nursing resources in the hospital.\textsuperscript{7,8,9}

INICIARE is based on the conceptual model of Virginia Henderson,\textsuperscript{10} which provides structure; the items were obtained from the indicators of results of the Nursing Outcomes Classification (NOC).\textsuperscript{3} The Henderson model provides the backbone for the healthcare strategy of the Andalusian Healthcare System (Spain), a community in which this scale has been validated. The Standardized Nursing Language (SNL) provide a format to the instrument compatible with the healthcare management systems for digital medical records. This is a strategic feature from the point of view of current applicability to healthcare departments, in which SNL have been included in various classification standards\textsuperscript{11,12} and enable the evaluation of healthcare,
increasing the quality of nursing documentation in the medical records.\textsuperscript{13}

**Research Aim**

To evaluate the validity, reliability and sensitivity to change of the INICIARE scale in a multicentre study conducted in hospitals of varying complexity of the Andalusian Public Healthcare System.

**Methodology**

Two design components were employed: firstly, a descriptive and cross-sectional design of clinometric validation and, secondly, a descriptive and longitudinal design to assess the sensitivity to change. Both have been developed with hospitalised patients in 11 public healthcare system hospitals of differing complexity levels (3 primary, 3 secondary and 5 tertiary).

The sample was composed of 2762 assessments in 690 patients. The sampling was consecutive, calculating the sample size based on the number of items in the questionnaire and a number of results sensitive to the nursing practice (mortality, readmission, pressure ulcers, catheter-associated infection, pneumonia and urinary tract infection), stratified by hospital size (number of beds), unit type (surgical and nonsurgical), sex and age.

The data collection started November 2013 and ended December 2014. The inclusion criteria were an age older than 16 years, both sexes, hospitalisation in surgical and nonsurgical units and an estimated stay of ≥72 hours.

Regarding the data analysis, we first performed a descriptive analysis for the demographic variables. For the clinometric analysis, we tested the reliability using internal consistency, which
was calculated using Cronbach’s alpha, and tested the construct validity and criterion-related validity. The construct validity was determined with exploratory factorial analysis (EFA), principal components extraction of and Varimax rotation. Previously, we performed the Kaiser-Meyer-Olkin (KMO) measure and Bartlett sphericity test. We also conducted a confirmatory factor analysis (CFA) using the fit indices CMIN/df, GFI, FC and RMSEA to check the model a priori. A normality test was conducted with the Kolmogorov-Smirnov test (KS), which detected that our sample did not follow a normal distribution. We therefore used Spearman's rho as a correlation measure for the criterion-related validity. INICIARE was validated with the care dependency scale (CDS) (as a gold standard scale) and Barthel Index.

We also performed the calculations for the scale’s cutoff points using a receiver operating characteristic (ROC) curve, calculating the sensitivity and specificity and optimal intervals based on CDS. For the sensitivity to change, we performed Student’s t-test for related samples, calculating the differences between the initial and final values of the INICIARE scale, as well as the standardised effect size using Cohen’s d.

**Results**

The sample was composed of 54% men and 46% women, with a mean age of 64 years. Sixty-three percent of the patients had a personal caregiver, presented serious (24%) to moderate (31%) dependence (according to Barthel Index), were oriented (88%) (according to Pfeiffer) and dependent on care (69%) (according to the CDS). The profile of the caregiver was female (76%), with a
mean age of 57 years (SD, 13.8) and with a family relationship of wife (53%) or daughter (32%).

The reliability analysis determined a Cronbach alpha of 0.983 on the 59-item scale. Construct validity was determined using EFA, which resulted in 8 measures and an explanatory power of the variance of 80.4%. Previously, we performed the KMO, which yielded a value of 0.97, and the Bartlett sphericity test, which indicated statistical significance. The 8 measures, defined based on the Virginia Henderson needs, are as follows: psychosocial (avoid dangers in the environment and avoid injuring others, communicate with others, beliefs and values, work and accomplishment, play or participate in various forms of recreation and learn, health and use the available health facilities), instrumental (move and maintain desirable postures, select suitable clothes-dress and undress and keep the body clean and well groomed), breathe normally, eat and drink adequately, eliminate body wastes, sleep and rest, protect the integument and maintain body temperature. The CFA (fig. 1) confirmed the presence of these 8 measures (CMIN/df, 3.8; GFI, 0.85; CFI, 0.95; RMSEA, 0.049).
The convergent validity achieved a Spearman's rho of 0.891 with CDS and 0.769 with Barthel Index. If we perform the convergence between the instrumental measure of INICIARE with Barthel Index, the rho value increases to 0.838. The ROC curve (fig. 2) determined that the optimal cutoff is 259, with 87% sensitivity and
70% specificity. The positive predictive value was 91%, and the negative predictive value was 57%. The optimal intervals indicated a distribution to 4 categories, major dependence (59-201), moderate dependence (202-259), patient at risk (260-276) and independence (277-295).

![ROC Curve](image)

Fig. 2. Cutoff according to the ROC curve.

INICIARE is sensitive to change between the initial and final patient assessment, obtaining a statistically significant relationship (t=20.75; p=.000) and a moderate effect size (d=0.53).

**Conclusions**
The INICIARE scale is an instrument obtained after a rigorous validation process in the context of clinical practice of varying
complexity. It shows excellent psychometric properties and quantifies the healthcare dependence level of hospitalised patients. The compatibility with digital systems enables it to serve as support, as a structured system for patient assessment and revaluation and, in hospital management, for the prioritisation and redistribution of nursing resources.

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Keywords: Instrument development, Nursing Assessment, Patient Outcome Assessment, dependency, Health Services Administration

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**Background**

The introduction of electronic health records (EHR) was intended to facilitate increased efficiency, as well as improvements in quality and patient safety (1). Audit instruments developed for the assessment of nursing documentation can be used actively by managers to ensure robust implementation of EHR. They can also be used to follow up the implementation of new ICT solutions. The goal of this work was the translation and cross-cultural adaptation of an audit instrument for qualitative and quantitative assessment of nursing documentation in Norway.

**Method**

Two independent project groups conducted the translation work (Figure 1); one group was located at Oslo University Hospital...
(Group I) and the other at St. Olav's Hospital in Trondheim (Group II).

Each of the two project groups were composed of nurses with a specialisation in documentation. These nurses formed the working group at their respective hospitals. The two groups also functioned as a reference group for each other’s translation work.

Evaluation and selection of assessment tool
We wanted to identify a valid tool that could be used not only with free-text documentation but also with structured documentation, regardless of the type of classification system or structure. Cultural variations and legal requirements were also to be safeguarded.

Cat-ch-Ing is the tool that is most widely used in Scandinavia (3). This tool has been used in several studies where nursing documentation was based on the VIPS model, including at Norwegian regional hospitals. It was concluded that Cat-ch-Ing is valid and reliable. However, further development of the instrument is necessary (4, 5, 6).

D-Catch (Dutch-Catch) is a further development, which has combined Cat-ch-Ing with the Scales for Degrees of Accuracy of Nursing Diagnosis (2). D-Catch is composed of qualitative and quantitative variables for measuring the accuracy of nursing documentation in hospitals. Studies conducted in hospitals in the Netherlands have shown that it has good validity and reliability (2). Permission for translation and cross-cultural adaptation has been obtained from Wolter Paans (main author).
Translation of D-Catch

We used Guillemin, Bombardier and Beaton's method for cross-cultural adaptation of instruments (7). This method should ensure a systematic approach to semantic, idiomatic, empirical and conceptual equivalence (7, 8,) and complies with the translation process within the nursing field, as presented in a recent review (9). This method emphasises the importance of cross-cultural adaptation when translating from one context and language to another.

Figure 1 presents a schematic outline of the steps that were followed in the working process.

**Results and discussion**

N-Catch II is a tool that is culturally adapted to Norwegian conditions. N-Catch II is anchored in the ISO model for nursing diagnoses and nursing interventions. The translation resulted in some structural changes.

In D-Catch, the objective/expected result is not a separate variable. The objective is indirectly integrated under the variable that covers the evaluation of the results. (2). In N-Catch II, the assessment of objective/expected results became a separate variable in line with criteria described in Cat-ch-Ing (3). The purpose of this was to be able to determine if the documentation included planned, individual and quantitative results, in accordance with regulations for patient records in Norway.
Furthermore, D-Catch refers to the PES format for formatting a nursing diagnosis (2). N-Catch II offers two alternatives for the evaluation of nursing diagnoses. One alternative is based on a direct translation from D-Catch. In this case, the formatting of
nursing diagnoses is based on the PES format. The other alternative makes it possible to base an assessment on the ISO model for nursing diagnoses. This alternative can be used for a general assessment where it has not been decided in practice to use the PES format. It offers broader coverage, as there are more ways to describe diagnoses. It includes identifiable and internationally recognized core elements, and an international standard that is based on the ISO model for nursing diagnoses (30). The PES format could be too rigid for the minimum requirements of the International standard ISO 18104 and for the current documentation practice at several Norwegian hospitals. One of the primary intentions of the ISO model is to facilitate systematic evaluation. Other aims are improvement of existing terminology and specialist language, as well as to promote consistency in the development of nursing terminology and documentation (10). Classification systems, standardised documentation, and free text can be utilized with both of these alternatives for assessing nursing diagnoses. The ISO model also makes it possible to examine and compare documents before and after any implementation of the PES format or any classification system.

Nursing intervention is another variable in the audit instrument. The guide to the original instrument states that the requirement for a maximum score is that the intervention "...contains all relevant information needed to act...". In N-Catch II, this explanation was developed based on the ISO model for nursing intervention and stated as “..contain all information that is necessary to be able to perform the nursing intervention”. The intervention in the ISO
model is specified according to the following characteristics: what (action and target of the action), how (means), when (timing), where (location), and who (recipient of care)/by whom (operator).

Finally, some changes were made to the metric aspects of D-Catch in order to maintain equivalence. We adjusted the number of points it was possible to score in the qualitative and quantitative assessment of nursing documentation by changing and adding variables. For example, the assessment of target description was added as a new assessment variable, and point 6 on the assessment of readability as a variable was deleted.

**Conclusion**

An audit instrument for nursing documentation will be an excellent tool for evaluating the implementation of new EHR solutions and classification systems. It will also be effective in following up desired outcomes such as improved quality, efficiency, patient results and health gains.

Further development of the N-Catch II translation can facilitate an even broader application of the instrument. Continuing use and validation of N-Catch II, such as in the district nursing and home health care service as well as in hospitals, will be important for the realisation of the audit instrument's potential.

**References**


Disclosure: No significant relationships.

Keywords: audit instrument, cultural translation, Documentation, Nursing Diagnosis

2. (Nearly) real time analysis of nursing process data.

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About
The presentation is a project report and will show some possibilities and chances of continuously analysing nursing process data in an acute care setting.

Background
By virtue of an increasing financial pressure on the health care systems nursing services have a mandate of efficiency and measurability (Muller-Staub, Needham, Odenbreit, Lavin, & van Achterberg, 2007). Although care planning along the nursing process has a history in Switzerland generally and the University Hospital of Zurich (USZ) especially, the implementation of care planning did not quite meet the challenges of feasibility for our nurses in practice and of measurability for continuous analysis in
the back office. The main reasons were the time spent on collecting data in an acute care ward environment and the efforts that have to be spent on qualitative analysis of free-text-data and hand-coding it for a quantitative analysis.

What was needed was a system that allows quick planning and documentation in a way that creates a sort of structured nursing language for an equally quick analysis.

**Project description**

From 2012 to 2013 the University Hospital Zurich (USZ) implemented an electronic nursing process documentation with a structured nursing language using three instruments: the outcome-based Patient-Assessment Instrument (ePA-AC 2.0), the NANDA-I nursing diagnosis 09/11 (NANDA 09/11) and an activity recording tool for nursing (LEP 3.2). These instruments were linked together by the LEP-AG® with the overall goal to statistically analyse the data to create a data-model of nursing for quality management.

Our specific goals were:

- To provide a comprehensive tool for nursing-process planning and documentation
- To shorten the time for documentation
- To obtain LEP-Data.

Behind these goals we saw the possibility to obtain the nursing process data with just a little more effort wherefore we decided to go on with it.

**The Instruments**

The ePA-AC (Helberg, Frei, Vincenzi, & Spirig, 2010; Hunstein, 2014) is a quick assessment instrument, screening the patients with
55 items in 10 categories for potential nursing problems. The instrument generates risk-scores for pressure ulcers (Braden-Score), falls, pneumonia, delirium/confusion and malnutrition (NRS-Score). Another main score is the self-care-Index (SPI) which is a direct measurement of patient’s self-care abilities respectively an indirect measurement of the amount of care a patient needs. The ePA-AC focuses merely on the physical, functional aspects of care and its categories were developed from the ICF-taxonomy, but are not on par with them. The ePA-AC is conducted once a day. Within this framework, the ePA-AC provides data about the condition of the patient. Also, the overall goal of nursing is described via ePA-AC.

The NANDA-I diagnoses (North American Nursing Diagnosis Association, 2010) describe nursing problems within a PES-scheme that were derived from the actual condition. Of course, a patient can have more nursing diagnoses at a given time and the NANDA taxonomy points to the domains and classes of functional health patterns.

The LEP 3.2 (LEP AG, 2014) is a catalogue of about 800 nursing activities including nursing interventions based on the nursing diagnoses, but also including all patient related activities that may be necessary to deliver nursing care in a hospital. The data created consists of the name, the time and the number of persons needed for the activity. The LEP 3.2 catalogue has its own taxonomy (level 1 – level 5) which is based on the ADL’s and common (Swiss) nursing language.
Overall, these three instruments generate data about the condition of the patient, the diagnoses following that condition, the planned interventions derived from the diagnoses, the interventions that were actually performed and the goals that were achieved by doing so. Each data-item includes meta data about time, patient-ID and case-ID, the organisational unit of the user and the organisational unit the patient is assigned to. This implies to first model the data along the nursing process where it was derived from. Other models (i.e. the modelling along care plans, medical diagnoses, DRG’s or others) are to be discussed.

Results
In a first step, we were able to export this data from our clinical information system and perform descriptive analyses, and the main impression was, that this consists of a very large data set in multiple dimensions and different taxonomies and that our first aim has to be to develop a framework of reasonable questions which the data could answer. Also it was quite clear that we had to establish an IT infrastructure to handle the amount of data. “Handmade” data exports were sure not the way to go on.

In a next step we analysed the ePA-AC-data. The ePA-AC offers some interesting data especially as nursing sensitive outcomes, i.e. regarding pressure ulcer or fall incidences. Due to this analysis, we are now able to compare our wards in terms of nursing care demands, risk factors, pressure ulcer and fall incidences, malnutrition risks as well as other data of interest. It became also clear that the comparison between wards is one of the great benefits, as the data shows a great heterogeneity between them:
Based on the monthly execution we can guide and monitor some practice development projects towards where the impact should be the highest.

In a next step we will combine this data with the NANDA and LEP data. For this purpose, the data will be linked with the metadatabank Amalga®. This allows us to depict the condition of a patient, the nursing diagnoses, what interventions were implemented as well as the costs of the interventions.
While this work is still in progress \(^2\) we did some test-exports to get an idea of the data and which questions we might in the future possibly be able to answer with them, such as:

- Which nursing problems were diagnosed and how often?
- With which interventions were these problems addressed?
- Do different repertoires of interventions assigned to a specific nursing diagnosis exist in different wards and with which outcome were they performed?
- Could there be a useful knowledge transfer to gain better patient outcomes?
- At what costs were these problems addressed?
- Could we do it at lower costs?
- (To be continued...)

\(^2\) At the time, this paper has been written, the implementation of Amalga\(^\text{®}\) was close to be completed. At the Acendio Congress a first impression of the working system should be possible. Never the less, first analyses have been conducted and will be shown.
Considerations
Analysing nursing process data at the University Hospital Zurich is first of all handling big data. The nursing interventions alone create
approximately 1 million data units per month. There has to be an appropriate IT-environment to handle such an amount of data. As stated before, we will use Amalga® for the database. We chose this platform for convenience since it is also applied at the USZ as a financial and medical database. The platform enables us to perform the measurements constantly and, most importantly, in nearly real time. The term “nearly” refers to the fact that some of the data might be from the previous day.

The real time analysis, though not reasonable for all data, could change the way e.g. nursing experts organise their work. For example, after implementing it would be possible to identify patients whose pressure ulcer status changed from grade 1 to 2 and have it examined by a specialised nurse. Multiplied by the number of data items and their possible combination, this could be a milestone in efficiently delivering care in a skill-grade mix environment of nursing care in DRG times.

If data-based acting is the aim, data validity is an important concern. Of course, we are establishing several algorithms to ensure data validity, but our main strategy is to give the data back to the users. If they can make a valuable use of the data, it will be more important to them to create valid data. From this point of view, data validity is a side-effect of using the data.

**Future prospects**

Right now we are “drinking from a garden hose”. Simple descriptive analysis alone delivers sound insight in the processes and performance of our wards and has an impact in the quality promotion. Aggregating the data for different users’ requirements
will give them a better overview of the situation, be it the nurse who wants to see the important aspects for all 5 patients she is caring for or be it the head of a department who wants to see the outcomes of a launched project. Aggregating and displaying the data in an attractive way is the next and important task to do.

To derive conclusions from the data, one has to know about the circumstances the data has been entered in, the facts the data doesn’t contain and the analytical methods that were used to aggregate the data into possible conclusions. Analysing and reporting are not the only assignments, interpreting the results together with the staff is very important, too.

And then there is the prospect of combining the data from the nursing process with all other data sources, like DRG and medical diagnosis data, the human resources data, that allows us to assess which nursing profession, e.g. Undergraduate, Diploma, Bachelor or Master-Grade has done what, even laboratory data might be interesting to combine for certain questions. Further research is recommended.

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Keywords: nursing process, Structured nursing Language, ePA-AC, NANDA-I, LEP, Analysis
3. Hospital accreditation as agent for nursing record quality improvement in a university hospital.

