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E-Health and Nursing – Innovating for the Future

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E-HEALTH AND NURSING

Innovating for the Future

Editors

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Message from the President of ACENDIO: going from E to M

Terminology is moving. What we used to call health informatics in the past, is changed in the last 10 years into eHealth. And we all know that our words are changing the way we think. eHealth is indeed a much broader concept and shows that the new technology is everywhere and embedded in all health processes. Just put an e in front of every word such as eID, ePrescriptions, eCare and you see a variety of new possibilities in front of you. The same will happen when we would launch the concept of eNursing. It would generate new perspectives on how nursing can be practiced within this new eHealth environment. It will have its impact on patients, the work of nurses, system requirement, governance, education and research. We are proud that ACENDIO is contributing to this in writing an eHealth and nursing strategy for the future. We discussed this in last conference and workshops in Dublin, Reykjavik and Torino. We will present the results during the Dublin conference. But the work will continue as the rapid development of technology in the field of mobile technology such as smartphones, tablets, apps, clouds and social media initiate a shift from eHealth into mobile Health (mHealth). mHealth is bringing the new world of technology in the reach of all patients and all practitioners, young and old, all around the globe. The 9th Biennial ACENDIO conference in Dublin will indeed lead us into the future of 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 Dublin 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. E-Health 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 143 abstracts were submitted for the conference. Based on a scientific review process, we selected 48 oral presentations, 53 poster presentations and 3 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
Greetings from the Chair of the Conference Committee

On behalf of the Conference Committee for the 9th International Conference of ACENDIO, I would like to welcome you to the Dublin, Ireland. In my 15 years of involvement with ACENDIO, I have always wanted to host the conference in Ireland and this became a reality in 2013. In a time of economic recession and public service cut-backs it is a moment of joy to welcome so many colleagues and experts to our beautiful and historic country.

This is a particularly apt time for the conference to take place in Ireland as Ireland holds the EU Presidency in the first half of 2013 and will host the EU eHealth Summit in May 2013. This will again bring informatics expertise together in Dublin and will be an impetus for the ongoing introduction of eHealth and informatics within our health system.

I would like to take this opportunity to thank all our keynoye speakers, and presenters and, of course, the participants, for the commitment and dedication demonstrated. I would also like to thank our colleagues in the Irish Nurses and Midwives Organisation and in the Healthcare Informatics Society of Ireland, who supported us and helped to make this conference successful.

Dr. Fintan Sheerin
Chapter 1 - Keynotes

1. Designing the Future: getting beyond the ‘care quake’

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This paper argues that a ‘care quake’ is upon us and we need to respond radically to create a sustainable future. The perfect storm brewing in the public purse and our public services means we have to be radical in designing our future and our way of out of recession. The combination of long-term challenges such as an aging population, the growing burden of long terms conditions, increasing pressures and demands on services, rising public expectations and enduring challenges resistant to solution (addictions) plus recession with a severe contraction of public spending provide the ideal conditions to apply ‘shock’ therapy to the public sector and radical reform through innovation. Trying to extract greater efficiency from already over-stretched and constrained services will yield something but not nearly enough to make the step change we need to secure a sustainable future for healthcare. This paper argues we need to become much better at implementing, spreading and scaling up innovation and that design has a key role to play both of the system to enable this and in
developing innovations themselves. We need to design our way out of recession by fundamentally re-examining the assumptions upon which we organize and fund healthcare to produce better outcomes for less cost. Engaging practitioners and patients by using their expertise in redesign is essential. Locking in best practice and innovation rather than allowing it to leak out of the system is imperative. The paper concludes that information systems have a leading role to play in the process.
2. ‘Trialogue’ – Translating A Grassroots Community Mental Health Dialogue into an Online Learning Presence

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The Mental Health Trialogue Network Ireland (MHTNI) is a community development initiative established in Ireland during 2010/2011. The aim of this Network is to empower communities to become proactive in communicating about mental health through a powerful open dialogue (Bakhtin, 1981) and participatory process called ‘Trialogue’ (Amering et al. 2002; Mac Gabhann et al 2012). Presently there are seven participating communities. Participation involves establishing a series of monthly Trialogue meetings’, with previously agreed topics relating to mental health. The term ‘Trialogue’ here relates to the three key groups of people who engage in an open dialogue at these meetings; people with mental health problems who may or may not use services; family members or friends of people with mental health problems; and mental health care providers such as nurses and other therapists. However, in reality any community member with an interest in mental health can and do participate. The Trialogue meetings offer a communicative space where everyone’s lived expertise is respected with no ranking of knowledge expertise. The focus of meetings is to explore the topics from the collective expertise and diverse perspectives and through critical discussion come up with
an enhanced understanding and strategies for individuals, families and professionals to respond to mental health problems in their communities. Trialogue meetings are not in themselves action orientated, however the transformatory experience of participants and inevitable development of open dialogue communication skills means that frequently there is a fundamental shift in how people view mental health problems and see the solutions for overcoming associated challenges.

Initially a web site was established www.trialogue.co to provide a central information portal for participating communities and advertise monthly meetings and locations. This quickly evolved as a learning HUB where facilitation guidelines, Trialogue resources and parallel Open Dialogue projects became part of a reference point on the WEB for interested individuals and existing Trialogue Participants. A monthly Trialogue Blog provides an on going discourse on what is interesting to participants in the field of mental health. What started out as a mechanism to manage the MHTNI has become a national and international learning space for people interested in Open Dialogue and Trialogue.

References


3. The role of standards in facilitating innovation through eHealth¹

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Abstract
This paper will examine the transformational potential of eHealth and the role which standards can play in facilitating this transformation. The ability to share health information lies at the heart of eHealth services from the development of electronic health records, to the management of chronic disease and electronic prescribing. The adoption of international standards to facilitate such information sharing is essential enabling innovation by providing a platform on which it is possible to build novel applications and services.

Background
There are a growing number of examples of where eHealth has delivered significant benefits both in terms of efficiency but also in terms of improved patient safety (Bower 2005, EC 2009). Equally, however, there are examples of where significant investment has been made which has failed to deliver on its promise (e.g. National

¹ Some of the material in this paper has been drawn from “Developing National eHealth Interoperability Standards for Ireland: A consultation Document” published by the Health Information and Quality Authority in December 2011. It is available from www.hiqa.ie
Programme for IT in England; Black et al 2011). Thus organisations and countries which are considering investing in eHealth can be confused as to how to proceed.

eHealth (also known as Health Information Technology) can be loosely described as “the exploitation of Information and Communications Technology (ICT) in healthcare to enhance the quality and safety of patient care” (HIQA 2011) but a more comprehensive definition which captures the potentially disruptive nature of the technology was captured by Eysenbach:

“e-health is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies.... the term characterizes 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”(Eysenbach 2001).