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Introduction

The use of Electronic Health Records (EHRs) allied to classification systems has supported the Nursing Process (NP) implementation into the clinical practice. However, adopting a computerized system does not guarantee the completeness and quality of the documentation, requiring reviews and improvement in a systematic way¹. These assessments have been undertaken by institutions seeking to Hospital Accreditation. Currently, more than three hundred health facilities are certified or accredited by the Joint Commission International (JCI) in the world², which aims to encourage safe and quality patient care, as well as the constant improvement of the institution's performance. Considering the standards from the manual developed by JCI, the documentation become an important focus of evaluation in institutions, both organizational and medical care. Thus, the
quality of computerized nursing records have been given a position of extreme importance to achieve Hospital Accreditation. In this evaluation context, the nursing team documents information that reflects patient care in a clear and reliable manner, considering a new attitude of the professional in front of advanced technology, globalization and changes required in the workplace\(^3\).

The Quality of Nursing Diagnoses, Interventions and Outcomes - Brazilian version (Q-DIO Brazilian version) validated in Portuguese is an instrument that aims to evaluate the quality of nursing records\(^4\). This instrument evaluates four domains: Nursing diagnosis as process, Nursing diagnosis as product, Nursing interventions, and Nursing results, using a Likert scale of three points for measurement. The Q-DIO - Brazilian version has been used as a measurement tool to evaluate and compare the quality of nursing records, and is utilized to measure the impact of implemented educational programs during systems audits and evaluation\(^4\).

To address this issue, through the period of preparation for Hospital Accreditation, the institution where this study took place, developed several strategies to improve quality of care, therefore, the electronic nursing records.

The implantation of the Hospital Accreditation standards demand systems and documentation changes. Thus, this study aimed to evaluate the quality of the electronic nursing records at two different times, before and after preparation for Hospital
Accreditation, through the Q-DIO - Brazilian version and specific quality criteria of JCI.

**Objective**
To evaluate changes in the quality of the electronic nursing records at two different times, before and after implementation of the Hospital Accreditation standards.

**Method**
This is a retrospective observational study of interventions\(^5\) with a quantitative approach developed in a university hospital in southern Brazil. The intervention consisted of educational activities implemented by nurses during the preparation period for the Hospital Accreditation in order to improve the quality of nursing records.

The study population was nursing records from the surgical and medical nursing services before and after the period of preparation for Hospital Accreditation, during the period of October 2009 and 2013, respectively. Inclusion criteria were inpatient medical records with stay of length of at least four days in the same unit, totalizing 224 records. No exclusion criteria were adopted. Data collection was performed by two evaluators between the months of December 2013 and January 2014. To assess the records quality, we used the Q-DIO - Brazilian version instrument, translated and validated to the Portuguese language. A second instrument was built, concomitant with a guideline instructions, with specific quality requirements of JCI, which accessed missing information from the first instrument. The second instrument includes questions about the nursing assessment, fall prevention, pain
control, skin integrity, patient education and family issues, the presence of standard abbreviations, as well as the frequency of nursing records.

A pilot test was conducted to estimate the agreement between the two raters in applying the Q-DIO - Brazilian version and the specific quality criteria of JCI with 24 medical records.

Data analysis was performed by comparing the scores of the total score of the Q-DIO instrument - Brazilian version, their four domains and their items. In addition to this, the total score, and each items of the specific quality criteria of JCI were compared between the first and the second group. The Mann-Whitney test was used to compare continuous and asymmetric variables, and results are presented by mean and interquartile range. Chi-square test was used to compare categorical, and findings are represented by absolute numbers and percentages, with adjusted standardized residuals. Additionally, Yates' correction or Fisher's exact test was utilized when necessary. A statistical significance level of 5% (p<0.05) was adopted. The Statistical Package for the Social Sciences (SPSS) version 18.0 for Windows was adopted. The study was approved by the institutional ethics committee.

**Results**

There was a significant improvement in the nursing records quality (p<0.001). The total score of Q-DIO - Brazilian version instrument and the specific quality criteria of JCI, showed significant difference (p<0.001) between 2009 and 2013. This results considered a minimum score of "zero" for the two instruments, a
maximum of 58 points for the first and 24 points for the second instruments.

The four domains of the Q-DIO - Brazilian version were grouped considering a maximum score of 22 points for the first domain (Nursing diagnoses as process), 16 points for the second (Nursing diagnoses as product), six for third (Nursing interventions) and 14 for the last domain (Nursing outcomes). For instance, there was a significant difference between all domains, p > 0.001 for the first, third and fourth field and p = 0.002 for the second domain.

Out of the total 29 items from the Q-DIO - Brazilian version instrument, 24 items improved (82.8%), and 9 out of 12 items of the specific quality criteria of JCI (75%).

**Conclusion**

Results showed an improvement in the quality of the electronic nursing records after implementation of the Hospital Accreditation standards. Researchers believe that there was a commitment in the hospital cultural change through organizational innovation, protocols, audits and specifically, in educational activities. In addition, the process reinforced the recognition of this institution as an academic center with excellence in health quality and patient safety by the JCI in 2013. This study may support other hospitals to set goals for care improvement, and consequently, the nursing records, adopting educational interventions.

**References**

4. Text mining of nursing notes in different settings.

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Introduction
This study try to use innovative tools for textual analysis to analyse nursing handover, since nursing handover are the main way to communicate, describe and compare nursing health care practice (Coenen and Bartz, 2006). Furthermore nursing handover are
effective tools to improve patients involvement both on their health status and in the decision making process about their care process (Park, 2006).

Indeed, Text Mining (TM) can be particularly useful for these purposes, for instance through the analysis of nursing handovers in order to identify a specific "terminology" developed during time within a ward, discovering by this differences in terminology used by health professionals to describe the same care needs of patients. Results of this analysis could be used at a later stage to set up a general set of terminology, for instance to avoid meaning disambiguation, guarantying by this a correct handover process.

TM can be also used to improve the quality of nursing handover. Indeed, currently there is not a clear identification of what should be written in nursing handover, therefore TM – being able to analyse huge amounts of data – is an important tool to detect gaps within nursing handover with respect to planning, intervention and / or nursing assessment, or any duplication and / or information not directly related to care process.

In the light of above the authors choose to exploit tools such as Text Analizer, Voyant – Tools, Tal-Tac2 which on the one hand allow through a lexicon metric analysis to highlight the specificity of the language used in these contexts; on the other, to discover concepts and more meaningful relationships within nursing handover as well as making a comparison with a nursing terminology which was identified in ICNP® terminology version 2013". In the study two wards were involved, namely that of "Obstetrics and Gynecology" and that of Neurology, as well as a Mental Health Service.
Methods
A retrospective study was carried out in the above mentioned wards through the transcription of all nursing handover (all in hard copy) for three months. The transcription were entry in a link on Lime survey platform, set up for the purpose which was layout as the real nursing hangover (Fig.1). All data gathered was exported into an Excel format to make it "usable" by software aforementioned in order to carry out the text analysis.

Moreover only for the "Obstetrics and Gynaecology" ward - a comparison was carried out with the ICNP® 2013 terminology, using a four stages approach: 1)identification of the main terms and phrases used in writing nursing handover, 2)division into diagnosis, interventions or membership of an axis, 3)comparison
with ICNP® 2013 (so called cross mapping). To describe the level of mapping of the term, levels of applicability of ICNP® proposed by Taiwan Nurses Association (Fong & Chao, 2005) were used such as ‘perfect fit’, ‘conceptual fit’, ‘partial fit’, ‘does not fit’

A table describes results of cross mapping, where the level of applicability of the ICNP® terminology was high (i.e. I-II-III), this was reported together with ICNP® code of the specific term; where there was not matching (level IV) the authors proposed a number of different terms within ICNP® terminology which could describe, even partially, the nursing handover transcribed.

Results

A total of 1309 nursing handover were analysed in "Obstetrics and Gynaecology" ward during the period from September to November 2014, 1329 deliveries from May to July 2014 in the Neurology ward, 1400 nursing handover in the Mental Health Service (from January to March 2014). A total of 7680 for Gynaecology and Obstetrics, and 11352 words in Neurology and 11.149 words from the Mental Health Service were retrieved. Word frequency is displayed in table 1.
<table>
<thead>
<tr>
<th>Word</th>
<th>Occur</th>
<th>Freq</th>
<th>Word</th>
<th>Occur</th>
<th>Freq</th>
<th>Word</th>
<th>Occur</th>
<th>Freq</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take therapy</td>
<td>231</td>
<td>2.1%</td>
<td>condition</td>
<td>347</td>
<td>3.1%</td>
<td>PS (Natural Childbirth)</td>
<td>757</td>
<td>9.8%</td>
</tr>
<tr>
<td>feed</td>
<td>205</td>
<td>1.8%</td>
<td>stable</td>
<td>356</td>
<td>3.1%</td>
<td>I (first day)</td>
<td>745</td>
<td>9.7%</td>
</tr>
<tr>
<td>hour</td>
<td>140</td>
<td>1.3%</td>
<td>tomorrow</td>
<td>208</td>
<td>1.8%</td>
<td>II (second day)</td>
<td>609</td>
<td>8.9%</td>
</tr>
<tr>
<td>Go out</td>
<td>126</td>
<td>1.1%</td>
<td>Cases</td>
<td>191</td>
<td>1.7%</td>
<td>TC (caesarean section)</td>
<td>549</td>
<td>7.1%</td>
</tr>
<tr>
<td>Come-back</td>
<td>125</td>
<td>1.1%</td>
<td>Need</td>
<td>170</td>
<td>1.5%</td>
<td>exams</td>
<td>291</td>
<td>3.7%</td>
</tr>
<tr>
<td>quiet</td>
<td>124</td>
<td>1.1%</td>
<td>nursing</td>
<td>164</td>
<td>1.4%</td>
<td>Foley</td>
<td>158</td>
<td>2.05%</td>
</tr>
<tr>
<td>Activity</td>
<td>106</td>
<td>1%</td>
<td>therapy</td>
<td>162</td>
<td>1.4%</td>
<td>C/C</td>
<td>107</td>
<td>1.3%</td>
</tr>
<tr>
<td>rest</td>
<td>104</td>
<td>0.9%</td>
<td>helped</td>
<td>139</td>
<td>1.2%</td>
<td>pregnant</td>
<td>81</td>
<td>1.05%</td>
</tr>
<tr>
<td>Health professional</td>
<td>99</td>
<td>0.9%</td>
<td>performed</td>
<td>130</td>
<td>1.1%</td>
<td>situ</td>
<td>59</td>
<td>0.7%</td>
</tr>
<tr>
<td>Go</td>
<td>93</td>
<td>0.8%</td>
<td>Dott</td>
<td>124</td>
<td>1.1%</td>
<td>laxative</td>
<td>79</td>
<td>1.02%</td>
</tr>
</tbody>
</table>

Tab.1 Frequency and top words
2720 terms were retrieved and cross mapped with ICNP® terminology, a two step approach was carried out.

First step
Nursing Handover assessment retrieved were..... of this total, 767 (the majority) were related to nursing diagnoses (DC), 741 to nursing interventions (IC); terms that was impossible to match have been connected to axes with prevalence axis M (means) or by axis F (focus).

Second Step
Once the first step was completed the cross mapping with the terms of ICNP® was carried out. This second step shows that 33% of terms reached ‘perfect fit’ (level 1), 26% of terms reached ‘conceptual adaptation’ (level 2), in 23% of terms reached ‘partial adaptation’ (level 3) and just 18% of terms reached did not fit. (level 4) (fig. 2).

Fig. 2 Degree of adaptation of "nursing notes" with ICNP®.
**Discussion**

At first glance it is interesting to note that the three areas analysed are characterized by the use of terms which are strongly connected to the setting (i.e. wards).

The clouds below (fig. 4-5-6) displays all words prior to the process of lemmatization (i.e. riposare - riposata/ to rest - rested). In the Obstetrics and Gynecology wards terms such as TC (caesarean) and PS (spontaneous delivery) which are of course connected to the setting, in the Neurology ward terms are much more connected to patient's condition, similarly in mental health care all attention is paid to the general well being of the patient (ie feeding, rest, self care). This is strongly connected to Kushima, 2011 where hangovers, in oncology settings/wards, are more focused on therapeutic administration while in a neurology/wards there is a prevalence of hangovers about motor problems.

![Fig. 3 Obstetrics and Gynaecology](image-url)

Fig. 3 Obstetrics and Gynaecology
During the collection of data the authors realized that there was a lack of consistency in nursing handover, in other word each nurse uses his/her own way to write handover, indeed each shift often associates different words and expressions to overlapping situation. There is a large use of synthesis, furthermore there was a frequent use of acronyms (sometimes not scientifically validated) and colloquial expressions to designate patient’s conditions or nursing plan.
Overall there is a lack of compliance of nurses on what is the aim of nursing handover, which are aimed not only to communicate within the ward but also and more specifically to give information about the nursing process carried out during hospitalization. Surely this limit is also due to the fact that nursing handover are on hard copy which probably encourages nurses to think that are written for internal purpose (ie within the ward). If informatics nursing notes would be usual in daily routine, for research, storage or other aims, probably nurses would write more carefully nursing notes using a more standardized terminology. This is even more evident when data was compared with ICNP® terminology where it was necessary to make numerous straining for matching expressions which have meaning to weave a single term ICNP® (e.g. Tab.2)

<table>
<thead>
<tr>
<th>Nursing notes</th>
<th>Meaning</th>
<th>ICNP® term</th>
<th>axis</th>
<th>code</th>
<th>applicability</th>
<th>Occurences</th>
<th>Alternative term</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS</td>
<td>Natural Childbirth</td>
<td>DC</td>
<td></td>
<td>10029342</td>
<td>II</td>
<td>757</td>
<td>childbirth (T, 10004311)</td>
</tr>
</tbody>
</table>

Tab. 2
Conclusion
Data and result here presented are the first findings of the study which is currently in the development process. The authors are at this time involved in the data gathering within the same wards; certainly in order to fully exploit the SW a further step should be developed. Indeed data should be converted from nursing handover to a more structured representation in terms of traits, characters, words, terms, and concepts relevant in the nursing handover under analysis. Afterwards all the key stages of Information Extraction (IE) should be set up: Tokenization, lemmatization, Tagging, recurrent patterns, relationship building, identification of co-referencing (Bolasco, 2013).

An important aspect that should be considered in the light of these preliminary results is certainly the analysis of verbal handover during at each shift change. Also for verbal handover, it is our intention use the TM and qualitative analysis of the recorded handover. Finally, despite the benefits of electronic innovation widespread adoption of it is electronic health records (EHR) in Italy is low and the same is for the use of standardized language terminology (SNT). EHR and SNT represented key values for provide evidence of impact of nursing in Health Care System.

References


**Disclosure:** No significant relationships.

**Keywords:** nursing notes, Text Mining, terms
Chapter 16 – Workshops

1. The development of a NANDA-I clinical decision support eTool for accuracy in nursing diagnosis.

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Diagnostic reasoning requires the ability to assess patients to collect data, cluster that data into patterns, and then transform it into information based on conceptual knowledge of the nursing discipline. NANDA International, Inc. (NANDA-I) currently provides 235 nursing diagnoses, definitions and diagnostic indicators (defining characteristics and related factors, or risk factors) that cross the spectrum of age, clinical setting, focus (individual/family/community), and areas of nursing expertise. Because humans are complex beings, influenced by internal and external variables, diagnosis is also quite complex - and while accuracy is critical, it is often difficult to determine in a clinical setting given the amount and complexity of data that is collected during assessment and ongoing care delivery. Development of tools that support clinical reasoning, by providing real-time “at your fingertip” access to a nursing assessment that includes the use of standardized scales, research findings and expert
recommendations, could support nurses’ clinical reasoning, thereby increasing diagnostic accuracy. A project developed by the collaboration of NANDA-I and the University of Wisconsin System (USA) has led to the first such tool available on the market. Originally designed for students and educators, the tool provides clinical decision support, the integration of expert knowledge and standardized assessment tools, and educational videos - along with the NANDA-I diagnostic indicators- to support nurses as they assess and diagnose human responses. Three pathways are currently available; the assessment path is in final preparation for launch. This workshop will detail the development process of the e-tool, discuss research that has been completed, and additional research that is underway, to provide expert knowledge to improve diagnostic accuracy, differential diagnosis and to suggest potential co-occurring nursing diagnoses (those that may occur together in some patients). In addition, recommendations for additional decision support tools will be discussed, including the addition of new standardized assessment tools. Participants will be able to: experience the tool, discuss its development, consider evidence used to create/adopt its decision-support tools, and understand the impact of this tool on the improvement of diagnostic accuracy. Implications for nursing education will be discussed, along with pedagogical strategies for integrating the tool into classroom, simulation lab and clinical experiences.

**Disclosure:** No significant relationships.

**Keywords:** decision support, Nursing Diagnosis
2. The Swiss Nursing DRG Project.

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The actual nursing workload is not sufficiently reported in detail by the Swiss DRGs (Baumberger et al., 2014). In 2008, the Swiss Nurse Director's Association (SVPL) and the Swiss Professional Association for Nurses (SBK) initiated the project “SwissDRG and Nursing”. This project, referred to as “NursingDRG” since 2014, was launched to depict the nursing workload in SwissDRGs in a reliable and performance-oriented manner (SBK, 2014; SVPL, 2014).

On behalf of NursingDRG, the Swiss Federal Statistical Office extended the classification of CHOP (Surgery, Intervention, Therapy) to «CHOP-Pflege-Komplexbehandlung/CHOP-Nursing-Complex Treatment» (code 99.C1) for 2014 (Baumberger & Portenier, 2013). Training programs and information events assisted the implementation of this initiative.

The analysis of the data collected in 2014 should indicate the reality of nursing workload, it would allow a performance-based compensation for acute somatic cases that require a particularly high degree of nursing care. The splitting of single DRGs would therefore allow a fair compensation that reflects the actual nursing workload without creating additional costs.
The NursingDRG project group is now confronted with the task to adjust the regulations and the underlying point system to the 99.C1 CHOP-code. Already gathered data is therefore analyzed, but an additional empirical study is needed as well. First results of the data evaluation from different hospitals show that at the moment only 1% of the cases trigger a 99.C1 CHOP-code. It is still early to tell if the “Nursing and Complex Treatment” code can reach its goal to report the nursing workload in a performance-oriented manner, since it heavily depends on the quality of the data collected. There is still a considerable amount of development work to be carried out, especially the elaboration of a common nursing data-set that can be efficiently obtained from the Electronic Health Record (EHR).

**References**


3. European Observatory of Nursing Standards.

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The European Observatory of Nursing Standards (EONS) is part of ongoing ACENDIO and AENTDE collaborative with the aim of populating specific thematic areas that have been identified and developed by members. The workshop aims to further formulate basic ideas for the development of a European Observatory of Nursing Standards. The objectives of this specific workshop are:

- To identify general trends of development for a European Observatory of Nursing Standards.
- Populating these trends with concepts that are considered to be relevant to nursing’s role in/contribution to a European Observatory of Nursing Standards;
- Engaging with ACENDIO and AENTDE members and collaborators from Europe in order to create a network for the development of the European Observatory of Nursing Standards (EONS)

The Workshop will commence with short presentation about the main results of the European Survey. After that, participants will be asked to address a creativity work on how the EONS would look like.
4. ACENDIO Health Informatics Curriculum for nurses at postgraduate level.

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Information not available at time of printing.

5. ACENDIO eHealth Project.

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Background

eHealth is a rapidly developing area which is creating a new and exciting context for the provision of health services and for the practice of nursing. The European Union has been actively working on eHealth initiatives since 2004 and this has filtered through to policy development in member states and is also evident in that of states in the wider EFTA region. These initiatives are widely characterized as being mediators of better healthcare for citizens. It has been suggested by some ACENDIO members that, whereas many nurses have been active in the development, application and support of eHealth initiatives, nursing has not been very evident in the development of eHealth strategy. Accordingly, ACENDIO has been engaging with its membership, many of whom are eHealth
experts and/or users, in order to produce a coherent and clear voice for nursing on this important work.

**Research Aim/Question/Purpose**

The project aimed to establish a nursing contribution to the European eHealth Strategy. The objectives were to: 1. Identify what ACENDIO members consider to be the key themes in the strategy; 2. Explore and develop those themes and related sub-themes through focused work with members; 3. Disseminate this information to ACENDIO members and European nursing/eHealth organisations.

**Methods/Process**

It was decided that this work would be undertaken using a loose research approach and that a quantitative-qualitative, mixed-methods (modified Delphi and Focus Workgroup), design would be employed. This involved the development of sequential on-line surveys, which sought to ascertain members’ perspectives on key thematic areas, followed by group work on particular themes. Whereas, all ACENDIO members were invited to take part in the on-line work, a cohort of members expressed an interest in being part of an actual working group and it was this group that was facilitated to meet at designated European locations for the second stages of the project.

**Findings/Outcomes**

The initial survey led to seventeen textual responses and following analysis, twelve main themes were identified. These are presented, along with their sub-themes: Individuality of Patient Data; Remote Patient Monitoring Devices; Remote Patient Support Devices;
Usability from a Nurse’s Perspective; Safety and Quality of Care through eHealth Technologies; European Nursing Minimum Data Set; Education/Training on Information Technologies; Virtual Learning; Information Technology and Diagnostic Reasoning; Research and eHealth; Foci for Research; Data Storage and Access. These twelve thematic areas were re-presented to members via an online survey to ascertain which areas were considered most important and priorities for work. Forty-eight members completed this survey and themes were ranked in order of importance. For the second part of this project, members of the ACENDIO eHealth Working Group were invited to partake in eHealth Seminars and Workshops in Dublin, Reykjavik, Torino and Bern. This led to detailed development of the prioritised items.

**Implications**
This is the first attempt to develop a clear nursing contribution to the European eHealth Strategy. It is important for nursing as it provides a voice to nursing which traverses international boundaries. It is also significant as the first such project to be undertaken by ACENDIO.

**Disclosure:** No significant relationships.

**Keywords:** eHealth, Nursing, Europe

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Nursing classification systems are continuously gaining importance in providing the framework for the nursing process and are increasingly used as basis for the evaluation of nursing practice. In addition, the use of terminologies in electronic patient records enables the quantification of data obtained from the nursing process. Data, which can not only be used for reimbursement but also for outcome research, further development of nursing knowledge, implementation of Evidence-based nursing, and the interprofessional communication. However, the discussion of requirements nursing classification systems should meet in order to fulfill the demands of being an integral instrument in electronic patient records are still sparse in the literature. Therefore, the purpose of this workshop is to discuss the adequacy of current nursing terminologies for the use in electronic patient records so that the various requirements for being a significant contribution to Evidence-based nursing practice could be met. Furthermore, the abstraction level, or the needed granulation of nursing classification systems to enable nursing documentation in an electronic patient record will be discussed. At the beginning, three short presentations will establish the basis for the workshop.
Meaning, the manifold aims of utilization nursing process data in electronic patient records will be outlined and the needed level of abstraction and granulation of nursing classification systems will be discussed by presenting results of a cross-mapping of European Nursing Care Pathways (ENP) and NANDA-I. Then, in the final part of the presentation, some case study will be introduced to spur the discussion with the participants of the workshop regarding the central question: How accurate must nursing diagnoses describe the patient's condition or reflect what we observe/perceive/diagnose?

**Disclosure:** No significant relationships.

**Keywords:** Nursing classification systems, Electronic Health Record, Granularity, Accuracy of Diagnosis, Utilization of Nursing Process Data
7. ANA scope and standards.

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Introduction
The American Nurses Association (ANA) is a membership organization, with a message that extends beyond its membership to the interests of 3.1 million registered nurses, nationwide (American Nurses Association, 2015). A major way in which the practice interests are supported is through the organization’s stewardship, development, and dissemination of the profession’s scope and standards of nursing practice. These not only guide practice but help drive policy and serve as a framework for the evaluation of the quality of care.

The nursing process represents the practice core of the ANA standards. We, at ACENDIO, are all aware of the ANA recognized terminologies that have developed around nursing diagnoses. Interventions, and outcomes. The 2015 edition, *Nursing: Scope and Standards of Practice, Third Edition*, proposes an expansion of the evaluation/outcome section. For those inclined to think in terms of taxonomic development, this expansion prompted the idea for an eHealth evaluation taxonomy.3

3 The term “taxonomy” rather than “ontology” because the author is focusing on the structuring or classification of knowledge rather than on describing or arguing for or against its existence (ontology). In philosophical terms, the
The 2015 ACENDIO Conference represents a timely platform to not only discuss changes in the evaluation/outcomes section of the 2015 ANA standards and scope of practice, but also to reflect upon how application of the changes may enhance our understanding of eHealth evaluation?


- Need for change is recognized/identified by the community.
- Change and its direction are not imposed by the facilitators/leaders but shaped by the community.
- The community agrees upon the dimensions of change.
- Enthusiasm to participate in change is high.
- The community is capable of helping with planning, implementing, evaluating and sustaining change.

The author is more interested in the epistemology of eHealth evaluation rather than in its metaphysics.
• The community assumes responsibility to create, builds, lead, market, and staff the structure (an organization, a clinic, movement) for lasting change.
• There is an on-going communication loop among members (clearinghouse with newsletter, blog, Facebook, publications, and/or journal)

ACENDIO is an organization, a community of people. Perhaps it will decide to lead the kind of change needed to structure and disseminate the recommendation made in this presentation: a taxonomy of eHealth evaluation.

Change and knowledge are intertwined. When change occurs, knowledge expands and when knowledge expands, change occurs. While it is difficult to define or capture where change will lead, it is less difficult to define the dimensions or domains of knowledge that influence change. When speaking of a taxonomy of eHealth evaluation methods, for example, the supportive knowledge domains/dimensions may include:

• Types of eHealth initiatives or services/devices (including assessment (monitoring), diagnostic, interventional)
• Adoption outcomes (consumer-user and provider-user)
• Its evidence base (design, study level or phase; levels of evidence, grades of recommendation)
• Outcome evaluation (process output, e.g., frequency of use, reliability, sensitivity analyses; patient outcomes, e.g., nursing sensitive quality indicator outcomes; 2001 Institute of Medicine (IOM) report-derived quality care outcome
categories (Table 1); longer term risk reduction and adverse event outcomes)

- Impact evaluation

Is this type of eHealth evaluation taxonomy needed within nursing/healthcare practice, education and research? That is for the ACENDIO community to decide. If their decision is yes, then it is up to ACENDIO members or subgroups to shape the direction of change.

The aim in this paper is to stimulate discussion by addressing a fourfold purpose to

- Provide a brief overview of the processes that went into the development of the 2015 Scope and Standards of Nursing Practice
- Advocate for leadership by nursing professionals in the design of an eHealth evaluation taxonomy that includes outcomes, e.g., the 2001 IOM quality care outcome criteria
- Revisit how AMIA (American Medical Informatics Association, 2015) displays the branches of the science of informatics
- Stimulate discussion within ACENDIO membership on the development of an eHealth evaluation taxonomy, led by nurse professionals and congruent with nursing standards

**Methods**

The methods used in developing this presentation are simple:

- Observation of the processes used by the ANA Working Group on the Nursing Scope and Standards of Practice document
• Comparison of recommendations from the literature with the recommendations within this article for a nursing-sensitive taxonomy of eHealth evaluation methods
• Suggest an alternative AMIA display for the branches of informatics science
• Use a community reflection approach to elicit from the ACENDIO audience ideas and the leadership needed to create a taxonomy/classification of eHealth evaluation methods.

A potential approach to accomplish the latter objective is to divide those in the audience who desire to participate into small clinical, educator and researcher groups and ask each group to identify three advantages of an eHealth evaluation taxonomy. They will then reconvene, share, summarize responses, and discuss whether the advantages outweigh disadvantages. If the decision is to move forward, the next best steps are to name the group and continue the work begun at this conference.

Results
Processes used by the ANA Working Group on the 2015 Scope and Standards of Practice.

The initial processes used were the selection of members and the introduction of members to the overall methodology, i.e., the who, what, why, where, how, and when of nursing practice, paralleling assessment, diagnosis, outcomes, planning, implementation and evaluation. The large group was then divided alphabetically into who, what, why, where, how and when small work groups. The large and small groups met alternately at two-week intervals. Except for a final meeting at ANA headquarters in Silver Spring,
Maryland, all meetings were video-enhanced telephone conferences, scheduled at the convenience of members, taking into consideration changes in time zones. The selection process began in the early months of 2014 and the Silver Spring meeting occurred on February 7-8, 2015. Leadership was provided by Elizabeth “Libby” Thomas, Med, RN, NCSN, FNASN, Chairperson and by Carol J. Bickford, PhD, RN-BC, CPHIMS, FAAN, Senior Policy Fellow, Department of Nursing Practice & Work Environment, American Nurses Association. The “when” group, of which I was a member, focused on when nursing occurs and on evaluation. Thinking in terms of ACENDIO, my own focus then turned to eHealth evaluation and the nursing process.

Comparison of recommendations from the literature with the recommendations within this article for the development of a nursing standards sensitive eHealth evaluation taxonomy.

There are at least two articles relevant to this discussion. The first, by Murray (2012), discusses the UK Medical Research Council (MRC) framework and suggests domains that may be useful in the development of an eHealth evaluation taxonomy. These include what might be called a management facilitation uses (self-management, healthcare management, emotional management and role management/transition). In terms of design levels, the author recommends the MRC study phases. The author also identified a few types of web-based applications or apps to be evaluated.

A December 2014 article in the Journal of Medical Internet Research reported on a review of telehealth evaluation methods.
Authors were members of the Center for Connect Health at Partners HealthCare. This center is affiliated with Harvard Medical School hospitals, including Brigham and Women’s and Massachusetts General Hospital. The Center has a vested interest in evaluation strategies for telehealth because it is a driver in the use of technology to deliver home health care. The services supported include remote monitoring, mobile health, health sensors and trackers and other solutions for improved self-health management. In this article, the authors reviewed evaluative methods used within one eHealth program, the Diabetes Connect Program. Their review served as a case study.

The study used an evaluative typology that consisted for four domains: evaluability, documentation, formative (process), and summative (outcome). Outcome here is not to be confused with output, e.g., the number of devices in place or even the number of devices on which the patients have been instructed. Rather, outcome here represents patient and population outcome data. In this regard, the authors’ definition of evaluation is analogous to nursing’s use of the term “outcome evaluation.” The authors’ “summative evaluation” and nursing’s patient outcomes conceivably fit within the quality care categories identified in the 2001 IOM report. Table 1 illustrates how the IOM categories may be adopted for eHealth evaluation purposes.
Table 1. One eHealth evaluation approach and related examples, derived from the 2001 IOM report *Bridging the Quality Chasm*

- Among consistent, inconsistent, and discontinued wireless glucose monitoring users, evaluate
  - **Effectiveness by**
    - Health outcomes: the number and proportion with favorable health outcomes, e.g., decrease in HbA1C, decrease in hospital admissions, decrease in complications, sick days
    - Impact: improvement in overall health and health care costs of population being served by the device as measured by decreases in rate of terminal events, complications, uncontrolled plasma glucose concentrations, hospital admission and/or readmission rates
  - **Safety by**
    - Missed hypoglycemic episodes
    - Missed hyperglycemic episodes
  - **Equitability by**
    - Study of selection bias with regard to race, age, sex given the overall pool in the larger population
  - **Patient centeredness by**
    - Patient satisfaction with features
    - Patient dissatisfaction with features
    - Attention given to patient recommendations regarding improvements needed
  - **Efficiency by**
    - Decreases in resource waste and costs e.g.,
      - Provider cost or costs averted/patient
      - Hospital cost or costs averted/patient
      - Lost patient productivity.
  - **Timeliness by**
    - Time-to-report hypoglycemic/hyperglycemic episodes
    - Time-to-treat hypoglycemic/hyperglycemic episodes
    - Duration of consecutive time within pre-set glycemic range
To assess further the need for a nursing-sensitive eHealth evaluation taxonomy, we conducted a search, using the following terms (with embargoed results limited to one year): eHealth technology initiatives AND evaluation AND nursing process NOT pharmacy. On January 30, 2015, the search retrieved 52 citations. Of these, 19 (36.5%) listed one or more nurses as an author. Of these 19 citations, 12 titles or abstracts referred one or more times to direct patient/consumer care. Of these 12, only five titles or abstracts included references to one or more steps in the nursing process. This overview indicates eHealth would benefit from more patient outcome and clinical nursing focused studies.

An alternative display of informatics science
Rather than a linear display of the AMIA branches of science of informatics, it is advisable, from a clinical nursing perspective, to display the patient at the center of a series of knowledge rings/domains, with each ring representing a branch of informatics science. Also, in terms of nursing and health science, as a whole, the distinction between clinical informatics and consumer health informatics is ambiguous. For nursing, the consumer is the client, who is under some circumstances, the patient or the family or the population. The implications of such ambiguity is worthy of scholarly discussion.

Community reflection: Advantages of an eHealth evaluation taxonomy for clinical and nursing education and research practice.
This section is contingent upon audience response at the 2015 ACENDIO Conference. The results may yield a leap forward in the field of eHealth evaluation.

References

Disclosure: No significant relationships.

Keywords: Standards, Nursing, eHealth, informatics
NB: The database of 52 titles and their related abstracts, used to derive results in this presentation, will be available upon request at the 2015 ACENDIO conference in Bern.
Chapter 17 – Posters

1. Reducing the gap between theory and practice through nursing documentation

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Reducing the gap between theory and practice through nursing documentation. Background Educating nursing students involves teaching knowledge, skills, and competencies. Within nursing education, there is continual discussion about where students should learn what. Research shows that the relationship between theory and clinical practice is perceived relevant for students. Studies under the label "gap issues" between theory and practice, and reality shock, are well known. The project is designed to reduce the gap between theory and practice and ensure the quality of learning outcomes for students. Learning situations provide opportunities for guidance and reflections, trial and error, without compromising patient safety. The project aims to ensure the quality of the actual educational content. The students are provided a thorough review and discussion of the appropriate nursing interventions, the reason for these interventions, and nursing documentation. In a busy clinical setting, it is uncertain the students receive sufficient guidance, which can compromise the healthcare they perform. It is of great importance that the university and the clinical settings cooperate about the educational content, as both institutions are
important contributors to the students learning. Intervention. The project is a collaboration between the university and the hospital. The aim is to test and quality ensure a method that will promote learning outcomes. The intervention will change the learning environment in order to achieve the expected learning outcomes, in addition to changing the role of university lecturer, nurse from clinical practice and student. Design of intervention: One school day in virtual practice facility with nurse from clinical practice and university lecturer. Students provide notes concerning reflections about specific themes such as infection control, COPD, heart failure, heart attack, intoxication. Discussion about these reflections. Review of standard nursing care plans concerning the specific theme, for example a plan for patients with heart failure. Relate to a patient case, discuss and justify the nursing care plan Training of practical skills related to the given theme: use of infection control equipment, measures to promote respiration, oxygen treatment and equipment selection, procedures and care of PVK, BT, taking a pulse counting and recording respiration, insertion of a permanent catheter. Scenario related to the given theme: A patient situation they may encounter in the clinical setting where they will be training: serving food to a patient with airborne contagious agents or "positioning of patient with heart failure.” The aim is that students receive knowledge and skills that are relevant to the work they will encounter in the clinical setting and that they understand the necessary documentation of health care. This is done without risk to the patient, and the students can use the needed amount of time without pressure. In addition, the
purpose is to promote cooperation between the university and the hospital, reducing "the gap between theory and practice". The project is evaluated through the analysis of focus-group interviews with students at the completion of the project, while the experience from the clinical settings is obtained by the university-lecturer.

**Disclosure:** No significant relationships.

**Keywords:** Nurse-education, Documentation, Intervention, cooperation

2. **Equivalency of items between the ICNP Portugal 2011 and Brazil 2013 translations**

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**Introduction**

This paper describes a research in development about a semantic equivalency between the International Classification for Nursing Practice (ICNP®) Portugal 2011 and Brazil 2013. Translations for Brazilian Portuguese and Portugal Portuguese ICNP® are the result of distinct understanding of terms of professional practice. The cultural roots and historicity of both countries may reflect different ways of understanding and accepting propositions terms. The purpose of this presentation is to identify similarities in descriptions of the concepts of translated terms for the Brazilian Portuguese and European Portuguese language of the ICNP®.

**Method**
An equivalency of items was made between the translations available on the International Council of Nursing website (Portugal 2011 and Brazil 2013). Terms were organized in a spreadsheet from your coding and classified into four major groups: SET1 identical name and description; SET 2 identical name and different description; SET 3 different name and identical description; SET 4 different name and description.