And it is probably true to say that one of the many reasons for eHealth failures has been a failure to recognise its disruptive nature – its implications for users and ways of working.

Given the mixed experience with eHealth deployments particularly at national level it is not surprising that researchers have critically examined the reasons for failure, identified the lessons learned and the critical success factors (e.g. Protti 2008; EC 2009). There a number of common threads, one of which is the imperative for clinical involvement and another the importance of standards –
specifically standards which support secure sharing of health information between systems and service providers. This paper will examine the critical role which standards play as one of the key enablers for successful eHealth application deployment.

**Standards and innovation**

Standards have a major role to play worldwide in improving safety, whether it is in the airline industry, banking or in healthcare. Standards can be broadly defined as “documented agreements containing technical guidelines to ensure that materials, products, processes, representations, and services are fit for their purpose” (Allen and Sriram 2000)

There are those who argue that standards stifle innovation by constraining autonomy and creativity. One of the best examples of such criticism can be found in the arguments put forward against the introduction of standard clinical guidelines – and these were after all only guidelines, not mandatory standards – as “cookbook medicine” which would eliminate clinician autonomy and put patients at risk. These criticisms have now been largely discounted and the adoption of clinical guidelines has been shown to improve patient safety and outcomes. One of the best known examples is probably the World Health Organisation’s *safe surgery saves lives* checklist designed to prevent medical errors in the operating theatre and improve the safety of surgical care generally. A study in 2010 proved convincingly that the use of the checklist resulted in a significant reduction in surgical morbidity and mortality. Complications from surgery in the hospitals using the checklist
were reduced by almost one third compared to the control sites and mortality by almost a half (de Vries 2010). Outside the arena of health care, the Global Standards for Mobile Communications is one of the best examples of a standard which opened up the market for mobile communications worldwide whose full impact is only beginning to be felt.

“The existence and use of standards makes it easier to produce, sell and buy products and services. Standards enable a market. They are part of the infrastructure for innovation-led growth” (Swann 2000).

**Standards and eHealth**

Health is information and communication intensive so it not surprising that the potential of ICT to support the delivery of healthcare was recognised from the earliest days of computing. While there are a number areas of healthcare which have been transformed by the advent of ICT, in particular imaging and diagnostics generally, a widespread shift from paper to electronic records has proved challenging. There are many reasons for this including in many countries a focus on front-line service delivery such as reducing waiting times; however, there can be no doubt that the absence of useable standards has proved a major hindrance. The consequence has be a constant cycle of reinventing the wheel albeit one which is a different size than previous ones, fits a slightly different vehicle and runs on slightly different roads. The result has been that rather than focusing on the innovation and transformation of service delivery made possible through the effective use of ICT or eHealth, implementers have been tended to
focus on providing the basic functionality of supporting service
delivery. A report prepared by Emprica GmbH on behalf of the
European Commission identified over 20 main ICT standards in
healthcare (Empira 2008), ranging from standards for modelling,
to data security standards to communication and terminology
standards. At the heart of all eHealth applications is the ability to
share information between systems. We are therefore primarily
interested in standards which facilitate interoperability i.e
“the ability of health information systems to work together within
and across organizational boundaries in order to advance the
effective delivery of healthcare for individuals and communities”
(HIMSS 2005).
To support interoperability between systems and meaningful
sharing of data, health information standards must cover both the
syntax and the semantics of the information being exchanged. For
eexample, an electronic messaging standard to transfer a test result
from a clinical laboratory to a General Practitioner must specify the
structure (syntax) of the message in much the same way as the
International Postal Union has evolved a standard layout for
postcards. However in order to understanding the meaning
(semantics) of the information being communicated sophisticated
coding and terminological systems are required in much the same
way as that the sender and receiver of a postcard must use the same
language in order for the message to be mutually understood.
Broadly speaking, standards fall into three different groups (Allen
and Sriram 2000; HIQA 2011). Firstly, there are proprietary
standards, such as, for example, Microsoft Windows which when
they have sufficient market penetration become widely used *de facto* standards. Secondly, there are the *regulatory standards*, which as the name implies are typically set by regulatory agencies often with the purpose of protecting both workers and the public and which are not driven by market forces. And finally, there are the *open or consensus standards*, which are typically developed by standards development organisations such as the International Standards Organization (ISO) and the European Committee for Standardization (CEN). Such standards may be voluntary or mandatory.

In areas of implementation, standards can act as the middle ground where coordination between different software systems is needed. For example, systems that have very different user interfaces can still communicate meaningful data if they capture the same terminology using an agreed standard (Stead and Kolodner 2005).  

**The benefits of standards**

The use of standards delivers key benefits in a number of areas. Specifically, standards enable and support health service improvements – they can deliver economic benefits and, most importantly, result in benefits for patients and service users through safety improvements in frontline service delivery.

**Health service improvement**

The nature of modern healthcare which is highly information-intensive, coupled with the need for patient-centred care, demands the effective use of ICT. The ability to share information both within and between healthcare providers is of fundamental importance to ensuring the delivery of safe, high quality care to
patients and for the timely and accurate monitoring and planning of services (HIQA 2011). Yet, despite this, it is recognised that “...seamless electronic communication between systems and between health professionals is not the rule but rather the exception” (Empirica 2008). There is widespread agreement that the adoption of proven international standards has a critical role to play in supporting efficient and cost-effective information sharing (interoperability) (EHR Implement 2011).

A number of countries which have major eHealth programmes underway, including Canada, Australia, England and Denmark, have placed a strong emphasis on eHealth interoperability standards. Furthermore, the lack of such standards has been identified in numerous studies as a major impediment towards the adoption of ICT in health (Empirica 2008; Bower 2005).

Economic benefits

It has already been argued that there are numerous examples of standards enabling, supporting and in some cases even driving innovation. As Allen and Sriram (2000) conclude in their paper on the role of standards in innovation:

“Although standards can inhibit innovation by codifying inefficient or obsolete technology, and thus increase the resistance to change, standards generally spur innovation directly by codifying accumulated technological experience and forming a baseline from which new technologies emerge. Standards also spur innovation indirectly because they increase global competitiveness”.

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The National eHealth Transition Authority (www.nehta.au) placed a strong emphasis on the importance of standards right from the start and put forward a clear and cogent case (see National eHealth standards development framework). This report identified the potential benefits to be derived from the adoption of standards on two fronts: “to underpin cross-sectoral health service improvement; and as a lever for economic development via greater and faster expansion of health software markets”.