**Results**

A total of 2132 terms were reviewed, 560 were classified in SET1 (23, 6%), 710 in SET2 (33, 3%), 367 in SET3 (17, 2%), 480 in SET4 (22, 5%) and 15 terms are absent in version 2013. The location axis has 61.3% of its name and descriptions with total similarity between the translations; 36.7% of the terms of the focus axis are identical but have different descriptions; 51.1% of the action axis terms have different descriptions and 30.4% are terms with different names and descriptions. At the time axis met the lowest percentage (7, 6%) of different name and descriptions. The results of this phase (1572 terms and descriptions) will be analysed semantically.

**Conclusion**

The diversity of nursing practice and the different cultural contexts in which it occurs makes the establishment of consensus on the concepts of terms that are used to be a task of great responsibility and with high impact in practice. Some descriptions should go through back translation to decrease the possibility of different interpretations of the same concept.
Disclosure: No significant relationships.

Keywords: Classification, Vocabulary controlled, Terminology, Nursing

3. N-Catch: an audit instrument for assessing nursing documentation in Norway

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Content: Introduction: Studies have found that documentation of nursing care lacks logical structure and appears incomplete. Electronic Health Record (EHR) systems entails expectations about efficiency and quality improvement. We need a validated audit instrument to investigate the nursing documentation systematically. Purpose: Cultural translation and development of an audit instrument, D-Catch, to a Norwegian instrument, N-Catch, for investigation of nursing documentation. Method: We translated, culturally adjusted, and developed the D-catch instrument further based on national requirements, legislation, and the ISO model for nursing diagnosis. Use of scientific methods ensured validity and reliability of the translation. Result: N-Catch is an audit instrument to assess quality and quantity of nursing
documentation in Norway. N-Catch can be used in any EHR system in Norway independent of free text documentation or use of classification systems. Conclusion: A national audit instrument for nursing documentation can be a support for managers, researchers and developers. The cultural translation and development of the instrument may be of interest for other countries as well.

**Disclosure:** No significant relationships.

**Keywords:** audit instrument, cultural translation, Documentation, Nursing Diagnosis, Nursing action

### 4. Nursing diagnosis based on signs and symptoms of cardiac patients

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**Introduction**

Nursing diagnoses are clinical judgments on responses of an individual, a family or a community to health and real or potential vital processes. They are used to guide planning, implementing and evaluating nursing actions. Given that they are considered as a scientific interpretation of collected data, they have been contributing to the analysis of responses to cardiovascular diseases which are, for a majority of them, ischaemic heart disease and cerebrovascular insults, among other affections preceded by pathologies involving the cardiovascular system. Hospitalizations
associated with the latter include admissions in intensive care unit, in which it is relevant to adopt measures that conceive health and disease as something going beyond the biological dimension, providing the patient with humanized, contextualized and complete care.

**Purpose**
Inferring nursing diagnoses to cardiopathic patients hospitalized in intensive cardiology unit

**Methods**
It is a transversal study, based on electronic medical records of patients hospitalized in an intensive cardiology unit at Hospital São Francisco, part of Santa Casa de Misericórdia hospital complex in Porto Alegre, Brazil. Sampling will take place conveniently, which means only patients having an electronic medical record are eligible. Data will be collected according to the instrument developed specifically for the present study. Signs and symptoms of patients will be recorded, and will be sorted by pathology. This will allow inferring nursing diagnoses. For a nursing diagnosis to be attributed to a patient, at least two definer characteristics or risk factors shall be identified. Statistical Package for the Social Sciences (SPSS) will be employed for statistical descriptive and analytical analysis. Ethical issues will be approached in compliance with the Brazilian resolution #466, from 2012.

**Expected results**
The main nursing diagnoses for cardiopathic patients are expected to be identified in order to strengthen the basis for the proposal of
care plans being coherent with the real needs of each patient, stating guidelines for clinical nursing practices.

**Disclosure:** No significant relationships.

**Keywords:** Nursing diagnoses, Cardiology, Intensive Care

### 5. Person with chronic pain - a nursing intervention model of care

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Chronic pain is reflected in people's lives and changes the patterns of daily life and perception of health status. Willingness to handle new situations, challenges and the acquisition or development of strategies to find balance, are the key to pain control. This reality was the fulcrum for the development of this investigation, carried out under the question: Which nursing care model effectively responds to the people with chronic pain needs, promoting the coordination and continuity of care? The research aims to define a nursing intervention model, sustained in the transition theory, which can be integrated in the care organization. Adopting a constructivist paradigm, an approach was designed based on two phases. The first phase aimed to characterize the process of living with chronic pain and the model of care used in organizations in the accompaniment of persons with chronic pain. The second phase aimed the development of a nursing model of
accompaniment of people with chronic pain, which ensures the needs of the person/family, promoting coordination and continuity of care between different health care settings and improvement on the satisfaction and quality of life of the person with chronic pain. In order to define the structural lines development of a model monitoring nursing to people with chronic pain, the use of group discussion, as we deem appropriate methodological strategy. We present the structural aspects of the monitoring of nursing to people with chronic pain as a result of consensus generated in the group discussion model. The proposed nursing care model of accompaniment of people with chronic pain is based on three structural elements: health policy, the nursing care organization and the care process. The assumptions underlying the health policy are appropriate, support the development of the proposed model, guided by the Health National Plan, as well as by Pain Control National Plan. However, the adequacy of these guidelines in the context of clinical practice does not always respond to the actual needs of the person with chronic pain. The proposed model assumes the centrality on the client and family. The use of a multidisciplinary team to cope with chronic pain is often essential. The definition of circuits and flows, including the signalling process for teams specializing in pain management as a strategy relevant to the organization of care, emphasizing the use of primary care. The process of nursing care should be aware that the transitions are associated with changes that occur, or may occur, in the person, resulting from the process of living with pain: changes in health condition and how they settle and generate transformations on the
person and the circumstances surrounding it. Therefore, it is necessary that the model of nursing care in the accompaniment of people with chronic pain is oriented to address the aspects experienced in the transition, ensuring in this way the continuity of care and evaluation.

**Disclosure:** No significant relationships.

**Keywords:** Chronic pain, Model, Nursing, Transition

### 6. eHealth advancing nursing worldwide

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Nurses rendering care to recipients with health needs use eHealth, defined as the use of information and communication technology (ICT) in health. Two challenges inherent in this universal usage are recognition by nurses that eHealth is inevitably part of their practice, and recognition of nurses’ knowledge, skills and abilities for care delivery. ICN launched its eHealth Programme in 2011, recognizing that the construct of eHealth was viable worldwide and that international nursing leadership was necessary in the fast-growing field of ICT applications for health. Internally, ICN considered several of its programmes directly relevant to eHealth: Connecting Nurses Collaboration, the Telenursing Network, and the International Classification for Nursing Practice (ICNP). In
addition, ICN programmes emanating from the ICN pillars (socio-economic welfare, regulation and professional practice) were found to have great potential for enhancement with eHealth applications. The aims of ICN eHealth are to [1] support eHealth practice, [2] be recognized as an authority on eHealth, and [3] be positioned centrally in the eHealth community. ICN supports ICT-infused practice, that is, eHealth practice, through its management of ICNP for application in care settings. It further supports this aim through education and advocacy for telehealth nurses globally. In working to advance nursing and health as the authoritative voice for nursing, ICN identifies and promotes best eHealth practice and policy. Virtual and in-person education sessions organized by ICN are examples of the promotion of best practices. An example of policy promotion would be the 2014 ICN Position Statement “The Right to Connect via Information and Communication Technology.” ICN expertise is often sought by nursing organizations and interdisciplinary partners for eHealth issues. ICN partners with the International Society for Telemedicine and eHealth (ISfTeH), contributing nursing perspective and experience to this interdisciplinary society that seeks to advance health care that leverages technology for greater access and quality. Collaboration with the World Health Organization (WHO) Family of International Classifications demonstrates ICN’s credibility in terminology development and dissemination. Nursing interventions are being used in the development of the WHO International Classification of Health Interventions (ICHI) to ensure that nursing is represented in this relatively new
terminology. The operating principles for ICN eHealth are engagement, visibility and utility. ICN is sensitive to nurses’ needs in terms of practice, education and regulation with the goal of supporting nurses’ initial, continued or advanced application of ICT in their work. To ensure continued visibility, ICN uses electronic communications with the nursing community covering key events, conferences, new terminology and telenursing products, publications and ICNP Centres’ accomplishments. ICN eHealth utility is seen in the application of ICNP in care delivery systems and in the education and collaboration for telenurses through the ICN Telenursing Network and the ISfTeH Telenursing Working Group. With health care being steadily influenced and advanced by ICT applications, it is essential that nursing demonstrates leadership in eHealth. As the international voice for nursing, ICN is committed to providing that leadership, supported by the policies and tools necessary to advance nursing and all aspects of citizen and patient health worldwide.

**Disclosure:** No significant relationships.

**Keywords:** visibility, eHealth leadership, Engagement, utility
7. Medical diagnoses and nursing effort – can LEP Nursing 3 be of help in recognizing patterns?

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Background
The data collection of nursing interventions via LEP Nursing 3 allows a more realistic analysis of the nursing workloads than previous methods. This occurs due to the inclusion of LEP variables in care planning. Both, automatically created combinations of these variables within EDV documentation and patient data management system (PDMS) from Intensive Care Units (ICUs), lead to more objective data.

Objectives
Initial exploratory analytical steps of these numerous data sets show various possibilities for a detailed look at individual diagnostic groups (ICD) with regard to their nursing workload. This incorporates considering patient pathways across ICUs, high dependency units (HDUs) and general wards. Of special interest are similarities and differences in the delivery of nursing care with a view on e.g. indications of the required number of staff and their needed qualifications.

Methods
In a timeframe over 3 months the ICDs are investigated by merging the LEP data of a surgical ICU with the data of a HDU and general
wards. The processed data are analysed descriptively (e.g. costs of nursing care in minutes, types of interventions). Inferential statistics are used to investigate correlations between patient characteristics such as the number of secondary diagnoses, age, length of stay and variable groups of LEP nursing 3.

**Expected Results**

With this study we aim to represent departmental similarities and differences in nursing effort and the types of interventions. Economically the data can be used for a comparison between cost for nursing staff and proceeds. Additionally, we hope to obtain more information of predictors of differences in nursing workload in acute care hospital.

**Disclosure:** No significant relationships.

**Keywords:** LEP Nursing 3, medical diagnosis, nursing effort, exploration

8. **Use of complementary therapies in control of anxiety in patients with colorectal cancer: an integrative review**

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**Background**

Anxiety is a common feeling among patients with colorectal cancer and affects negatively them. In addition to affecting cognitive abilities and cause physical and mental discomfort, may endanger
the recovery of patients in cases of surgery. As a symptom, anxiety can be managed by a brief intervention, which can be obtained by different nursing actions, among which are complementary therapies.

**Aim**
To analyse the available evidence in the literature about the use and effectiveness of complementary therapies in controlling anxiety in patients with colorectal cancer.

**Methods**
This is an integrative review conducted in September 2014 in the following databases: PubMed, CINAHL, LILACS, The Cochrane Library, APA PsycNET, Academic Search Premier, Scopus and Web of Science. The guiding question of this review was: "What is the evidence available in the literature regarding the use and effectiveness of complementary therapies in controlling anxiety in patients with colorectal cancer?" To the search descriptors and keywords were used, which were combined in different ways to ensure a wide search of the studies, and have been applied according to the specifics of each database. Inclusion criteria for the selection of the articles were: primary studies published in journals that addressed the use of complementary therapies in controlling anxiety in patients with colorectal cancer, no limits as to the year of publication or language being established. To collect and analyse data an instrument developed by the authors to meet the objective of the study was used.

**Results**
Of the 104 articles identified, only 7 met the inclusion criteria, of which the oldest was published in 2000 and the latest in 2014. Of the 7 articles, 5 (71%) had at least one nurse as an author and, of these, three (43%) were conducted only by nurses. According to the results of studies, complementary therapies used (Progressive Muscle Relaxation Training, Hatha Yoga, Music Therapy, Reiki, Self-Efficacy Enhancement and Hypnosis) were effective in reducing anxiety in patients with colorectal cancer.

**Conclusions**

Anxiety in patients with colorectal cancer can be managed effectively through the use of complementary therapies. Nurses can use this review to learn about the use of complementary therapies in controlling anxiety. Still, professional nurses can develop new research in order to explore different types of intervention in the area of complementary therapies to put them into practice and spread the use of these in Nursing.

**Disclosure:** No significant relationships.

**Keywords:** Anxiety, Colorectal Neoplasms, Complementary Therapies
9. Nurturing novice nurses with the partnership nursing system (PNS): changes in nursing skill mastery before and after introduction of PNS

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Introduction
The University of Fukui Hospital devised the “partnership nursing system” (PNS) in 2009, and has systematically introduced it since then. The aim of the PNS is to enable nurses to provide both safe and high quality nursing. In the PNS, two nurses cooperate with and complement each other as effective, equal partners, taking advantage of each other’s strengths to perform daily nursing care and share achievements and responsibilities. The education system for novice nurses was also changed with the introduction of the PNS. Before the introduction of the PNS, assessment of nursing skill mastery of a novice nurse was performed by a clinical coach, who was in charge of their education, however, after the introduction of the PNS, the person responsible for performing the assessment was changed to the partner appointed for the novice nurse.

Objective
This study aims to clarify the contribution of the recently introduced PNS to the education of novice nurses by determining the differences in nursing skill mastery.
Method
Subjects: 175 novice nurses (40 in 2010, 47 in 2011, 49 in 2012, and 39 in 2013) Survey method: Data of 63 individual nursing skill items that novice nurses became able to perform independently and the respective dates were collected using a nursing skill evaluation sheet. Ethical considerations: Approval from the ethical committee of the institution was obtained. The aim and method of the study and the content of the survey were verbally explained to the novice nurse participants, and their consent was obtained.

Results
The rate of mastery of nursing skill items by novice nurses rose from 43 of the 63 items (68%) in 2010 when the PNS was practiced in some of the wards, to 50 items (79%) in 2011 when the PNS was introduced in all the wards, 50 items (79%) in 2012, and 53 items (84%) in 2013. With regard to individual skills, the skill acquisition rates for several items were low before the introduction of the PNS, but rose after its introduction (as of 2013).

Discussion
In the PNS, a novice nurse can accumulate experience of specialized, highly sophisticated skills that are difficult to master, or of caring for patients in serious conditions that a novice nurse cannot cope with independently. A novice nurse is not only paired with a senior nurse, but is also a member of a group with a head nurse as a core member and, therefore, can receive support from the whole group. In addition, the partner can educate the novice nurse with support from the group members, the clinical coach, and the head nurse. The successful support system of the PNS has
led to improvements in the mastery of nursing skills by novice nurses.

**Conclusion**
The mastery of nursing skills by novice nurses has been improved after the introduction of the PNS. The introduction of the PNS is beneficial for the nurturing of novice nurses through the support of all staff members. Keywords: Partnership Nursing System, PNS, novice nurse, nursing skill, education

**Disclosure:** No significant relationships.
**Keywords:** Partnership Nursing System, PNS, novice nurse, nursing skill, education, Partnership Nursing System, novice nurse, nursing skill, education

**10. Management of acute postoperative pain**

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Management of acute postoperative pain Introduction: Pain is localized, unpleasant to unbearable feeling associated with physical or mental disorders in the functioning of the organism. Despite major medical advances, the pain remains still treated below
expectations. In the University Medical Centre Ljubljana was with a view to improve the management of acute postoperative pain formed Department for the relief of acute postoperative pain (SLAPB). In this paper we want to investigate the problem of acute postoperative pain in patients following abdominal surgery and the influence of experts from the SLAPB in better pain management. 

Hypothesis:
- Average pain assessment by the nurse in the Department of intensive care (the first and second day after the operation) is equal or less than 3 according to the NRS pain assessment scale.
- Assessment of pain the first two days after surgery is done and documented regularly every 2 to 3 hours.
- In the Department of intensive care nurse administrates additional analgesics on the basis of the assessment of pain, which is greater than 3, which is evident from the documentation.
- Half an hour after the administration of additional analgesics nurse in the Department of intensive care re-evaluate and document pain.
- Assessment of pain by nurse in the Department of intensive care differs from the assessment of pain by the consultant SLAPB.
- Consultant SLAPB interventions reduce the possibility of developing side effects of analgesia.

Methods:
We will carry out quantitative, prospective study. After receiving approval by the medical ethics committee and patients' informed consent to participate in the study sample, we will cover all elective patients with a medical diagnosis Ca sigma, surgery under general anaesthesia with ASA I and II, after surgery in the lower abdomen, pain located in the region abdominal receiving continuous intravenous opioid therapy (iv PCA). Patients will be followed two
days. We will exclude palliative patients receiving opioids before surgery and patients who will be given pain due to other causes. We will include 60 patients in the sample. Results: We assume that the pain assessment by an expert SLAPB will differ from the assessment of pain by nurse in the Department of intensive care and that expert SLAPB recognize the higher ratings of pain and side effects that nurse in the Department of intensive care does not recognise. Therefore SLAPB expert interventions contribute significantly to the management of postoperative pain.

Disclosure: No significant relationships.

Keywords: post-operative pain, continuous intravenous opioid therapy, piritramide

11. Actual use of NANDA-I nursing diagnosis death anxiety in Japan

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Purpose

It is clear that there is death anxiety among dying persons, but the frequency of the use of NANDA-I nursing diagnosis “Death Anxiety” is very low in the clinical settings in Japan. Therefore, the
The purpose of this study is to clarify the actual use of NANDA-I nursing diagnosis “Death Anxiety” in Japan.

**Methods**
The participants were 11 nurses, who were from 20’s to 40’s, and were using nursing diagnosis mundanely. Data were collected from August 2013 to May 2014 using semi-structured interviews. The participants were asked to reply to the questions, “Did you use Death Anxiety?”, “What kind of situation did you use Death Anxiety for the patients?”, and “What were the reasons only after you did not use Death Anxiety?” Interviews were analysed using qualitative content analysis.

**Results**
The participants only used NANDA-I nursing diagnosis “Death Anxiety”, when there were verbal expressions about death anxiety from the patients. And the participants also thought that patients expressed death anxieties only after the better interrelations were constructed between the patients and the nurses. The persons who were not only patients and families but also medical staffs tended to recuse the use of words of "death" and "dying" in the clinical settings in Japan, where had the cultural backgrounds that the person should not fear the death and should die gracefully. Therefore, the participants considered the use of the “Death Anxiety” through the patients’ words and behaviours that expressed about “death” and “dying” indirectly. Additionally, participants thought that the comprehensive cares, not only for death anxiety but also for physical aspects, were needed for the patients.
Discussion
The results showed that the nurses considered the use of “Death Anxiety”, with preparing for divers patients’ phenomena before the patients directly expressed their own death to nurses, because the Japanese people recuse the use of the words about “death” in the clinical settings. And the results also suggested that the non-verbal expressions and the behaviors, that were made the nurses estimate the existence of death anxiety, might be the important defining characteristics among the patients having the culture that recuse the use of terms about “death” similar to Japanese culture.

Disclosure: No significant relationships.
Keywords: Nursing Diagnosis, Death Anxiety, Actual use

12. Preliminary data of quality of nursing records comparing the standardized languages NANDA-I, Nursing Intervention Classification and International Classification for Nursing Practice

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Summary
A longitudinal study is being conducted to compare the quality of nursing records in two hospitals. In centre 1 NANDA-I and the NIC was used, in centre 2, the ICNP. By using the Q-DIO instrument, overall scores were higher in centre 1 with significantly higher nursing diagnoses accuracy scores.

Introduction
Standardized Nursing Languages (SNLs) can support the quality of clinical and critical thinking; development and refinement of handwritten and Electronic Health Records (EHRs). However, it is unclear whether the quality of EHRs is dependent on SNLs such as ICNP or NANDA-I/NIC and studies using the Quality of Diagnoses, Interventions and Outcomes (Q-DIO) are missing.

Objectives
To compare the quality of nursing records using NANDA-I together with the Nursing Interventions Classification (NIC) with ICNP.

Methods
A longitudinal study is being conducted in two research hospital centres in Brazil. In one centre the classifications NANDA-I/NIC are used (centre 1), and in the other ICNP is applied (centre 2). Sample and data collection: Nursing records of women with breast cancer, with a minimum length of hospitalization stay of four days. In each centre the charts in the period from 2010 to 2013 of all woman eligible for study inclusion were listed, and a randomized sample (n= 138) was drawn. The Brazilian version of the instrument ‘Quality of Diagnoses, Interventions and Outcomes’ (Q-
DIO) was applied to assess the quality of nursing diagnoses and interventions in health records. The Q-DIO contains 29 items on a 3 point scale (0-1-2) maximum score 58 points. In order to assess the accuracy of nursing diagnoses as a process (diagnostic assessment notes) there are 11 items, maximum score 22 points; for nursing diagnoses as product 8 items, maximum score 16 points; to the effectiveness of nursing interventions 3 items, with 6 maximum score; the quality of nursing-sensitive patient outcomes 7 items, maximum score 14. Data were organized and analysed by SPSS 20.0 program. The means and standard deviation of the total score and each dimension of the Q-DIO was calculated. To compare the mean between centres the t-Student test was used. Score \( p < 0.05 \) was considered as significant.

**Result**

Preliminary data analysis of 20 records of each centre \( (n= 40) \) showed a means of sum of total score of Q-DIO of 35.45 (±6.10) points in centre 1 (NANDA-I / NIC) and 32.10 (±5.32) points in centre 2 (ICNP); the difference was not significant between study centres \( (p=0.072) \). The Diagnosis Process Dimension also did not differ between centres \( (p = 0.260) \), as well as Outcome of Nursing \( (p = 0.585) \). However, the Diagnosis Dimension as Product showed statistical differences \( (p <0.001) \), with the centre 1, average of 13.75 and centre 2, 9.55. The Intervention Dimension had different averages between centres too, centre 1 (5.80) and centre 2 (4.95) with a \( p=0.018 \).
**Conclusion**

The domain that has the nursing diagnosis as the product seems to have better quality in the centre using NANDA-I. It appears that these provide greater clarity in the description when compared to diagnoses described by ICNP.

**Disclosure:** No significant relationships.

**Keywords:** nursing records, Classification, Evaluation, quality of the documentation

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**13. Development and psychometric evaluation of a questionnaire based on the nursing outcomes classification to evaluate knowledge on breast-feeding: research protocol.**

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**Aim**

To develop a questionnaire that allows for nurses/midwives to assess the indicators of the outcome “Knowledge: Breast-feeding (1800)” of the Nursing Outcomes Classification with greater
objectivity, and to evaluate its psychometric properties in a sample of future parents. Background The promotion of Breast-feeding is fundamental due to its extensive benefits. Nursing interventions that foment learning about breast-feeding in future parents is therefore of utmost relevancy. The indicators of the outcome “Knowledge: Breast-feeding (1800)” of the Nursing Outcomes Classification allows for nurses to measure the efficacy of said interventions thought a clinical interview. However, the use of self-administered questionnaires by patients could facilitate a more objective evaluation of this outcome.

Methods

The study is comprised of two phases. The first phase will be the development of the questionnaire. Based on the indicators and the system of measurement that the NOC outcome uses, a series of items and an equivalent scoring system will be developed. Taking the evidence available as a foundation, the topic of each indicator will be collected in 4 items composed of true/false statements, under the same premise that the items generated are representative of the semantic content of the indicator. The Likert scale used for the NOC outcomes will also be adapted so that the correct answers to each item will maintain linearity with this measurement system, ensuring that no correct answer correspond with 1 point in indicator 1, 1 correct answer with 2 points, 2 correct answers with 3 points, 3 correct answers with 4 points and 4 correct answers with 5 points. In the second phase, a methodological design will be used to assess the psychometric properties of the questionnaire, including reliability (internal consistency and test-retest
reliability), validity (apparent and content-related, of the construct and of criteria) and sensitivity to change.

**Discussion**

The promotion of breast-feeding is one of the objectives that is a constant in all healthcare systems. If the questionnaire shows evidence of adequate psychometric properties, it would enable professionals to objectively assess parents’ knowledge on breast-feeding, which facilitates the planning of adequate nursing activities directed at the deficient aspects of knowledge of the future parents, saving time and maximizing its individualization. Likewise, the questionnaire will enable the evaluation of the effectiveness of said activities, with the score obtained in the questionnaire as the variable of response to change at the knowledge level as mediated by the nursing/midwife intervention. Therefore, this would allow for the measurement of the clinical effectiveness of the nursing interventions, which is a first class priority in nursing and healthcare research. In addition, as the questionnaire would be an accurate reflection of the NOC outcome in which it is based, it could be used as a gold standard in studies that aim to evaluate the criteria-related validity of this. The methodology developed to create measuring instruments based on NOC outcomes can be replicated for the creation of questionnaires based on other ones related with the evaluation of knowledge in different areas of health.

**Disclosure:** No significant relationships.
Keywords: Research protocol, Instrument development, Breastfeeding, Validation studies, Psychometric assessment

14. Implementation of the nursing process in a clinical research centre

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Summary
Experience report of the Nursing Process (NP) implementation in a Clinical Research Center in a Brazilian university hospital. Currently, it is possible to record the different stages of the NP, providing a greater focus on health and research participants’ needs.

Introduction
The Clinical Research Center (CRC) of the Hospital de Clínicas of Porto Alegre (HCPA) is located in southern Brazil. It was recently created to centralize the development of the pharmaceutical industry clinical research and academic projects developed in that institution. This setting provides physical infrastructure, technical, logistical and operational support for conducting research. In the HCPA, the NP has been an established practice for four decades, and the NANDA International (NANDA-I) Taxonomy has being
used for the establishment of the diagnosis, and the Nursing Intervention Classification (NIC) for intervention. Thus, the complementary implementation of the NP through the CRC aims to qualify and ensure nursing care to research protocol participants.

**Objective**
To report the experience of implementing the NP in a Clinical Research Center.

**Methods**
Experience report during 2013 in the CRC of the HCPA. In addition to nurses, other health professionals, administrators, and systems analysts were involved in this process. Scenario recognition and infrastructure available were strategies considered for actions, as well as the delineation of different steps needed for NP records.

**Results**
The CRC is a center with specialized attention with short term of participants (<12h) which constituted a challenge to the implementation of the NP. Therefore, it was necessary computerized system readjustment creating a specific agenda for participants with drug infusion in research protocols. This change allowed recording the assessment of every participant in its first research infusion and, subsequently, the development of nursing notes for each return to the CRC. The data interpretation supports the nursing diagnosis and interventions needed during infusions.

**Conclusion**
Among the benefits of using computerized NP at CRC are that nurses began to record nursing evaluations, diagnostic hypotheses, and actions which improved the communication between
multidisciplinary teams, researchers, and especially, the nursing team. Likewise, this process allows recovery of the nursing data by research instructors. All these benefits ensure quality and safety of care to the participants as well as to researchers in that institution.

Disclosure: No significant relationships.
Keywords: nursing process, Nursing Diagnosis, Clinical Research

15. The evaluation method MAST, Model for Assessment of telemedicine applications in the renewing health project Norrbotten: on line support to increase quality of life, health status and empowerment in patients with lifestyle related diagnoses

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Summary
This abstract describes the use of the evaluation method MAST, Model for Assessment of Telemedicine Applications, in the EU project Renewing Health Norrbotten, which overall aim was to implement telemedicine services in nine European regions targeting treatment of chronic patients suffering from type-2
Diabetes (TD2), Chronic Obstructive Pulmonary Disease (COPD) or Cardio Vascular Diseases (CVD).

**Objective**
To evaluate whether the introduction of large-scale personalized and technology supported telemonitoring and health coaching interventions increases health related quality of life, health status and empowerment of patients with a type-2 diabetes and CVD.

**Introduction**
People with lifestyle related diagnoses as TD2, CVD and COPD are increasing. The Norrbotten field trial in the Renewing Health project have developed a method combining health coaching with online-management of patients data where the patient becomes more actively involved in their own health and healthcare. The technical implementation is based on a national patient portal. It provides secure access for Swedish citizens to their health information and supports electronic interaction with healthcare professionals. The patients perform health promotion activities and report parameters like number of steps, pulse and duration, blood pressure, blood glucose, PK values and 2-channel ECG. The health professionals provide reference values that make it intuitively for the patient to interpret the progress through graphical diagrams.

**Method**
The application is implemented in four healthcare centers in county of Norrbotten, Sweden. The evaluation is made through a randomized controlled trial with patients with CVD and TD2, 377 in the intervention group, 361 in the control group. The
methodology used for the assessment was MAST (Kidholm et al, 2012) including an assessment of the outcomes of telemedicine applications divided into seven domains: health problem and characteristics of the application, clinical safety, technical reliability, effects on the patients’ health, patient perspectives, economic aspects, organizational, socio-cultural, ethical and legal aspects. Data were collected through blood tests, questionnaires, interviews and focus groups, analyzed with quantitative and qualitative methods.’ For assessment rigorous description of was made data collection and analyzing methods’: of the diseases, the population and the technical application –the patient’s clinical safety and the technical reliability of the application –of blood tests and the questionnaires measuring effects on the patients’ health – of questionnaires and interview questions to capture the patient perspective –of parameters evaluating cost-effectiveness -questions for the focus group discussion capturing the organizational aspects -questions for the focus group concerning socio-cultural and ethical aspects -information from national laws concerning ethical aspects on research and legal aspects concerning technical equipment Conclusions MAST provides a model for assessment that can be used for designing new studies and as a checklist to include different subjects. The model covers aspects that can serve as base for politicians to make rigorous decisions about future innovative healthcare.

Disclosure: No significant relationships.
Keywords: MAST, ehealth services, lifestyle diseases

16. Questionnaire for the assessment of the quality of diagnoses, interventions and outcomes (Q-DIO). Cross-cultural adaptation to Spanish

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Purpose
The European Union has encouraged the development of digital platforms for the management and organization of clinical documentation. In 1973, WHO began to contemplate the inclusion of new technologies in the health sector, as the structure for the collection, processing, analysis and transmission of information to the organization and functioning of health services as well as for research and teaching. "Transforming nursing through information and communication technology, entails analysing the quality of nursing records and approach the evaluation of their content. This requires the use of a standardized nursing language and system based on taxonomies nurses. In 2008, it a measuring instrument to evaluate the Quality of the documentation of Diagnoses, nursing Interventions and Outcomes. (Q-DIO)was designed and validated in English language.. a measuring instrument Q-DIO, to evaluate the quality of the documentation of diagnoses, nursing
interventions and outcomes. Our research group has worked on performed the translation and cross-cultural adaptation to Spanish of the Q-DIO to Spanish. The aim of the study was Nowadays our aim is to study the validity of the questionnaire Q-DIO to Spanish evaluate the validity of the Spanish Q-DIO, as a tool for assessing Electronic nursing Health Records (EHRs) in the Virgin of Valme Hospital in Seville, (Spain).

**Methods**
Observational, descriptive and cross-sectional design ,(in Virgin of Valme Hospital in Seville, (Spain), from December 2013 to March 2014). In the first phase, the cross-cultural adaptation of the Q-DIO into Spanish was performed by Delphi technique using a consensus was double blinded .consensus method. In a second phase, Second, the Q-DIO was evaluated in a pilot study in with 70 randomly selected nursing documentations from Electronic health records EHRs. It was selecting by randomizations. Data analysis: Analysis Univariate and .Reliability analyses with Cronbach's alpha. Criteria for disregard an of items were: :Mean<3.5; median <3; and/or standard deviation < 0.90; and cand toriteria to accept an item: high valuations (4-5) > 75% and/or standard deviation. < 0.90. The Validity was determined by factor analysis with varimax rotation. with c Confidence intervals 95%and p <0.05.

**Findings**
Q-DIO questionnaire adapted to Spanish is achieved after two evaluation rounds the Spanish Q-DIO contains 14 validated items. of assessment. In the second validation phase, we obtain a questionnaire of 14 items. Cronbach’s alpha of the global scale was
The factor analysis explained 56% of the variance and supported four. Four dimensions are achieved: Cognitive-perceptual rating; Aetiology diagnosed; Interrelation between diagnostic etiology, interventions, and outcomes; Implementation of interventions, outcomes.

**Conclusions**

Electronic nursing records, evaluated in this study includes included the interrelations of the NNN taxonomy as virtual support. These electronic records the interrelations of NNN taxonomy automatically suggested d. Diagnoses, outcomes and interventions may be suggested from in standardized care plans. T, this fact may explain the lack of discrimination of some Q-DIO items and the emergence of a new dimension: cognitive-perceptual ratings. This study provides data results on the reliability and validity of the items in the questionnaire Spanish Q-DIO Spanish version and, starting s a line of research to convert the questionnaire Spanish Q-DIO as a tool for evaluating further evaluations of the quality of electronic nursing records.

**Disclosure:** No significant relationships.

**Keywords:** electronic health records, Quality Nursing Records, Q-DIO Spanish, Standardized Nursing Language
17. Quality monitoring in a geriatric hospital

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Introduction

Quality of nursing and health services is often measured by „don’t“ – indicators, e.g. pressure ulcers, failure to rescue, nosocomial infection etc. Moreover, these data are mostly focusing on outcomes only and collected using a point measurement. Instead, quality should rather be monitored frequently in order to show the « do’s » and to ensure staff that they do the right things all right.

Aim

Development and evaluation of a tool to systematically monitor and improve the quality of core nursing processes

Method

The method is informed by Standards of practice Nursing diagnostics (NANDA-I®) Systematic data collection (weekly) Monthly reports and evaluation with staff Ten core nursing processes (based on Standards of practice and some based on frequent nursing diagnoses) were selected for quality monitoring, e.g. safe medication, pain management, fall prevention or management of acute confusion. The quality of these ten processes is monitored weekly by the quality responsables of the respective wards. For entry into the electronic system, three categories of quality were defined (3=good, 2=o.k. but should be improved and
1=poor). All data are entered in a preformatted excelsheet and automatically sent to a remote file, where results are analysed monthly and benchmarked (MS Excel). The tables are then converted into a PDF-Document and sent to the ward responsibles and the quality board. The results are discussed monthly with the quality responsibles of the respective wards. Reasons for poor quality are assessed and need for action, as well as methods for improvements, are discussed. Good results are praised and their responsibles are asked to share their factors of success.

**Target group** diploma nurses

**Results**

Development, actual status and tables will be shown during the presentation.

**Discussion/Conclusion**

Systematic quality monitoring is supportive in establishing a working quality management system.

**Disclosure:** No significant relationships.

**Keywords:** quality management, process quality, quality monitoring
18. The advanced nursing process in nursing education: a Turkish example

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Summary
An educational example on nursing diagnoses in undergraduate programs is presented. Interrelationships between theoretical courses, clinical trainings and exemplary nursing diagnoses as part of the curriculum are explained. The teaching effect was evaluated in quasi-experimental studies demonstrating that students met the learning goals and competently apply the Advanced Nursing Process.

Aim
To give an example of education on nursing diagnoses in undergraduate programs and to show interrelationships between theoretical courses, clinical trainings and exemplary nursing diagnoses as part of the curriculum.

Methods
Teaching methods focus on supporting critical thinking, case studies, and clinical assignments. In the undergraduate program, the NANDA-I, NIC, NOC (NNN) books and a nursing diagnoses textbook are required readings. In the second term of the first year, nursing diagnoses are taught as stages of the Advanced Nursing Process in the course “Fundamentals in Nursing”. The focus in
teaching lies on the importance of the Advanced Nursing Process in care. Students learn to determine patient problems, what should be noted when stating nursing diagnoses, how to choose patient-specific nursing activities aimed at reducing or eliminating patients’ problems, and to evaluate nursing outcomes. In Fundamentals in Nursing (first year), common diagnoses, e.g. self-care deficit, impaired skin integrity, risk of infection, nutritional imbalance, risk of fall as well as nursing interventions and nursing outcomes associated with these diagnoses are taught and discussed. After the theoretical lectures students go to hospitals for a 112 hour clinical training to apply the Advanced Nursing Process. They participate in patient care under the control of trainers and must document the Advanced Nursing Process of two patients. Trainers evaluate these documentations and give students feedbacks. In second grade (internal disease and surgery course) further nursing diagnoses are included e.g. ineffective airway clearance; risk for aspiration; risk for bleeding and fluid volume deficit. In third grade nursing diagnoses, interventions and outcomes related to pediatrics, gynecology, public health and psychiatry are taught: Dysfunctional family process; risk for delayed development; ineffective health maintenance; parental role conflict; sexual dysfunction; social isolation; powerlessness; and stress overload. In fourth grade, students work in clinics during the whole year under supervision but function as primary nurses being responsible for patients’ Advanced Nursing Process. Throughout the year, each student presents two Advanced Nursing Processes to the whole class. They are required to demonstrate clinical decision-
making skills by: Fully describe patients’ situations, reason how/why nursing diagnoses were determined, which/why nursing interventions were applied including evaluations. The full Advanced Nursing Process has to be evidence-based, reasons given and discussed with peers. In quasi-experimental studies the frequency and correctness of nursing diagnoses was measured.