One of the key challenges in the implementation of technical standards for health is the fragmentation of the health software market. There are many local suppliers and, as a result of mergers and take-overs, a diminishing number of big international players. Any typical healthcare organisation will have dozens of different ICT systems from different suppliers, each supporting different functions. For example, in Canada, they calculated that there were approximately 40,000 clinical information systems nationally. In order to get each one to interoperate with each other system, 1.5 billion interfaces would be required, whereas with a standard in place, the number reduces to “only” 80,000 (Canada Health Infoway 2010). The actual amount of work required will be further reduced if systems provide the standard as an integral part of the functionality of the system. This is already happening with standards such as HLv2.x (www.hl7.org) widely adopted throughout the health software industry. However, the reality is that for the foreseeable future there will be many hundreds if not thousands of legacy systems which will never be able to integrate such a standard and therefore a bespoke mapping from that
system’s proprietary data format to a standard format will have to be developed and vice versa.

Stakeholder benefits
A wide range of stakeholders will benefit from having eHealth interoperability standards in place including healthcare professionals, service planners, healthcare organisations, healthcare software suppliers, implementers together with the standards development organisations, policy makers and regulators. The overriding impetus for the introduction of eHealth interoperability standards remains the ultimate benefit to all those who use health and social care in terms of better quality and safer care.

The benefits to stakeholders include the following:

- **patients** benefit from the use of eHealth interoperability standards in a number of ways. By ensuring that all relevant information relating to their care is available when and where it is needed, the risk of an adverse event is reduced, quality is improved, and the unnecessary duplication of tests and investigations eliminated. Specifically, patients will benefit from safer and more timely care. By facilitating the efficient sharing of information, interoperability standards play a crucial role in patient-centred shared care, providing the patient with services in the most appropriate setting, which will increasingly be in the community

- for **suppliers**, standards provide greater market certainty, a basis for certification (a marketable asset), simpler procurement processes and the prospect of growth in export
markets where the standards used are international (NEHTA 2006)

• for purchasers and implementers, standards simplify procurement including the assessment of compliance, improved confidence that the product purchased will be interoperable, and greater potential to avoid vendor “lock-in” (NEHTA 2006)

• for policy makers and regulators, there are clear benefits in the use particularly of international standards through the promotion of solutions which have proved to be successful elsewhere, as well as providing insights into where problems have been encountered. Finally, the standards developers themselves have a keen interest in ensuring the adoption of “their” standards.

Conclusions

eHealth is undoubtedly both an innovative and a disruptive technology and we are only beginning to understand just how disruptive it can be. Standards - and particularly those focused on supporting information sharing - have a critical role to play in delivering the benefits of eHealth. However, the standards landscape is confusing with dozens of international consensus standards development by organisations such as HL7, ISO and CEN as well as probably thousands of proprietary standards used by specific vendors. While many of the international standards are the result of intensive efforts over a long period of time, there is generally a significant time lag before they become available as an integral art of software products.
As the body in Ireland charged with the legal remit to set standards for and monitoring compliance by the Irish health and social care system, the Health Information and Quality Authority has set out the following set of guiding principles when considering recommending the adoption of standards for eHealth:

1. The development of standards and associated technical materials to support eHealth will be insofar as possible in line with the World trade Organisation (WTO) Code of Good Practice for the Preparation, Adoption and Applications of Standards (ref).

2. Open non-proprietary standards will be preferred over proprietary ones.

3. International standards which have been fully implemented and validated will be preferred; they should have already been successfully deployed elsewhere.

4. There should be a minimum of adaptation of the international standards to meet the requirements of the Irish health sector.

5. Where there is no international standard available, and only as a last resort, will the Authority consider developing a new standard for Ireland.

6. Industry developments and health service delivery opportunities will be taken into account.

7. The standards proposed will ensure value for money and minimise cost of compliance.

Adherence to these principles will ensure that we can leverage best international practice and avoid duplication of effort, as well as
ensuring that only tried and tested standards which are already available in software products are selected for use.

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- **HIMMS 2005**

- **HIQA 2011**

- **NEHTA 2006.**

- **Protti 2008.**

- **Stead and Kolodner 2005**

- **Swann 2000.**
Nursing is the largest health care profession and the practice of nursing requires unique data, information, and knowledge to compliment other health disciplines. Nursing is defined as “the protection, promotion, and optimization of health and abilities, prevention of illness and injury, alleviation of suffering through the diagnosis and treatment of human response, and advocacy in the care of individuals, families, communities, and populations” (ANA Social Policy Statement, p. 10). Nurses care for clients that individuals, families, groups, and communities. They practice in any setting in which health care is provided. Outcomes of care are influenced by practice and additionally, the education, experience, and settings in which nurses practice, resulting the need to describe the resources and context of care. Therefore, the data to represent nursing practice is has unique features essential to improve quality of health care.

Nursing informatics is the art and science for creating and implementing the information infrastructure to support nursing practice by combining nursing, computer, and information sciences to capture, store, and manage data, information, knowledge, and
wisdom to improve health. Nursing minimum data sets and standardized terminologies have evolved over the past 35 – 40 years and are recognized by the ANA using the International Standards Organization (ISO) standards for terminologies. This foundational informatics work is excellent, yet often it is not used in electronic health records (EHRs) and therefore, not available for conducting quality improvement and big data research.

Major efforts are underway to increase use of EHRs and reuse the data for quality improvement and research. The Institute of Medicine has published multiple reports calling for the use of digital information to The National Institutes of Science, Agency for Healthcare Research and Quality, and National Science Foundation all are calling for the use of health care data to better understand effective care to transform the health care system and reduce costs. Nursing data and processes need to be standardized to be included in these research efforts.

The purpose of this presentation is to describe key principles for implementing standardized terminologies to create reusable quality and research data. Examples will be provided of research from descriptive through predictive models that are possible when terminologies are implemented and used effectively. Resources will be shared as examples of collaborative web-based and virtual global meetings to create nursing data for big data research. A clear vision and action plan is needed to increase the use of the nursing data within EHRs for documentation of care, make data reusable for quality improvement and research, educate nurse researchers on
newer methods of big data research, and integrate these efforts with key national and international efforts.
Chapter 2 – Indicators of Nursing Diagnoses, Interventions and Outcomes

1. Altered feeding dynamics in children: a new nursing diagnostic guide

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Background

This paper presents two new nursing diagnoses which focus on altered feeding dynamics in children leading to obesity or anorexia. Childhood obesity and childhood anorexia are major global health concerns in developed countries. In relation to obesity for example, almost 20% of US children were classed as obese in 2008 (Ogden et al. 2010) and almost 17% of English children classed as obese in 2007 (NHS Information Centre 2009). Obesity refers to an excess of body fat to the extent that may have implications for a person's health status - a body mass index (BMI) of 30.0 kg/m ² or greater with extreme obesity defined as a BMI of 40.0 kg/m ² or more (http://www.americanheart.org). Childhood obesity places children at increased risk of a range of diseases particularly associated with Type 2 diabetes, hypertension and coronary heart disease (Ebbeling et al. 2002) and, subsequent emotional, social
and financial costs of treatment. Anorexia, which is characterised by a lack of desire/refusal to eat, although less prevalent, also carries risk of diseases related to malnutrition and similarly carries significant emotional, social and financial costs for the child and family unit (Chatoor 2009)

**Research Aim/Question/Purpose**

To present two newly developed child/young person-centered nursing diagnoses concerning altered feeding dynamics in childhood, in order to support improved care strategies for Children, Young People and their Families

**Methods/Process**

In Stage 1 of our research, two new diagnoses were developed, applying the Satter Eating Competence Model (Satter 2007) as a conceptual framework. The two new diagnoses apply to NANDA-I’s current diagnoses of ‘Nutrition Less than (or Greater Than) Body Requirements’. The newly proposed diagnoses are: ‘Ineffective Eating during Childhood: Less Than (or More Than) Body Requirements’ and 'Risk for Ineffective Eating during Childhood: Less than (or More Than) Body Requirements'. In Stage 2 we conducted a survey using the Delphi Survey Technique to test the validity of the two diagnostic concepts. This type of survey aims for consensus of opinion from a group of experts using a series of questionnaires, to transform individual views into group consensus (Hasson et al. 2000). Participants were drawn from a US clinic which specialises in childhood nutrition.
Findings/Outcomes
The findings indicate that a very high degree of consensus emerged among the Delphi Survey participants, early in the research process (>80%), for all the diagnostic concepts being tested. Consequently only two Delphi rounds were needed to establish consensus of at least 80% for all the components of the nursing diagnoses.

Implications
The findings from this research provide new diagnostic concepts, designed for use by children's nurses, to help manage a global childhood health problem and as such, can contribute to nursing diagnosis knowledge development for the child health setting.

Keywords: Altered Feeding Dynamics, Children's Nursing Diagnosis, Childhood Obesity, Childhood Anorexia, Delphi Survey Technique

2. Harmonising healthcare terminologies and record structures

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Introduction
There is general agreement within nursing and across health care on the ongoing and pressing need for a) standardized terminologies and b) standardized record structures. In the case of standardized terminologies, several with relatively large user bases are currently used across the world to describe nursing practice. Conversely, in the case of record structures there is little widespread agreement. Although they are characterized differently, this plethora of standard terminologies and the paucity of standard record structures both have a negative impact on the comparability of data and on interoperability between nursing information systems.

The International Council of Nurses (ICN) eHealth Programme has identified harmonization of terminologies and of record structures as a priority. The extent of standardization determines to a large extent how harmonization is interpreted. In the case of terminologies, the aim of harmonization is to allow a range of terminologies to co-exist, and to make them compatible with one another (Kim and Coenen, 2011). In the case of record structures, the aim of harmonization is consensus. In this paper, examples are given from among the ICN portfolio of work to demonstrate how a number of organizations are collaborating at an international level in providing solutions for these significant challenges.

Methods
Regarding standard terminologies, ICNP is working with a range of terminology developers to promote comparability and interoperability. For example, a harmonization agreement with the International Health Terminology Standards Development
Organisation (IHTSDO) is enacted through a project within the ICN eHealth Programme to determine appropriate transformations between data captured under the International Classification for Nursing Practice (ICNP) and data captured under SNOMED Clinical Terms. A second project, the product of an agreement between ICN and Sabacare Inc., seeks to determine similar transformations for data captured in the Clinical Care Classification (CCC). Both of these projects are cognizant of the International Standard, *ISO 18104:2003 Health informatics - Integration of a reference terminology model for nursing* (International Organisation for Standardisation, 2003), but they extend the work in terms of considering also the content of terminologies rather than merely their structure.

Regarding record structures, ICN is collaborating with a number of European Partners to develop a framework for an electronic nursing summary (eNursing Summary) (Hübner et al., 2010). While important work has been carried out to provide high-level schemata for health records, within, among others, the Comite European de Normalisation (CEN), the International Organisation for Standardisation (ISO) and Health Level 7, there has been little progress in terms of gaining consensus on implementable, purposive record structures (for example where agreed record section headings are specified). In common with the ICN work on terminologies, the work on record structures extends previous work by considering also the content of record structures rather than merely the structure itself.
Results and conclusion
Early results from both pieces of work are promising: significant progress has been made in terms of specifying transformation pathways between ICNP, SNOMED CT and CCC and advances have been made in terms of gaining a mutual understanding of the eNursing Summary problem space.

References

3. ESPOIR: from narrative to data oriented documentation

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Abstract
This presentation is focus on the development of a clinical documentation model.
Since 10 years the University Hospital in Lausanne (CHUV) is using the “focus charting model”(1) for the nursing documentation in most of their acute wards. The way it was implemented shows weakness that should be solved before the introduction of an Electronic Health Record (EHR).

This paper describes the model change to move from paper to EHR more precisely from a narrative environment to a structured and quantitative environment to answer the goal of optimizing the reuse of data.

**Context**

This work was conducted with the support of a group of Nurses working in different field of practice. Since 1999 the CHUV diploid the “focus charting” to document the Nursing process with a structured narrative model and a table chart to collect quantitative data and the interventions. The near future will be en electronic interdisciplinary documentation system.

**Goals**

The overall goal is to prepare the shift from paper based documentation to an electronic documentation. This change of documentation technology is not neutral, as wrote Jerry M. Garcia

> In the end, the success of EHR is built by and with people and not just with technology. Most clinicians will not simply adopt technology because it has been dropped on their desks. If you can confidently prove that this technology will help provide better patient care, then clinicians will embrace it. »(2)

Linked to the practice, the clinical documentation must be patient centered and reinforce the interdisciplinary collaboration. More
than sharing information through the interface of the EHR, the system must be built as all in which the data describe the concepts in the same way and are used in the way whatever the user is. The EHR supports interoperability, reuse of data to reinforce safety, security and quality of care.

**From notes to data: The past**

Historically, the nursing paper documentation moved, in 1999, from a narrative structure to the focus charting model(3). The concrete result in the CHUV was a combination of the Focus charting approach, a graphical chart and some rules of the charting by exception approach. The graphical chart is used to represent the quantitative data (pulse, blood pressure, Temp., Pain intensity, etc.) and the follow-up of the completed nursing interventions and medications.