**Discussion/Conclusion**
The NANDA-I classification was successfully applied throughout all four terms in University undergraduate education. Combined with teaching methods fostering critical thinking and clinical-decision making and clinical assignments, students demonstrated to fulfil requirements for stating correct diagnoses, to choose effective interventions and to reach desired patient outcomes. Use of NNN is suggested for all University programs on undergraduate and graduate levels.

**Disclosure:** No significant relationships.

**Keywords:** Nursing, Education, Turkey, Sifa University
19. Data and text mining of structured nursing records for the development of wound care and documentation

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Summary
Data and text mining are excellent research methods for analyzing structured data. Data mining and knowledge discovery in databases require coded data. Structured nursing documentation using standardized nursing languages (SNL) offers large coded databases for data mining to develop nursing care and care processes.

Object of study
The aim of the study was to compare the formerly developed wound care documentation model to the structured wound care documentation. The wound care documentation model is based on the Finnish Care Classification’s (FinCC) Skin Integrity component. In the development of the model Finnish experts of wound care and Finnish Current Care Guidelines, evidence-based clinical practice guidelines, were utilized. FinCC is a SNL including three classifications: Finnish Classification of Nursing Diagnoses (FiCND), Finnish Classification of Nursing Interventions (FiCNI) and Finnish Classification of Nursing Outcomes (FiCNO). The latest version, 3.0, was launched at the beginning of 2012. The
further aim was to demonstrate advantages and vast potentials of structured data, which is a requirement for data mining.

**Methods**
The research data included structured documentation of nursing interventions of wound care (n=58 060) of surgical wards (n=10) from one university hospital during two years (2010-2011). Data was extracted and delivered in Excel format stored in a CD by the ICT organization, which provides services to the hospital. Data and text mining were used as research methods. SAS (SAS® Deployment Wizard 9.3) Text analytics software was utilized.

**Results**
Almost half (n=20 763) of the documents included information of wound dressings. Different main- and sub categories of Skin Integrity component were used. Very often the trade name, not the generic name of the wound dressing, was written. To some extent wound redness (n=2313) and swelling (n=3396), periwound (n=1936), wound edges (n=1268), and position limits (n=1011) for e.g. plastic surgery patients were mentioned. Also more specific terms of the model for plastic surgery, monitoring and care of skin transplant (n=378), monitoring and care of skin graft donor site (n=276), and monitoring and care of flap (n=393), were found. Terms of wound size; depth, width and length, were found very seldom from the data. Many different terms were used of devices for reduction or elimination of tissue focusing pressure.

**Discussion**
Nurses document a lot, but more than quantity, quality of the records needs to be taken into account. Based on this explorative
study structured nursing data can be used for data mining. Standardized codes from wound care documentation model were easily extracted from the data repository. Structured wound care documentation model offers a tool for accurate and uniform wound care documentation. The use of SNL alongside with the electronic patient record system facilitates the use of databases which in turn enable evaluation, analysis, and utilisation of data for secondary use e.g. administrative and research purposes. Information for efficiency and quality of care, nursing intensity, nursing practices, and decision making can be utilized directly in patient care. Nursing administration gets also information of specific areas where training for nurses should be allocated.

**Disclosure:** No significant relationships.

**Keywords:** Data Mining, Text Mining, Documentation, Terminology
20. Improving patient care documentation for epilepsy patients through trigger tool development

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Object of study
The aim of this pilot study was to analyze the medical records of epilepsy patients to develop triggers for further analyze of epilepsy patient’s condition. The primary aim is to develop patient care documentation and as a result to improve patient care, the continuity of care, and patient safety.

Methods
The research data included the medical records of epilepsy patients (n=20) from a Finnish tertiary hospital (2007-2013). Inductive content analysis was used as a research method. The development of triggers begun with a literature search and consulting an expert from the epilepsy centre. A retrospective chart review was performed by two primary reviewers, whose work was validated by two secondary reviewers of a multidisciplinary team. The triggers were used to analyze patient Records.

Results
Thirteen triggers were identified for epilepsy patient’s care. The triggers, for an epilepsy patient, defined meaningful information for patient care, care processes and patient safety. The triggers
were tiredness (fatigue), headache, bowel symptoms, weight fluctuation, skin problems (efflorescence), eyesight problems, cognition and motoric ability to function (motoric skills), mood fluctuation, mental stress, sleeplessness (insomnia), hormonal imbalance (menstruation, infertility, thyroid gland problems), socioeconomic situation and quality of social life (coping skills). The preliminary findings showed that the triggers could indicate changes in the epilepsy patients’ health and well-being.

**Discussion**

Electronic medical and nursing records offer large databases for research, administrative and developmental purposes. The development of documentation improves patients’ care, the continuity of care between care providers and patient safety. These thirteen triggers identified during the first phase of the study represent a diverse range of epilepsy patients’ health and well-being items. Hereby, the first demonstration of the triggers functioning was positive. The pilot study proved an explicit need for the study proper. The triggers may act as potential tool in improving patient safety in a specific patient cluster.

**Disclosure:** No significant relationships.

**Keywords:** Safety, Trigger, EHR, Patient
21. Base of terms of the special language of nursing of a university hospital

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One of the problems in Nursing practice is the incipient visibility of the results of its care, which should be, among other sources, from the systematic processing of own data of Nursing in information systems in health. The evolutions of Nursing are not written in a standardized way, which compromises patient care and makes it difficult to measure the results of the care. Thus, it becomes important to standardize Nursing records, which can be anchored by the construction of Base of Terms of the Special Language of Nursing; these bases consist of a set of terms used to describe the practice of Nursing. In Brazil, studies are guided in identifying terms in Nursing records and to map with the International Classification for Nursing Practice (ICNP®), to check the constant terms and no constant in this classification. Objectives: To describe the process of preparing of a Base of Terms of the Special Language of Nursing and to present results of cross mapping of the identified terms with ICNP®, as initial stages to the development of a standard of Nursing records. Methods: The database used in the research was composed of 115,760 Nursing evaluations, of the period from 2010 to 2012, of a University Hospital in Curitiba-PR. After preparation of the database, were extracted terms of the Nursing records with the aid of a computational tool. The terms
were quantified; classified as specific and no specific of the Nursing language; and categorized as preferred terms and attached terms, these attributed contextual reference to the preferred term. The terms were also normalized for spelling, gender and number; acronyms and abbreviations found were described. Subsequently, the terms were submitted to a cross mapping with ICNP® 2011 version. In the cross mapping, we considered the categories: identical term; similar term; term in the definition of another term and new term. The new terms will be defined with the aid of technical dictionaries and Portuguese, and these settings will be validated by experts. Results: We extracted of the Nursing records 2,638 preferred terms and 1,914 attached terms. In the preferred terms, it were found 289 identical terms with ICNP®; 296 were considered to be similar; 444 terms are included in the definition of terms ICNP®; 361 terms not present in the version 2011, are in ICNP® version 2013; and the others were classified as new terms and will be defined and validated. Conclusion: There was heterogeneity in the language used by nurses, however, Diagnosis and Nursing Interventions were identified. In the cross mapping, it was noted that 52.6% of the terms contained in the classification, as identical, similar or in the definition of other term; suggesting that even without the formalizing of the use of a classification system, nurses makes use of a special language. This study comprise a methodological approach for the construction of a standard of Nursing record, which may contribute to the improvement of the records, of the care of patients as well as of the professional visibility.
Disclosure: No significant relationships.

Keywords: Terminology, Nursing, Language, Cross Mapping


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The aim of this abstract is to describe and evaluate the long-term cooperation in development work between working life and University of Applied Science (UAS) in developing nursing documentation to the patient-centered direction in Hospital District of Helsinki and Uusimaa (HUS), Lohja Hospital Area. Lohja Hospital Area has nursing an action and implementation plan 2013-2016. The main targets are patient-centered and timely care; high quality research and education; close partnership with primary health care and effective and competitive performance. It is important that healthcare field education meets the learning needs of HUS and nursing care is developed systematically. Laurea UAS Strategy consists of three part first pedagogy, second research, development and innovation and third regional development. One
of the research and development areas is eHealth and how a citizen can influence his own wellbeing. Laurea is a multi-professional UAS and has 7500 students in Helsinki Metropolitan Area. Learning by Developing, LbD, is a pedagogical model and it has been developed in Laurea UAS. The LbD model is based on a development project that is disseminated in the world of work, and it aims to produce new practices and competences and requires collaboration between lecturers, students, experts and clients. The patient-centric care is one of the hospitals’ main development targets and also on the government level the target is to organize care from the client’s perspective smoothly and effectively way. The national strategies also direct Finnish health care organizations to connect to national archive during the 2014 and there are pages to a personal online service for citizens. The structural documentation increases safety and it is possible to reuse the information. The cooperation between working life and higher education has produced 67 theses in between 2010-2014. The cooperation started already in 2004. Later partners from Arcada UAS joined the project in 2010. The continuity of cooperation was built as a project was followed by another. In the first project, nursing documentation was developed with primary care in mind; in the second, according to nursing processes; and in the third, from patient-centered perspective. In 2012 the cooperation with a Danish UAS and a hospital for developing e-services was started. Development work from e-service continued with Danish and Latvian partners between 2013 - 2015 in the Five Stars project founded by Nord Plus Horizon. In every project the evaluation was carried out during the
project. One part of evaluation during five years of nursing documentation development is to carry out focus group interviews by interviewing head nurses and nursing directors. The research questions are how they see the effectiveness of development work and what is the next step of development work to involve patients more in their care. The results will analyzed by content analysis and presented at a congress.

**Disclosure:** No significant relationships.

**Keywords:** Nursing documentation, patient-centric, development, Competence

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**23. Nursing Outcomes Classification (NOC): evaluation of the acute and chronic pain on patients on palliative care**

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**Summary**

A longitudinal prospective study performed in a palliative care unit, designed to assess the clinical applicability of the Nursing Outcomes Classification (NOC) for Acute Pain or Chronic Pain in cancer patients. It was concluded that specific outcomes can show the clinical progress of these patients.
Background
The qualification of care to terminally ill patients in oncological treatment is a frequent challenge. In this scenario there emerged the therapeutics of palliative care, which entails the pursuit of patients’ physical comfort and meeting their psychosocial needs. The main concerns of the nurse in care of these patients are the evaluation, control and relief of pain of oncological origin. However, a precise, thorough and systematic assessment of pain is still an issue to be studied. One of the alternatives for this is to use the Nursing Outcomes Classification (NOC), which describes the outcomes achieved by patients as a result from nursing interventions, as yet little explored in clinical practice.

Aim
To assess the clinical applicability of the outcomes proposed by the NOC for the nursing diagnosis Acute Pain or Chronic Pain in cancer patients on palliative care.

Methods
A longitudinal prospective study in a palliative care unit of a university hospital in South Brazil was conducted in two methodological stages. The first stage consisted in selecting the nursing outcomes (NO) and their respective markers, as viewed by experts, to compose an instrument administered to patients in the second stage of the study. At this stage, a sample of 13 patients was composed. Inclusion criteria were adult cancer patients on palliative care with the ND Acute Pain or Chronic Pain. Data collection was performed between Nov 2013 and Feb 2014. The patients were evaluated by two different researchers.
simultaneously, though independently, for five consecutive days. A statistical data analysis was performed through the GEE Test, which was used for comparisons between the markers on a daily basis and a post hoc test (LSD) to indicate the difference across days.

**Results**
Eight NO and 19 clinical markers selected by the NOC were applied to patients, most of whom males (7), with mean age 56.0 ± 18.2 years. The reasons for hospitalization were dyspnea (5) (38.5%) and pain (3) (23.1%); the primary site of predominant disease was digestive neoplasias (4) (30.8%), and pulmonary metastases (3) (23.1%) were the most frequent ones. All patients used opioids and anti-inflammatory pain killers. There was a statistically significant difference in NO Pain Level, Pain Control; Personal Well-being and Vital Signs.

**Conclusion**
Specific NO and NOC markers can show the clinical progress of cancer patients on palliative care and thus can be effectively used in this nursing practice.

**Disclosure:** No significant relationships.

**Keywords:** nursing cancer, pain measurement, Outcome Evaluation, palliative care
24. Cultural adaptation and psychometric properties of the surgical fear questionnaire - Brazilian version: early stage

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Objective
To describe the cultural adaptation and preliminary psychometric properties of the Surgical Fear Questionnaire (SFQ) for adult patients.

Methodology
Methodological study conducted in 2014, with 62 patients hospitalized for medium and major surgery in a general hospital (semantic validation: n = 12; analysis of the initial psychometric properties: n = 50). The SFQ, established in the Netherlands, consists of eight items divided into two subscales: "fear of immediate consequences of surgery" (four items) and "fear of the long-term consequences of surgery" (four items). The score of each item ranges from 0 to 10, so to calculate the total score, the sum of the scores of each item should be divided by the number of items in the instrument, so higher values reflect higher levels of fear. This study involved the process of cultural adaptation of the scale and the description of its initial psychometric properties related to the construct and reliability. The adaptation process went through the
following steps: translation (Dutch-Portuguese) performed by two bilingual professionals; review of the translated versions by a committee of judges and establish a single version in Portuguese; back translation (Dutch-Portuguese) of the revised version; semantic, conceptual and face validation. For convergent validity, the Hospital Anxiety and Depression Scale (HADS) was applied. To analyze the reliability of the scale (internal consistency) the Cronbach's alpha coefficient was used. Construct validity was accessed through convergent validity according to the Spearman’s correlation. Analyses were performed using the Statistical Package for the Social Sciences application.

**Results**

Regarding the semantic equivalence of the adapted version, there was no need for adjustments in the wording of the questions because the patients had no difficulty in understanding them. It was observed satisfactory internal consistency with a Cronbach's alpha of 0.82. The SFQ showed convergent validity when compared with the HADS, since the Spearman correlation coefficient indicated a moderate direct correlation ($r = 0.543; p < 0.001$).

**Conclusion**

The Brazilian version of the SFQ certainly will constitute a valid and reliable instrument, given that the results are satisfactory for the measurement of fear related to surgery in adult Brazilian patients. It is recommended to analyze such properties in larger samples.

**Disclosure:** No significant relationships.
Keywords: Validation studies, Fear, Surgical Procedures, Operative

25. Pressure ulcer: submission proposal to NANDA-I of a new nursing diagnosis

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Summary
Study that aims to develop a new nursing diagnosis titled Pressure Ulcer through an integrative literature review.

Introduction
NANDA International (NANDA-I) describes a taxonomy of nursing diagnoses (NDs) continually refined, being the Diagnosis Development Committee (DDC) responsible by the analysis of new NDs. The latest versions of NANDA-I beheld NDs developed from Brazilian research, being one of the cases the recent inclusion of nursing diagnosis (ND) Risk for pressure ulcer (PU) in the domain Safety/Protection in Physical Injury class. Nevertheless this classification does not present a problem-focused ND that would reflect the condition of the PU, which is an injury to the skin and / or to the underlying tissue usually over a bony prominence as a result of pressure, or of pressure in combination with shear and / or friction.
Objective
To develop a new ND entitled Pressure Ulcer.

Method
an integrative review of the literature that will subsidize the development of the new ND will be developed. The research will be develop from the guiding question: What are the related factors and defining characteristics of the PU and what its definition is? Data gathering will be conducted by the search of scientific articles in Portuguese, English and Spanish published in the last ten years in the electronic databases MEDLINE / PubMed, LILACS / SCIELO and Web of Science. To search these journals with Descriptors in Health Sciences (DeHs) will be used: Pressure ulcer, Nursing diagnosis, Nursing process. Articles related with the subject of study will be included in order to meet its aims and they will also be entirely available online in selected databases. Articles that are not entirely available online will be deleted. After the sampled articles will be critically evaluated and structured in a summary table whose data suggest the synthesis and comparison of collected information which will be part of the protocol submission to DDC NANDA-I. Ethical aspects will be addressed by authorship naming of the articles used.

Results
The result of the integrative review will substantiate the concept, definition, defining characteristics and related aspects of the new ND which will subsidize the plan of nursing care. Therefore, the Nursing Outcomes Classification (NOC) shows the result of wound healing: secondary intention and clinical indicators such as the
presence of granulation tissue, exudate and erythema of the surrounding skin. Ones given this result, one of the interventions that may be listed in the Nursing Interventions Classification (NIC) is the PU Care and it will be up to the nurse to define the key activities for each case.

**Final Thoughts**

The first email contact on the development of the new ND was conducted by the DDC of NANDA-I. This project is under development and refinement.

**Disclosure:** No significant relationships.

**Keywords:** Pressure Ulcer, Nursing Diagnosis, Nursing processes

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**26. Education in service: proposal to qualify nursing records in a health institution in Porto Alegre.**

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**Introduction**

Nursing records are assistance instruments to establish communication between professionals health. Studies analyzed in a literature review indicate that the quality of nursing care is directly
related to the content of records professionals. And the proper use of standardized language associated with the electronics tools help nurses and staff in performing their care. The education service is inherent to the work process, consisting of educational activities in the workplace, in order to discuss the situations experienced by the professional seeking the professional care and gerencial qualifying practice.

**Objective**
To describe the process of education service for the qualification of nursing in a hospital in Porto Alegre, Rio Grande do Sul.

**Methods**
At first, there was the request of the health institution for the training of nurses. Nursing managers of the health institution, in partnership with the teachers of the Department of Nursing UFCSPA, drew the strategies for the development of education service aimed at addressing the nursing records. The proposed in-service education was developed in extension course on taxonomies of nursing and the nursing process, organized in classroom activities and distance. The content on nursing taxonomies NANDA-I, NIC and NOC, educational videos, exercises and a chat process were available in the virtual learning environment Moodle. The classroom activities developed in seven classes with 3 hours / class and occurred with the presentation of real clinical cases experienced by nurses, providing a support for the discussions and the use of taxonomies.

**Results**
two extension courses were conducted, an edition in January and another in April and May 2014, with a workload of 30 hours and the participation of 108 nurses from different care areas, obtaining 77.7% of students completing. During the course of 162 nursing diagnoses according to NANDA-I taxonomy, results for which were defined and nursing interventions, using the NIC and NOC taxonomies were developed.