The center of the nursing documentation is the notes, their organization is defined chronologically and structured by focuses, and the content headings are:

- **Data**: observed information linked to a focus
- **Action**: Planned or completed nursing intervention and surveillance.
- **Response**: Describe the impact of the Actions until the focus is relieved.

This narrative model managed the goal as implicit information. No intervention plan is documented.

After ten years of use, the focus charting approach was never deployed in different areas, like ambulatory units, psychiatry, and rehabilitation which continue with narrative data.
The other caregivers have also a narrative documentation but their headings are (4, 5):

- **Subjective data**
- **Objective data**
- **Assessment**
- **Plan**
- **Intervention**

This problem oriented approach is combined with the same graphical chart as the nursing documentation.

**From notes to data: the present**

To prepare an interdisciplinary electronic health record (EHR), it was necessary to think an approach based on the two approaches. The notion of notes should also be extended to the concept of Nursing Minimum Data Set (6) and Patient Core Data Set (7).

Building an EHR the goals we want to achieve, are an improvement of:

- the security with more accurate and accessible information,
- the reuse of the data,
- the interoperability,
- the usability to facilitate the documentation process,
- the quality by supporting the clinical intelligence of the clinicians.

A combination of these two models gives four headings:

- **Signs and symptoms (subjective & objective, quantitative & qualitative)**
**Problem**, might be an hypothesis, a risk or a resource. **Objectif** (French term for goal) equivalent to an expected outcome. **Intervention** that can be prescribed, planned or completed **Response or Result** as an evaluation of the impact of the interventions.

The construct of a common documentation approach is problem and process oriented. We propose to consider that a clinician never starts a data collection from scratch but from something that draws the attention (complaint, behavior, purpose of stay, etc.).

![Figure 1 - Combination of the DAR and SOAPIE approaches](image)

To complete the model, one concept is missing, the **Event** as an period of time(8) during which persons are involved (patient, clinicians, ...) in a specific place, for a particular purpose, doing several interventions. The classification of Event contains the following categories: Activities (movement, consultation, Assist to medical interventions, etc), errors, adverse events.
**ESPOIR (French word for hope)**

This general approach is the framework we use to build the documentation. Each of the component is a concept that can be modeled as a class(9). They are described by a set of attributes as a Nursing Data Set (NDS).

**Event** is a type of process concerning one to many patients, caregivers, activities, problems taking place in a specific location, during a certain time producing different outcomes. The event hierarchy is: movement, adverse event, errors, etc. For example: [Patient arrival after internal transfer]: id_event; date&hour; caregiver following; caregiver_recieving; clinical_equipment; ongoing_treatment; ongoing_Problems; etc

**Sign, symptoms and data:** for example, pain = id_code; location; intensity; type; periodicity; assessment_scale; etc

**Problem:** must be understood also as Risk, resource and problem. So the attributes are for the example of Altered Nutrition less than body requirements: id_code; weight; height; intensity: BMI; age; sex; Kondrup score; contributing factors; etc.

**Goal:** in French: “objectif”: is defined as a change of the problem, so for the Altered Nutrition less than body requirements it might be the expected BMI; expected Kondrup score

**Interventions:** are the set ordered medications, cares, treatment done by all the caregivers and the patient itself.

This framework defines also the basis of the interface with the scope of improving the usability.
**Information model**

Since the nineties, searchers working on the nursing minimum data sets are focused on the reuse of data from the electronic patient record to any informational process for any type of decision at any organization level (10-12). The model we built is based on the contsys European CEN standard (13) to put the emphasis on the time line of the overall process.

Through this work we looked to improve the interface usability and data storage as structured as possible.

![Figure 2 basic data model](image)

Any documented concept is considered as a class that can be described by:

- Fixed information (id, noun, category, etc)
- Time depend Information: follow-up (date, status, intensity, notes etc.)

Each class might be linked to the other. For example, during an event (medication error) several signs, problems could appear and several interventions should be applied.
One particular variable is the note. It’s the narrative component of the documentation. By the fact each note is linked to any type of class and category at anytime it allows the user to follow a patient either with the quantitative data or the notes journal. A terminological was needed to standardize the interface terms for each class. For the signs, problems, outcomes and interventions each term is mapped to ICNP. For the event a local classification is used until an international reference is available.

**Conclusion**
This conceptual work gave us the opportunity to move from a paper documentation system to an electronic patient documentation system. The result shows that the integration of semantic, process and information models supports the interface usability, the interoperability and the reuse of the data.
A limit we face now, is the possibility to share the terminology with the doctors. But this is more a human challenge than a technical one.
The next step after an experimental phase is to implement this model into a commercial EHR.

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<ewallace@cme.nist.gov> [Available from:
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4. **Always look on the bright side.**
   **Resource-based nursing diagnostics**

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**Introduction**

A core task of professional nursing is the structured and systematic diagnostic process concerning the health-status of people in need for care. However it seems that health care professionals are still used to focus on deficits – ill health – only. Positive health seems not to be regarded as an integral part of need assessment. The authors would like to introduce “PraxisOrientierte Pflegediagnostik - POP” that offers two tools: First, POP is a method of reasoning using resources as a basic module for shaping nursing diagnoses and secondly, it is a classification of nursing diagnoses designed for front-end use.

**Background**

Today we still experience a strong orientation on deficits in our health care systems. However a deficit focus neglects crucial and
valuable parts of human life. Patients/clients get reduced to dysfunctional health. Furthermore, deficit orientation ignores a lot of health oriented interventions already carried out by nurses. Nurses might have difficulties to find good arguments for justifying health related interventions. Therefore, spending more attention systematically on resources will provide benefits for both, patients/clients and nurses.

Despite the fact that there is a lot of discussion on how need for care/nursing can be defined and assessed best, one can take for sure that need for care is the result of a difference between demands of everyday life and available resources (Wingenfeld, Büscher & Schaeffer, 2007; Bartholomeyczik & Hunstein, 2000). It is a logical conclusion that resources are as important for assessing the need for care/nursing as impairments are.

Nurses need appropriate tools for nursing diagnostics that support the systematic consideration of resources. Many classification systems in nursing are based on the tradition of describing deficits. This was the starting point of POP.

**Theoretical foundation**

What is health? In a common understanding health seems to be a state of not being ill. Following health sciences, health can be regarded as a positive concept, notably as an ability “ [...] to lead an individually, socially and economically productive life” (Nutbeam, 1998). Pelikan (2009) defines health in a functional way, stating that health is the process of surviving. This process can be specified further by how long we survive (span of life) and by the quality of our survival (quality of life).
This general concept of health raises the question about the concept of health in nursing. Nursing is a health profession but only one among others. Every health profession is concerned with health, but every profession works on different aspects. Hence, the concept of health in nursing has to be a subdomain of the overall health concept. A nursing concept of health has to represent the practice field of nursing.