**Conclusion**

The activities provided a discussion of the content of nursing and its influence on the quality of nursing care. Clinical studies presented by nurses demonstrated the enhancement of critical thinking, as well as the familiarity of the use of taxonomies NANDA, NIC and NOC, which will contribute to future deployment of standardized language in the electronic records system of the institution.

**Disclosure:** No significant relationships.

**Keywords:** Education, Nursing diagnoses, nursing records
27. Cross mapping of nursing intervention for the diagnosis of risk for perioperative positioning injury

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Summary
Cross mapping study of nursing care from an electronic system with NIC nursing interventions for the diagnosis of Risk for perioperative positioning injury. The study indicates that there is similarity between the registered nursing care and NIC interventions.

Introduction
The Nursing Interventions Classification (NIC) provides to nurses clinical judgment and decision making support to individualized care through the choice of activities according to the needs of each individual. The Risk for perioperative positioning injury is a nursing diagnosis widely used in clinical practice, although studies on interventions linked to this diagnosis are still underrepresented in the national and international literature.

Objective
To compare nursing care with nursing interventions proposed by NIC documented in an electronic system of a general university
hospital in southern Brazil for the diagnosis of Risk for perioperative positioning injury.

**Method**
Cross mapping study. The diagnosis of Risk for perioperative positioning injury is used in clinical practice by nurses and guides the nursing care prescription for patients in the perioperative period where the study took place.

**Results**
For the 14 nursing care documented in the electronic system for that diagnosis, it was mapped 24 different NIC interventions and 36 activities. Of these, 20 interventions are associated and four are not related to that diagnosis. The majority of nursing care interventions documented was mapped in the complex physiological domain.

**Conclusions**
Results indicate that there is similarity between the documented nursing care in the electronic system and the interventions proposed by NIC for the studied diagnosis.

**Disclosure:** No significant relationships.

**Keywords:** Nursing, Nursing Diagnosis, Perioperative Nursing
Consensus and refining validation of the nursing results from the Nursing Outcomes Classification (NOC) for the diagnosis of risk for perioperative positioning injury

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Summary

A consensus and refinement validation study of the nursing results for the diagnosis of Risk for perioperative positioning injury. Clinical evaluation permitted the refinement of the nursing results validated by consensus. Besides, it was possible to identify the applicability of the results in real scenario of the clinical practice.

Introduction

The nursing results classification of the Nursing Outcomes Classification (NOC) provides the opportunity to assess the patient on a continuum across the nursing interventions implemented by nurses. Regarding the operating room setting, the importance of measuring outcomes in the perioperative period offers nurses the opportunity to develop and implement an individualized plan of care according to the needs of each patient.

Objective
To validate by expert consensus NOC nursing results for the diagnosis of Risk for perioperative positioning injury and refine the selected results.

**Method**

Expert consensus study design. This study included 10 expert nurses in nursing classification system and with experience in caring for patients in the perioperative period. Initially, it was selected 19 nursing results, and from those results it was attained consensus in four steps for results/indicators selection that were adequate to assess patients in the perioperative period. Nursing results were considered valid if it obtained consensus between 80% and 100%. A pilot instrument containing results, from the clinical evaluation of 10 patients in the perioperative period who underwent each of the five evaluations, was conducted for the refinement of the selected results.

**Results**

Results showed seven nursing results and 29 selected indicators. While performing patients’ clinical evaluation, it was identified one nursing result and six indicators to be included in the instrument, summing up eight outcomes and 35 indicators.

**Conclusion**

The expert consensus study and results refinement by clinical evaluation identified outcomes with applicability in real scenario of professional practice. It was possible to deepen the knowledge about this classification for patients in the perioperative period; however, further studies are needed on the use of nursing results classification in this scenario.
Disclosure: No significant relationships.

Keywords: Nursing Diagnosis, Outcome Evaluation, Perioperative Nursing

29. Risk for corneal injury in critical patient: the importance of diagnostic accuracy

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Summary
Patients in intensive care are susceptible to risk for corneal injury, either by coma, analgesia, mechanical ventilation or length of stay. Case study conducted in a hospital in Brazil showed relevance of nursing diagnosis "Risk for corneal injury" to which prescribe interventions, ensuring quality of care.

Introduction
Patients admitted to the intensive care unit (ICU) are often subjected to treatments and procedures that require continuous or intermittent sedation, which reduces protective reflexes of the eyelid (Alvarenga, 2010). In addition, patients may receive
medications as antihistamines or antidepressants that cause dryness of mucous membranes and reduced production and quality of tears. Faced with the reality of the field of critical patients, where hard technologies such as the invasive and noninvasive mechanical ventilation are prevalent, the nursing diagnosis (ND) "Risk for corneal injury" (NANDA-I, 2015-2017), object of this study, should be valued, and for only thus raised interventions and nursing activities may be carried out ensuring the quality of care.

**Objective**

To present a clinical study conducted by nurses in a university hospital in Southern Brazil.

**Method**

This is a case study conducted in a university hospital academically linked to the Universidade Federal do Rio Grande do Sul (UFRGS), Brazil approved by the Research Committee of the School of Nursing UFRGS and Ethic Committee in Health - Hospital de Clínicas de Porto Alegre (HCPA, 10-0505). Data were collected through electronic records of the institution, in the period from May to September, 2014.

**Results/discussion**

Patient JR, 71, male, hospitalized due to ischemic cerebrovascular accident. Thrombolysis was performed on arrival at the hospital, four hours after the onset of symptoms (loss of left hemisphere strength, relaxation of sphincters and vomiting). ICU remained in continuous, drowsy sedation, but with eye opening to call and obeying commands. Level of consciousness and respiratory fatigue
required invasive mechanical ventilation for twenty days. Many risk factors for corneal injury were present during the ICU stay, such as blinking <5 times per minute, intubation, mechanical ventilation, pharmaceutical agent, prolonged hospitalization, which underlined the importance of accurate diagnoses. From this study the diagnosis "Risk for corneal injury" and their nursing interventions will be included in the hospital system.

Conclusions
The diagnostic reasoning should portray the reality and the needs of critical patients. The ND "Risk for corneal injury" is relevant in care in order to avoid temporary or permanent complications like blindness and even prevent corneal injury in the potential donor.

Disclosure: No significant relationships.

Keywords: Critical Care, Corneal Diseases, Nursing Diagnosis
This work was supported by the Fundo de Incentivo à Pesquisa e Eventos (FIPE) do Hospital de Clínicas de Porto Alegre (HCPA)
30. Improving healthcare for the elderly admitted to nursing homes in Japan: effectiveness of a practical care-giving program focused on changing the care providers’ awareness

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Objective

In order for elderly people admitted to a nursing home to spend their daily lives with peace of mind, human environment, such as care providers, is a crucial factor. We conducted a survey of care recipients and care providers to measure the level of satisfaction with care. Based on the survey, we designed a practical care-giving program focused on nursing home staff’s awareness (chorusing care policies, carrying credos, practicing attentive hearing). In this study, the effectiveness of the program was examined from the standpoint of both satisfaction levels and safety.

Methods

The subjects of the program were 15 care recipients at a long-term care health facility (10 persons in the intervention group, 5 persons in the control group) and 28 care providers. Both the care recipients and the care providers were asked to assess the QOL and satisfaction levels of the care the elderly received, and we evaluated (1) changes in scores before and after the program and (2) the gap
in evaluation scores between the recipients and the care providers. We also surveyed the number of care-related near-miss incidents.

**Results**

Both the intervention group and the control group showed high satisfaction of daily body cares but low satisfaction of items related to maintenance and improvement of daily life activities and purpose in life. Amongst the intervention group, the satisfaction level of recreational activities improved after the program while the QOL scores on sleep and tasks decreased. The score gap narrowed between QOL assessed by the care providers and that perceived by the care recipients. After the program implementation, the number of reported care-related near-miss incidents decreased.

**Conclusion**

The study suggests that a practical care-giving program focused on raising awareness amongst staff (1) reduces gap in perception of QOL between care recipients and care providers, (2) raises the satisfaction level of the elderly, and (3) leads to a safer care environment. This work was supported by grants of the Ministry of Education, Culture, Sports, Science and Technology.

**Disclosure:** No significant relationships.

**Keywords:** elderly patients, Program evaluation, caring behaviors, nursing home, Program development
In Finland nursing documentation has been developed in the national projects during the several years. The Finnish National Nursing Documentation model created according to the development work consisting of the essential knowledge of patient according to the common structure. Nationally determined core data consists of Finnish classification of nursing diagnoses, nursing interventions, nursing outcomes, nursing intensity and nursing summary. The Finnish Care Classification system is used to document core data. Care Classification system consists the Finnish classification of nursing diagnoses interventions, and nursing outcomes. The Care Classification express nursing practice, patient care, and supports the decision-making in care. National code server makes possible the quality, homogeneity, development, sustenance and delivery of the classification. Patient safety strategy guides health and social care organizations, patients and their families to safe and effective care treatment. Hearing the voice of patient's, agreement on the treatment and the patient's own role in the treatment of different phases affect the patient's sense of security. The aim of the study was to describe and analyze the use of Medication component and Safety component of nursing
diagnosis and interventions in nursing documentation. Furthermore the aim was to present new knowledge of the issues promoting and preventing the use of Medication and Safety components. The study was conducted with the survey for users. The questionnaire consisted statements of opinions and open questions created by the expert group. Answers received from 148 respondents, 68 responded group and 55 individually. The data collected 1.2 – 16.4.2010. Respondents worked several specialties in primary health care, special health care and social care. 64 percent of the respondents had used Finnish classification of nursing diagnoses for more than a year and Finnish classification of nursing interventions and nursing outcomes 57 percent of the respondents. The results of the both components was analyzed with qualitative and quantitative methods. The qualitative results compared with hierarchical criteria of terminology by Cimino. Hierarchical criteria of terminology based on extensive literature search (1998). The study showed the acceptability of nursing diagnoses and interventions documentation of patient medication and safety. Main categories and sub-categories under both components evaluated and the need was found for more precise definition of the content and move to other component or remove. Cimino’s criteria as a framework of the theoretical framework of the study was defined to be useful. Although the data is from the year 2010, it is useful and the study results have the importance Medication and Safety components for further development. As the answers were based on only certain units’ evaluations, the results are not generalizable to all users and nurse documentation. The
Finnish National Nursing Documentation model is used by more than 15,000, and the model is integrated in several Finnish primary health care and special health care EHR systems.

**Disclosure:** No significant relationships.

**Keywords:** Nursing documentation, Classification, medication, Safety

32. Incorporating NANDA-I nursing diagnosis, NIC and NOC taxonomies according to Henderson’s components of basic nursing care in electronic nursing documentation: an Italian experience

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**Aims and Objectives**
Describe the introduction of standardized languages into electronic nursing documentation.

**Background**
The Pope Johan XXIII Hospital has been working since the 90th with the School of Nursing of Milano-Bicocca University, on
the choice of a conceptual model to guide the development of nursing documentation. In 1996 the nursing faculty developed a list of NANDA-I diagnoses organized according to Henderson’s 14 fundamental needs, following the conceptual model adopted for data collection and analysis. Between 1993 and 2013 a nursing documentation focused on nursing process developed thorough this standardized language was introduced in clinical practice and educational context. To date, the path of evolution is focused on the computerization of clinical documentation in the trust and we are going through the implementation process. This is giving us the opportunity to widen the diagnostic statements, partially used on the paper documentation, thanks to the development of a dedicated software.

The introduction through drop-down list of NANDA diagnostic statements enable the users to choose the more appropriate statement, the objectives and interventions through a guided path. The software will help users to develop critical thinking and the data collected will be used to improve nursing care documentation and to management, educational and research purposes.

**Methods and Materials**

Bibliographic research and analysis of similar national and international experiences in educational and management context on the use of NANDA, NIC and NOC taxonomies. Use of workshop among professionals to discuss the development of the software and the organizational conditions to use it. The nursing faculty developed a list of NANDA-I diagnoses organized according to Henderson’s 14 fundamental needs to support the use of NANDA
taxonomy within educational and clinical settings. Choice of NIC to include within the software. Development of a Nursing Minimum Data Set to be used for outpatients.

**Results and Conclusion**

Today we are developing an electronic patient record in which nursing documentation is structured so that the NANDA-I taxonomy is fully developed.

This project has resulted in reflections on the introduction of NANDA-I nursing diagnosis, interventions and outcomes in the computerized documentation system. The development of the software has opened questions about the real possibility nowadays to introduce the full NANDA, NIC and NOC taxonomies in an electronic nursing documentation system. We are actually in the stage of having fully developed the electronic system for a few selected diagnosis and interventions, planning to leave to a later stage the development of the full taxonomies. In regards to NIC interventions, the difficulty of developing the software is linked to the need of documenting often the single activity contemplated within the intervention statement. Also the time suggested for the implementation of an intervention isn’t always divisible among the multiple activities. In relation to NOC outcomes, we have found a lack of consistency between the proposed nursing outcomes and objectives that can be planned in nursing daily practice. We are aware that some difficulties that we have found are probably due to translation from different languages, in this case from English to Italian. We are also working with physiotherapists and midwives to
develop an electronic patient record taking into account international standardized languages.

**Disclosure:** No significant relationships.

**Keywords:** nursing process, Nursing Diagnosis, nursing management, Electronic Documentation, nursing research, interventions

### 33. Breastfeeding in immediate puerperium: interfaces with taxonomy NANDA, NIC and NOC

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**Introduction**

The Nursing Process (NP) allows to identify and treat the patient's problems safely and effectively, permitting nurses to make critical judgments, which help identify the nursing diagnoses (ND), according to the planning and implementation and evaluation of activities performed. In this context, it realizes the potential of the application of the NP for successful adhesion of postpartum breastfeeding, as pointed out by current publications which
highlight a significant rate of mothers who have weaknesses on how to breastfeed.

**Objective**

Apply the NP in postpartum women in breastfeeding process.

**METHOD:** convergent assistencial research developed in a Family Health Strategy in the State of Santa Catarina, Brazil. Five women participated in this study, inclusion criteria: Breastfeeding, find themselves immediately postpartum, using the Unified Health System, seek the service on demand, be assisted by the Community Health Agents. Data collection was performed by home visits (HV), in June-August of 2013, with semi-structured interview; participant observation; daily records on the field. The research phases are intrinsically linked to the NP stages and contemplated the following steps: medical history and physical examination, with instrument previously elaborated; from the taxonomy developed from the North American Nursing Diagnosis Association (NANDA); the results expected from the elaborate taxonomy Nursing Outcomes Classification (NOC) and prescribed interventions / taxonomy oriented from the Nursing Intervention Classification (NIC). Ethical principles were considered and approved by the UDESC Research Ethics Committee, number 397377.

**Results and Discussion**

The results showed eight ND, 23 expected outcomes and nursing activities 47. The ND, the effective breastfeeding related to basic knowledge about breastfeeding and the will to keep breastfeeding were present in all situations accompanied. During the HV, all
participants reported liking to breastfeed and that wanted to continue the process. Mention feeling love, tenderness and tranquility during breastfeeding. However, one can notice that the mothers had anxieties, doubts, beliefs, values, habits, cultures, financial condition, expertise and distinct stories, which should be respected by professionals mainly in nursing consultations, advising the basic and additional knowledge about the breastfeeding, which tends to decrease the rates of breast problems and early weaning, before the application of NP.

**Final Thoughts**

It was possible to apply all the steps of the NP individually taking into consideration the uniqueness of women in puerperium, or diagnose the specific needs of each postpartum, perform necessary interventions and evaluate their evolution through the HV. NP has a fundamental role to qualify the work of the nursing team, making care safer, ensuring cares efficiency and effectiveness. In this context, the NP is a management strategy for nursing care and assists in the search for ensuring comprehensive care to women in postpartum.

**Disclosure:** No significant relationships.

**Keywords:** nursing process, Nursing, Breastfeeding Puerperium
Introduction
In Brazil, the Federal Council of Nursing’s Resolution 358/2009 (COFEN) decides on the Systematization of Nursing (SN) and the implementation of the Nursing Process (NP), seeking to organize professional work as NP’s personal method instrument and operation.

Objective
To review the scientific productions that address the SN / NP as legislation.

Methods
Integrative literature (IL) held in LILACS, MEDLINE, Cochrane Library, and SciELO BDENF from the publications available online. Data were collected in September 2014 using the keywords legislation nursing, nursing societies, legal responsibility, nurse’s role, and the role of nursing staff across the descriptor nursing process and term nursing care system. The last mentioned specific in the language used in Brazilian resolution. Inclusion criteria: publications from 2002 (the period in which the first resolution came into force), Portuguese, English and Spanish, in the form of a scientific paper. Articles not available online in full version were excluded. The IL followed the steps proposed by Ganong and data
were collected using a Computerized Sophie Program, specially built for this purpose. The articles included were organized in Excel spreadsheet following the criteria of integrative review. The search selected 2,204 articles, and after reading the titles and abstracts were selected 13 for full reading. Of these, six met the goal and were included in the study.

**Results and Discussion**

Of the articles analyzed, one was produced in 2007, two in 2009 and three in 2010, five Brazilians and one American, available in LILACS (2) SciELO (2), MEDLINE (1) data and BDENF (1). Noteworthy is the low participation of the nursing assistants and technicians in the implementation of the SN/NP; the incipient implementation of the SN/NP in public or private settings in which nursing care takes place, although required by professional legislation; the obligation of nurses to meet the legislation, policies and professional standards; and the need for professional regulation in Mercosul’s perspective of workers movement between member countries of the Treaty of Asuncion.

**Final Thoughts**

This study, which is part of the doctoral thesis about the SN/NP legislation allowed reflect on the regulation of the practice of the NP and the need for their standardization in the Mercosul’s countries. It found lack of publications on the subject.

**Disclosure:** No significant relationships.

**Keywords:** Nursing, nursing process, Nursing Legislation
35. Electronic record for group-based patient education in primary care

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Summary
Development of electronic applications has been essential in improving health records. A clinical record for document group-based patient education was developed. It allows sharing educational projects between health professionals. 568 group-based interventions were performed in 29 Primary Care Centers (PCHCs) between October/2013 and September/2014 (58% more than the year before).