It is known that the situation and competencies of nurses differ across European countries due to educational and legal differences, specific roles in the health care system and other factors. Beside these discrepancies, we suggest, on a more general level, that health in nursing can be understood as the ability to cope with everyday life autonomously. This approach is in line with the theory of self-care (Orem, 1996) and with the discussion on health promotion in nursing (Bartholomeyczik, 2006). From the perspective of nursing, health can be defined functionally as potential and ability.

The resource-model underlying “PraxisOrientierte Pflegediagnostik - POP” refers to the idea that all prerequisites for health could be defined as resources. Resources are strengths, abilities and opportunities for maintaining and/or developing health or coping with impairments. Intact resources are prerequisites for health. This understanding corresponds with other health-related theories like the salutogenetic model by Antonovsky (1997) or various coping theories dealing with stress (overviews by Hurrelmann, 2006; Scheichenberger, 2009).
The POP resource-model

In the POP resource-model (Stefan et al., 2013) every resource makes a contribution to health in terms of intact functions, structures or processes like shown in figure 1.

![Image of figure 1](image_url)

Figure 1

We can easily identify relevant resources that can be used for nursing diagnostics by asking for the prerequisites of a specific function, intact structures or processes. As an example, we can ask for the prerequisites of the ability to walk. As nurses know, there are many things: e.g. energy/strength, endurance, mobility, sensory perception, thinking process, spatial orientation, coordination, feeling of safety while walking, motivation, self-confidence, absence of pain while walking, environment appropriate for individual abilities (e.g. non-slippery ground, free of barriers) ...

For the sake of clarity all resources are grouped into three classes: physical/functional resources, mental resources and social/environmental resources. This structure shows that there are always relevant resources in all three dimensions. This is an important reminder for the reasoning of nurses not to neglect potentially important resources that might be less obvious.
In a next step we can describe different conditions of resources. They can be:

- Intact (full functionality)
- Potentially impaired (functionality will be reduced if no preventive measure is taken)
- Impaired (reduced functionality but not completely lacking)
- Unavailable (total lack of functionality)

If intact resources fully contribute to health in terms of intact functions, structures or processes, then impaired resources can fulfil their task to a limited degree only. Unavailable resources cannot contribute at all.

In the case of impaired resource(s), the need for care/nursing might be the consequence. Impaired or unavailable resource(s) may cause limitation in ones abilities. Therefore, in terms of nursing diagnostics, impaired and unavailable resources can be described as aetiology in an actual nursing diagnosis. Figure 2 illustrates this relation.
In a similar way, (potentially) impaired resources can be described as a risk-factor in risk-diagnoses when they cause a need for preventive measures.

If the professional focus is on health promotion, POP offers “health nursing diagnoses” which are described by direct and indirect resources only. “Health nursing diagnoses” describe a professional decision that aims at the systematic development of strengths, abilities and opportunities for maintaining and/or improving health or coping with impairments. The goal is to (further) enable patients/clients to tackle future health-related challenges as independently as possible.

The terms “direct resource” and “indirect resource” refer to the condition of the resources that still contribute to the functions, structures and processes. Intact resources can provide full support. People can use them autonomously. Hence, they are called “direct resources”. Impaired resources don’t provide full functionality but
they can still offer some support under specific conditions. Impaired resources may be used if some requirements are fulfilled. Therefore, they are labelled as “indirect resource”.

An example for an indirect resource is “impaired walking” related to functional continence: Mrs. Smith reaches the toilet in time if she uses a crutch. The impaired resource “walking” can be used for maintaining continence by the condition that Mrs. Smith has her crutch at hand. The condition necessary for the use of an indirect resource implies in many cases a nursing intervention. In case of Mrs. Smith the nursing task is to ensure the accessibility of the crutch.

A POP nursing diagnosis describes not only resources that are impaired, at risk or unavailable. Some of the intact (direct) resources and the conditional functionality of impaired (indirect) resources should be considered as “supporting resources” that can be applied usefully by the patient/client or the nurses in the current situation. The indication of supporting resources is obligatory for all POP nursing diagnoses.

Summing up, each condition of a resource has a distinct function within the POP-model:

- **Intact resources**: can be direct resources in all kinds of nursing diagnoses (actual ND, risk ND, health ND)
- **Potentially impaired resources**: risk-factor
- **Impaired resources**: aetiology or risk-factor, conditional functionality as indirect resource
- **Unavailable resources**: aetiology
The POP classification

The first edition of POP has been published in April 2009. An updated and revised second edition is available by 2013. The current version 2 of POP encompasses 160 nursing diagnoses which are structured in 18 classes and 9 domains. The POP classification is also digitally available as electronic files ready to be implemented in IT-based nursing documentation systems.

POP is in use in general hospitals, psychiatric clinics, rehabilitation units, long-term care and home care across Austria, Germany and Switzerland. POP is used in paper documentation systems as well as in computer-based documentation systems.

Individuals and organisations concerned with nursing practically or engaged in nursing education can use the POP classification of nursing diagnoses without license fees.

Conclusions

“PraxisOrientierte Pflegediagnostik – POP“ offers opportunities to nurses for integrating resource-orientation systematically in their diagnostic reasoning as well as in their nursing documentation. This allows justifying health oriented nursing interventions in the same manner as interventions related to deficits. Having clear diagnostic concepts is also important in many health-related fields of nursing like care-counselling, prevention, health education, health promotion, support of informal carers etc.

A text sample in German language from the book “PraxisOrientierte Pflegediagnostik – POP” is available for free on the website www.infact.at.
References

Chapter 3 – Nursing Diagnoses and Outcomes

1. Does standardized nursing language in electronic health records improve patient outcomes?

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Background

Nursing documentations in patient records are unstructured and not representing nursing-sensitive patient outcomes. It is unknown if using SNL – in handwritten care plans or in computer tools – leads to factual better patient outcomes.

Research Aim/Question/Purpose

Aims: 1) To evaluate the effect of SNL on the quality of nursing-sensitive patient outcomes, nurses’ are trained to use SNL by Guided Clinical Resoning (GCR), and effects on patient outcomes are evaluated in documentations with and without computer tools containing SNLs. 2) To evaluate the coherence between the quality of the factual nursing outcomes based on nurses perceptions (focus groups) and the quality of the documented nursing-sensitive patient outcomes (record audits).
Methods/Process
Three-fold Mixed-Methods design: 1) an experiment with a four group factorial design. 2) a qualitative study with focus groups. 3) an audit of patient records in nursing sensitive outcomes (n= 20 per ward). Study Intervention: Guided Clinical Reasoning (GCR) is a special form of ward-based group sessions to educate nurses about SNL. The duration of GCR is monthly sessions of 1.5 hours during 6 months, giving rise to a total of 36 sessions for 120 nurses in total. Setting and sample: From four acute care hospitals three wards of each hospital are randomized. For study intervention, N=240 nurses of these four hospitals are allocated into groups. Per group (N=60 in group A,B,C,D; n=20 nurses per ward) under different conditions: Group A: nurses in a hospital using electronic outcome documentation. This group has attended SNL education by GCR. Group B: nurses in a hospital using electronic outcome documentation. This group has not attended SNL education by GCR. -Group C nurses in a hospital applying handwritten documentation. This group has attended SNL education by GCR. - Group D, control group: Nurses in a hospital applying handwritten documentation. This group has not attended SNL education by GCR. Record audit: A stratified, balanced sample of 20 nursing documentations per ward is analyzed (N = 180), and the quality of documented patient outcomes is measured. Twelve focus group interviews: N= 10 nurses per group, three per hospital. Variables and Instruments: The quality of the depended variable: ‘nursing sensitive outcomes’ is categorized as:
- Improvement in symptoms
- Improvement in functional status
- Improvement in self-care abilities
- Improvement in health related knowledge
- Improvement in coping strategies

Audit instrument.

The Quality of Diagnoses, Interventions and Outcomes (Q-DIO) is a validated 29-item instrument, which is used to measure nursing-sensitive patient outcomes in documentations by a 5-point Likert-type scale. Interview guideline for focus groups The Q-DIO serves as reference to create a focus group interview guideline. Data analysis: Descriptive and inferential statistics; inter-observer agreement is estimated by Cohen’s quadratic weighted kappa, intra-class correlation coefficient and Pearson’s product moment correlation coefficients of the documented nursing-sensitive outcomes. Main and interaction effects of GCR/SNL and the EHR on the quality of the sensitive-nursing outcomes are estimated by ANOVA. Qualitative focus groups are evaluated by Mayring’s content analysis approach, and compared with statistical results.

**Findings/Outcomes**

Will be ready for conference

**Implications**

Implications not ready

*Keywords*: Q-DIO Instrument, Clinical use of SNL, Electronic Health Record, Effects of Standardized Language, Patient outcomes
2. Nursing outcomes (NOC) in patients submitted to total hip replacement with impaired physical mobility diagnosis

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Introduction
The Nursing Outcomes Classification (NOC) is a terminology used in the Nursing Process (NP) to measure, by means of Nursing Outcomes (NO), health status, behavior, reactions and feelings from patients, caregiver/family or community, and allows the nurse to assess the effects of interventions during the nursing care process (Swanson, at al., 2010). The NOC is complementary of two other classifications, the NANDA International (NANDA-I), which develops Nursing Diagnoses (NDx), and the Nursing Interventions Classification (NIC), which contains interventions and activities of nursing. These three terminologies complement each other and can be used in informatized systems to apply interrelated stages (Assessment, Nursing Diagnosis, Planning, Implementation and Evaluation) of the Nursing Process (NP) (Nóbrega, et al., 2010).

The NP can be understood as a deliberate intellectual activity that aids the nurse in the decision making process, whose focus is in achieving expected outcomes (Alfaro-Lefevre, 2010).
Currently, Brazilian nurses have been noticeably organizing in a movement to identify practice-sensitive nursing outcomes. However, researches are still incipient (Garbin, et.al., 2009). It is believed that the use of a standardized language must be a priority in the profession, since it would be a visible and recognized nursing know-how by other areas of knowledge (Crossetti and Dias, 2002).

In orthopedics, patients submitted to Total Hip Replacement (THR) present Impaired Physical Mobility NDx (Herdman, 2012), given the limited amplitude of movements, trauma and pain in the affected lower limb (Almeida, Longaray and De Cezaro, 2006). Several nursing cares are performed for these patients and require outcome assessment for these interventions.

In the South of Brazil, a research according to the Nursing Outcomes Classification – NOC is being developed in order to verify the applicability of the NOC selected from the NOC-NANDA International linkage for the most frequent Nursing Diagnoses in hospitalized patients in different services (Almeida et al., 2012). A survey of the most frequent NDx in this institution has been carried out, identifying Impaired Physical Mobility (IPM) in orthopedic patients hospitalizations, although the NOC for the referred NDx still remains unexplored.

**Objective**

To verify the applicability of the Nursing Outcomes Classification (NOC) in hospitalized patients submitted to Total Hip Replacement (THR) with Impaired Physical Mobility nursing diagnosis.
Method
This is a pilot study, part of a prospective cohort study. The research has been carried out in a university hospital in the South of Brazil that has been using informatized Nursing Process (NP) in the Anamnesis and physical exams, nursing diagnosis, prescriptions of care/interventions and evaluation/assessment stages since 2000. This system was structured from Wanda Horta’s Human Basic Needs (Horta, 1979) theory, and encompasses the NANDA-I NDx. The nursing care is based on the Nursing Interventions Classification (NIC) and on the clinical practice of nurses. However, the nursing outcomes do not follow a standardized terminology (Almeida et al., 2011).
Inclusion criteria were: patients in immediate post-operation for THR; aged 18 years-old or more; both sexes, with their respective interventions/activities established by the assistant nurse. Study researchers bear no influence on prescribed care.
Preliminary data gathering was carried out in August 2012, by means of a previously constructed instrument, achieving four results: (0208) Mobility (1 indicator), (2102) Level of Pain (1 indicator), (1811) Knowledge: prescribed activity (4 indicators), (1909) Falling prevention behavior (3 indicators). Each patient was assessed daily, during four days, by nursing students previously capacitated.
Data were analyzed using Microsoft Excel 2010. For this study, the total nursing outcomes score average was calculated. The nursing outcomes scores were obtained on the first and last day of assessment; afterwards, the difference between scores found was
calculated by Student’s t test. A P value <0.05 was considered statistically significant.

The research project was approved by the institution’s Ethics Committee, and the ethical standards of the Brazilian National Health Council were respected. All participants signed a Consent Term.

**Results and Discussion**

Up to this moment, four patients were included: all of them are women; aged 66±21.4 years-old.

All outcomes evaluated showed improvement in indicator scores. Outcomes that presented statistically meaningful changes, when compared to the first and last assessment (Student’s t test), were Level of pain and Falling prevention behavior, as can be seen in table 1.