Background
The development of electronic applications has been essential in improving health records quality in our environment. The Community of Madrid has more than 270 PCHCs, 31 of them are in the Southern Healthcare Management Area(DASUR). The institution has been committed to develop standardize clinical record applications that allow nurses to document and assess their care. Patient education is an important nursing role in primary care. Group interventions are critical for improving patient learning. Sometimes the time needed for developing educational
materials and to implement the interventions is consider a barrier by the health professionals. It is also difficult to follow and evaluate the interventions performed.

Objective
Promote group-based interventions for patients’ health education (PHE) in Primary Care (PC). Standardize documentation of group-based interventions for PHE in the PCHCs. Carry out regular monitoring and evaluation of group PHE interventions. Create a Database of group-based interventions for PHE.

Methods
It was developed an online application (EpSalud) in the intranet of the Madrid Health Service (Spain) with access for all health professionals in the PC setting. Health education projects and the materials needed for them are stored in a database. They can be shared with other professionals if the authors want to share them. Then the projects can be retrieved by any health professional of any PCHC. The application allows documentation of the health education project, and the implementation and evaluation of the intervention. Data about group interventions is capable of being retrieved when needed or shared across different healthcare settings. This development meets the needs of health professionals, but also to administrators. Each Primary Care Health Centre signed annually a Contract Program (CPC) that includes the objectives set for the current year including that related with group-based patient education. The target tracking is performed through the application and can be accessed by all health professionals, technicians and
administrators of the organization with different levels of granularity.

**Results**

568 group-based interventions were performed in 29 PCHCs of DASUR between October/2013 and September/2014 (58% more than the year before). The interventions took place in the PCHCs, scholar centres and other community settings. The interventions were performed mainly by nurses. They involved more than 7000 patients. The most common interventions themes were: Pregnancy-Newborn: Prenatal education, postpartum care, breastfeeding promotion. Women health: Menopause, pelvic floor. Aging: Healthy aging, cognitive impairment prevention, caring caregivers. Chronic conditions: Hypertension, diabetes, arthrosis, back pain. Health promotion: Smoking cessation, anxiety/relaxation. School health promotion: healthy breakfast, sexuality, smoking prevention. The EpSalud electronic record allows sharing PHE projects between different PCHCs and improves the number of interventions performed by health professionals in PC.

**Disclosure:** No significant relationships.

**Keywords:** Nursing Informatics, Primary Care, Health education
36. Outpatient smoking cessation program: selection of NOC indicators to evaluate patients during treatment

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Study with the aim of selecting indicators of outcomes Smoking Cessation Behavior and Substance Withdrawal Severity, described by Nursing Outcomes Classification, to evaluate patients during treatment for smoking cessation. Twenty four indicators were selected by specialists, which will be applied to smokers patients included in the study.

Background
Smoking cessation is a big challenge for smokers, considering nicotine dependence and withdrawal symptoms. Professional support is very important at this stage, and the nurse is a professional capable of developing strategies to guide the smoker during cessation process. Thus, the evaluation of nursing outcomes is crucial, since they allow to knowing the effect of interventions established to patient during smoking cessation treatment.

Objectives
To select indicators of nursing outcomes Smoking Cessation Behavior and Substance Withdrawal Severity, described by Nursing
Outcomes Classification (NOC), focusing on evaluating patients during treatment for smoking cessation in an outpatient program.

**Methods**

This was a consensus study, carried out in a university hospital. Data collection occurred in four-person meetings, including participation of seven nurses: one with clinical-surgical experience, two working in the outpatient smoking cessation program, a professor coordinator of the program, a professor with experience in smoking cessation and two professors with experience in NOC. An instrument that contained the two nursing outcomes in study, including title, definition and indicators was completed by each participant, which should mark one of the options “I select” or “I do not select”. After completing the instrument there was a discussion and selection of the indicators that obtained 70% to 100% consensus.

**Results**

For the evaluation of the outcome Smoking Cessation Behavior 14 indicators were selected: Expresses willingness to stop smoking, Identifies benefits of smoking cessation, Identifies negative consequences of tobacco use, Develops effective strategies to eliminate tobacco use, Identifies barriers to tobacco elimination, Commits to tobacco elimination strategies, Uses behavior modification strategies, Uses alternative therapies, Identifies emotional states that affect tobacco use, Adjusts lifestyle to promote tobacco elimination, Uses prescribed medication as recommended, Uses available support groups, Monitors for signs of depression and Eliminates tobacco use. For the outcome Substance
Withdrawal Severity, 10 indicators were selected: Substance cravings, Irritability, Emotional Outbursts, Tremors, Change in appetite, Paresthesias, Headaches, Yawning, Impaired concentration and Difficulty sleeping.

**Conclusion**

The practice of consensus among nurses allowed to selecting indicators for later use in the outpatient setting, which will imply the construction of operation definitions, determining how each indicator will be evaluated in patients during treatment for smoking cessation.

**Disclosure:** No significant relationships.

**Keywords:** Tobacco Use Cessation, Outpatient Clinics, Hospital, nursing process, Nurses
37. Evaluation of the effectiveness of a mobile application in the development of care plans by students

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Aim
To evaluate the effectiveness of mobile applications (NANDA-NOC-NIC created by EDUCSA) in the teaching and learning of the development of care plans vs. the consultation of nursing taxonomies in book format for conducting simulated patient care plans by Nursing students.

Methodology
A controlled, multicenter, single blind, randomized trial was conducted. The participants included third-year Spanish Nursing students from the University of Cádiz (UCA) and the University of Barcelona (UB). A group of students elaborated a series of care plans for proposed fictitious patients using the mobile application (Experimental Group), and another group elaborated care plans using the traditional method of consulting nursing taxonomies in book format (Control Group). Assignment to groups was random. All students participated in the experimental or control groups depending on the fictitious clinical case that they were working
with. The sessions to solve the clinical cases were celebrated at the same time to avoid bias in terms of transference of information from one group to another. Effectiveness was measured by validated scales in terms of the quality of the care plan, diagnostic accuracy, attitude toward nursing diagnosis and time needed to complete the task.

**Results**
The activity was completed by 130 students. The diagnostic accuracy and the quality of the care plans did not differ significantly from one group to another. Although the time spent performing the task was lower in the experimental group, this difference was not significant. The activity significantly improved the attitude toward nursing diagnosis of the participating students.

**Discussion**
The activity improved the students’ attitudes toward the nursing process, which according to literature, we assume will lead to greater use of the application. As all participants would have the opportunity to use the application to solve one of the cases, it can be concluded that the students seem to have confused the nature of the application as the results were slightly worse when the application was used (experimental group). We believe that the students in the experimental group considered the application as a tool that would solve their clinical case and no as an instrument to aid them in the process. We believe that one of the main underlying problems may be the lack of homogeneity by teachers about the importance of the nursing process and its application. As well as
the lack of normalized use of the nursing process as a standard in clinical practice in Spain.

**Conclusion**
The mobile application is a useful tool that facilitates contact with and attitude towards the nursing process. However, we believe that to improve the accuracy and quality of care plans, it is necessary to focus efforts on the development of clinical judgment in students through training in the nursing process, both specifically and transversally, throughout the Degree in Nursing.

**Disclosure:** No significant relationships.

**Keywords:** Education, Quality of Care Plans, nursing process, informatics, Diagnostic Accuracy

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**38. Textual analysis online: an interpreting research on nursing**

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Every hour internet networks carries a quantity of texts equivalent to twenty billion books. For idea It is a huge mass of information on the linguistic behavior that was unthinkable until a few time ago. It is an opportunity for valuable analysis of the reading and
understanding of social phenomena and also health care. This paper showed how website and newspaper online analysis health, referring especially to nursing care. In this paper, that start from evolution of automatic analysis of texts, the steps of an ideally strategy for textual statistical analysis are defined. We show the potential of today's textual statistics and of the most recent Text Mining applications (DTM, Alceste, Wordle, Ngram, Taltac, Treecloud and other web 2.0 app) some relevant nursing concerning case studies, about visibility of nursing, health care system and patient, concerning statistical survey and document analysis are illustrated. For specific analysis we study “Repubblica”, first newspaper in Italy, for lectures (3 years of analysis, 2010-12), one nursing journal (3 years of analysis 2010-12) and some forum of health care information.

**Disclosure:** No significant relationships.

**Keywords:** Nursing, media, Text Mining
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Summary

Cross-sectional study aimed to evaluate the quality of nursing records. A review of 141 patient’s record was performed by a multidisciplinary team at a university hospital by an electronic instrument. The results showed the organization records based on the nursing process. Introduction: Patient safety and quality of health care has received worldwide attention, with high priority on the World Health Organization schedule. Then, many hospitals recognize the need to develop strategies that prevent or minimize errors and failures, seeking implementation of the standards of hospital accreditation from Joint Commission International (JCI). Thus, the nursing process (PE) is presented as a guiding to the organization and qualification of the nursing care documentation, because the information generated can to contribute to the safety patient. For this, it’s important to utilize information technology
and classification systems, empower of the team and facilitate the registration as well as realize the audit report.

**Objective**

To evaluate the quality of nursing register through audit report.

**Methodology**

Cross-sectional study in a Brazilian university hospital. Data collection was performed by a multidisciplinary group, through a computerized instrument based on JCI standards with items of the assessment, nursing diagnosis and education conducts. The sample consisted of 141 randomly patient’s record. Data analysis was descriptive statistics.

**Results**

Among the 141 patient's records, 75% were inpatients in clinical, surgical and emergency unit. The initial nursing assessment within the first 24 hours after admission was found in 117 (82%) patient’s record. The characteristic, location and intensity pain was registered in 88 (62%) patient’s record. The registration about the risk scale ulcer was present in 89 (63%) and the predictor instrument of risk for falls was present in 83 (84%) patient records. The nursing diagnoses were registered in 109 (77%) and the education conduct in 103 (73%) patient’s record.

**Conclusion**

The audit report showed that there was nursing assessment in the first 24 hours in 82% of the patient’s record evaluated. The highest rates of completion appeared in the risk assessment of the patient, which demonstrates attention to the prevention of adverse events; the presence of nursing diagnoses showed clinical reasoning and
the education conduct as part of nursing care. The PE in clinical practice favoured the register and the audit report was the strategy to support the planning of actions to encourage improved the quality and safety care patients.

**Disclosure:** No significant relationships.

**Keywords:** audit nursing, nursing process, nursing records, patient safety

### 40. The utilization and applicability of three common used nursing interventions in Turkish care settings by Turkish nurses

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**Introduction**

It stated that, the development and use of standardized language in nursing is one of the hallmarks of nursing profession, marks the development of a new era of nursing science. Having a standardized language will assist the professional nurse to communicate with colleagues in her or his own facility and across the world. Nursing Intervention Classification (NIC) is a comprehensive system of classification that describes and categorizes actions and therapeutic approaches performed by
nurses within all types of specialties and settings. Using the NIC system and terminology provides a standardized language to document interventions, facilitate the presentation of nursing in Electronic Health Records. Although using the standardized nursing terminologies and classification systems cannot be ensure the practice standards, in terms of NIC. Many variable could affect or limited the performing interventions and related activities out of the client needs, such as the educational qualifications, nursing approaches in nursing sub-group culture, understanding role and responsibilities in the country, legal regulations. Using NIC labels without determining these characteristics / limitations could be lead emptied the concepts, misconceptions, misunderstanding, invalid and unreliable information, and lack of expected benefits of data standardization. There is need to identify these variables effect on performing NIC interventions in different countries and regions. Thus, we could have comparable and safe information standards and expected benefits of standardization.

**Purpose**

Translation studies are in process to adaption of nursing intervention classification into Turkish language. In this process we notice that some differences can be arise in performing activities. This cross-sectional study is planned to have an understanding about the utilization and applicability of nursing interventions in NIC in our country. Three nursing intervention - Medication Administration, Intravenous; Discharge Planning; Shift Report that can be used many care settings and nursing fields were selected
and the status of their utilization and opinions on applicability evaluated.

**Sample and Setting**
Research sample consisted of nurses who employed different –university hospital and state hospitals in four region of Turkey. Data collection: Data were collected a questionnaire form included two part prepared by researchers. First part consisted from questions about working and socio-demographic characteristics of nurses. Second part included NIC with related definitions and activities. The form designed as three point likert scale questioning opinion about utilization and applicability of each nursing interventions/activities. These three interventions were previously translated to Turkish Language in the continuous translation studies of NIC book to Turkish by Erdemir. Every intervention in NIC were translated by in related nurse academicians and a Delphi study conducted to obtain expert opinions and consensus for Turkish names and definitions of nursing interventions, and then made corrections according the suggestions within the context of this translation process. In this study the reorganized form of NICs used. Study is in the process of data collection.

**Disclosure:** No significant relationships.

**Keywords:** Nursing intervention, Nurses, utilization, Turkish
41. Effectiveness of an educational group intervention in primary care to maintain exclusive breastfeeding (PROLACT study). Using electronic data capture system for a cluster randomised clinical trial.

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Summary
Research shows advantages of breastfeeding (BF). Despite the recommendations to promote BF, few newborns (35%) receive it after 3-4 months. Methods such as paper-based case-report-forms have been utilized for research. They are simple and inexpensive, but inadequate for clinical trials. Electronic data capture systems (EDCS) reduce time/cost, and enhance quality of data collected.

Background
Research studies have shown the advantages of breastfeeding (BF). Despite the wide dissemination of the recommendations to promote the exclusive BF (EBF) and the benefits of this, only few newborns (35% globally) receive it after 3-4 months\textsuperscript{(1)}. Research indicates that educational and supportive interventions, both in mothers and health professionals could increase BF\textsuperscript{(2, 3)}. Methods
such as paper-based case report forms have been utilized for research. They are simple and not expensive, but not adequate for clinical trials. They are not accessible to geographically distributed users. EDCS can address these problems and have more advantages like reducing time and cost, and enhancing the quality of data collected(4).

**Object**
The study involves a community based cluster randomized trial in Primary Care Health Centres(PCHC) in the Community of Madrid(Spain). The project aims to evaluate the effectiveness of an educational group intervention performed by primary healthcare professionals in increasing the proportion of mother-infant pairs using exclusive breastfeeding(EBF) at six months compared to routine practice. For data collection an Electronic Data Capture system(EDCS) will be developed.

**Methods**
A community, multicentre, parallel clinical trial, randomised by clusters, that compares two different educational strategies performed by primary healthcare professionals. The intervention will be carried out mother-infant pairs in 14 PHCCs in five different cities of the Community of Madrid(Spain). 79 primary care health professionals (nurses, midwives and paediatricians) will be involved. The number of patients required will be 432(216 in each branch). It will be included all mother-infant pairs using exclusive breastfeeding attending any query in the health centre. A paper-based case report form was designed by investigators for data collection. After that a web-based ECDS based on it was developed.
It had components that support and validate data entry as well as conducted single-multiple field cross checks. The ECDS was tested by the investigators in clinical practice to evaluate the content and usability. Improvements were implemented in the ECD System before the beginning of the study data collection. Data collection included: 1. Main response variable: mother-infant pairs using EBF at six months 2. Secondary variables: Type of breastfeeding at six months, EBF duration, reasons for ceasing breastfeeding, satisfaction with the intervention. 3. Prognostic variables: Professional, Mother and Breastfeeding 4. Socio-demographics

**Results**

We have developed a web-based application for the collection and entry of research data in order to help researchers manage of clinical data for the project. The application can be used by investigators to implement user-friendly, efficient, and cost-effective tools for multicenter clinical trials. This system allows the inclusion in research of populations that are not usually involved in clinical trials. This study was funded by the Spanish Ministry of Science and Innovation via Instituto de Salud Carlos III(PI12/02609 and PI12/02020).

**Disclosure:** No significant relationships.

**Keywords:** Breastfeeding, Research, Electronic Data Capture system
42. Nursing workload and mobility recovery – a German-Swiss comparison of outcome quality on the basis of routine data from nursing process documentation

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**Summary**

On the basis of routine data from nursing process documentation from two hospitals, in Germany and Switzerland, respectively, this presentation outlines a possible link between staffing levels and mobility recovery. The discussion shows how classification systems can provide indications for determining safe patient care.

**The Problem**

Satisfactory staffing levels are important for safe and successful patient care. The studies of Aiken et al. (e.g. 2014) show that the probability of patient survival following surgery increases with the staffing ratio. Mortality is a criterion that attracts considerable public attention (and is also relatively easy to measure), but constitutes a very drastic indicator for insufficient staffing levels. However, the rationing of nursing interventions as a result of staff shortages may well have impacts on outcome quality much earlier in the piece. But what outcome indicators could be used to form a judgement on this issue? To date, it has been very difficult to place
studies on this issue in a comparative context across national borders because of the heterogeneous nature of the classification systems used to measure the variables being examined.

**Method**
As a feasibility study, the authors have compared patient status and nursing intervention data from German and Swiss hospitals operating with identical standardised classification systems. Patient conditions were described using the assessment tool of ePA-AC Version 2.0, and the nursing interventions via the LEP Nursing 3.1 classification system. The assumption was that mobility recovery in orthopaedic patients is dependent on the nature and extent of nursing interventions provided. The study was carried out solely on the basis of routine data from electronic nursing process documentation.

**Results**
The study results indicate that the selected systems are able to measure nursing-sensitive outcomes. There are specific indications of the concomitant presence of more nursing interventions from the “movement” variable group in LEP and a greater improvement in patient performance in the areas of activity/locomotion and mobility/change of body position.

**Conclusions**
Indications that patients for whom fewer mobility-related interventions are undertaken recover a lesser degree of performance than those for whom more interventions are undertaken are cause for concern. Given the impact of mobility on the extent and trend of nursing care needs (cf. Wingenfeld, 2014),
this means a significant decrease in nursing outcome quality, to the
detriment of patients. Already today, according to Aiken et al. (2014), nurses in Germany are caring for an average of double the
number of patients as their counterparts in Switzerland, which
means significantly lesser resources for providing nursing services.
In the view of the nursing staff cuts that have already taken place in
Germany and the impending cuts in Switzerland, there is an urgent
need for the further exploration of these initial indications, and
standardised classification systems can be very useful in this
(2014). Nurse staffing and education and hospital mortality in nine
European countries: a retrospective observational study. Lancet,
Beltz Juventa

Disclosure: No significant relationships.

Keywords: Routine Data, outcomes, Nursing Shortage, Nursing
Workload, International Data Comparison, Mobility Recovery