<table>
<thead>
<tr>
<th>NOC</th>
<th>First assessment</th>
<th>Last assessment</th>
<th>*P</th>
</tr>
</thead>
<tbody>
<tr>
<td>(0208) Mobility</td>
<td>1,00 ± 0,00</td>
<td>3,50 ± 1,73</td>
<td>0,06</td>
</tr>
<tr>
<td>(2102) Level of pain</td>
<td>3,25 ± 0,50</td>
<td>4,50 ± 0,58</td>
<td>0,01</td>
</tr>
<tr>
<td>(1811) Knowledge: prescribed activity</td>
<td>7,50 ± 2,8</td>
<td>12,5 ± 1,29</td>
<td>0,058</td>
</tr>
<tr>
<td>(1909) Falling prevention behavior</td>
<td>4,75 ± 0,96</td>
<td>9,75 ± 1,71</td>
<td>0,003</td>
</tr>
</tbody>
</table>

Continuous variables expressed as mean ± standard deviation. *P obtained from Student’s t test.

THR were most frequent in elder women in our sample. Although articular replacement could be performed on younger individuals,
surgery is usually indicated for older patients, preferable 65 years-old and above (Morgan, 2006).

Regarding Mobility NO (0208), which did not show statistically significant changes (P=0.06), this NO’s score was observed to be positively increases in 2.5 points in Likert scale. This little score change is important, since most sample patients were stimulated to walk, with aid by an auxiliary device, from the first post-operation days.

As for Level of Pain, this NO (2102) showed pain scores considered moderate to weak intensity in the present study. Pain is cited as a nursing diagnosis by NANDA-I (Herdman, 2012), but presents itself as a related factor for IPM diagnosis. The role of Nursing in controlling orthopedic patient post-operative pain consists in assessing intensity and adopting strategies to minimize discomfort, carried out through care planning, taking into account alterations into vital signs, physical and emotional conditions and overall pain level (Paula, 2011). In the research institution a part of patients who carried out THR receive analgesia through peridural catheter in immediately post-operation, which would justify moderate to weak pain score in these patients post-operation. It is important to highlight that several nursing cares are carried out in patients in pain, showing the importance of this NO’s assessment to IPM NDx.

Knowledge: prescribed activity NO (1811) did not present statistically significant difference in this pilot study. In this NO knowledge on prescribed activities and exercises that patients can or cannot do are assessed. In daily assessment of this NO, several patients were observed not to remember which were the restricted
activities, safe movement activities, correct exercises and benefits of these exercises. However they received manuals with several guidelines regarding these activities. In the current study, max daily score for this NO was 20 points. Patients achieved 12.5 points in latest assessment. Greater investments are deemed necessary in nursing cares in this area of knowledge.

Regarding *Falling prevention behavior* NO (1909), which has positively increased five points in latest assessment (P=0.003), this NO is important for clinical practice of patients with the IPM NDx. In a study that aimed to qualify falls in a university hospital, it has verified that most relevant risk factors were impaired physical mobility, acute disease presence, impaired balance and decreased mental state (Costa, 2011). Patients that are recovering from an acute disease can withstand a transitory risk period, which does not happen to patients that present chronic marching instability and cognitive deficit, and thus present with risk since hospitalization (Oliver, 2004). Correct use of nursing cares involving mobility, usage of auxiliary devices for deambulation, as well as prescribed exercises are fundamental interventions to prevent falls. Since this NO involves patient’s behavior assessment in order to minimize fall risk factors, it is of utmost importance that these patients demonstrate understanding about care actions for fall prevention. Based on these results it is possible to infer that nursing cares regarding fall prevention are being effective in caring for patients submitted to THR on IPM ND.
Final Considerations
This pilot study was carried out in order to verify the NOC applicability for Impaired Physical Mobility NDx in orthopedic patients and showed statistically significant changes in four nursing outcomes over four days. These results indicate that NOC usage in this clinical scenario was applicable, and managed to demonstrate the improvement of orthopedic patients with this diagnosis.
Data analysis suggests that the NOC is a consistent standardized terminology, useful to assess patient outcomes with the studied nursing diagnosis. The study is believed to help both improve the quality of care given and help making nursing activities visible in patients’ records.
Developing studies that use a nursing language is important to define knowledge in nursing. It is increasingly necessary to apply nursing classifications to improve clinical practice standards.

References


3. Dignified dying as a nursing phenomenon in Portugal

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Background
The concept of dignified dying has been identified as a focus of attention of nurses in the context of nursing care to dying patients (ICN 2000). However, few studies have focused on interventions to promote dignified dying (Chochinov et al. 2006). In the last years, findings of some studies contribute to development of the International Classification of Nursing Practice (ICNP®) regarding the nursing phenomenon of dignified dying, providing an international tool to represent, communicate, and compare nursing practice across countries and different cultures (Doorenbos et al., 2006a; Doorenbos et al., 2006b Coenen 2007; Vosit-Steller et al., 2010). This tool, the ICNP® catalogue Palliative Care for
Dignified Dying, was based on the Dignity-conserving model of care (Chochinov 2002; McClement 2004).
Palliative care in Portugal began in the middle 1990s. Although the growing of services and teams in the last decade it remains a poor palliative care support comparing to the rest of developed countries (Marques 2009; Economist 2010)

Aim
This study focuses on the ICNP® nursing phenomenon of Dignified dying and it aims to describe how Portuguese nurses define the concept of dignified dying. This study attempts to contribute to the improvement of nursing care in the context of end of life care by making the care model culturally congruent.

Methods
This is a exploratory, cross-sectional descriptive study with a quantitative approach. Data was collected between the beginning of 2010 and the end of 2011. A total of 456 surveys were sent or delivered in person, and 267 were returned, at a response rate of 58,6%.
The sample included 267 nurses in a total of 18 health care institutions and 33 wards/teams, including the majority of palliative care wards and teams working in Portugal. The instrument for data collection was translated and adapted from the International Classification for Nursing Practice (ICNP®) Dignified Dying Survey. Nurses who in their daily practice care for dying patients were invited to participate in the study, including nurses working in palliative care teams, community care and in hospital wards for acute care. Authorization for this study was
obtained from the participating institutions, and surveys were delivered in person or by postal mail.

Nurses are requested to rate according to their representation in their personal practice the 14 questions about characteristics of dignified dying of the ICNP® Dignified Dying Survey on a five-point Likert response set: 1 – very often, 2 – often, 3 – sometimes, 4 – not often, 5 – never.

A descriptive and inferential analysis of the data was performed. Relationships were established between the data obtained and descriptive variables of nurses: education, context of care, and length of professional experience.

**Results**

The results allow the confirmation of the 14 defining items as being representative of the phenomenon *dignified dying*, in the opinion of nurses. Major items were “verbalizes relief of pain”, “verbalizes physical comfort”, “expresses control of symptoms”, and “resolves personal and family concerns” (Table 1).

Verification of the construct validity through factorial analysis lead to a three factor solution, this explained 66.38% of the total variance. The grouping of defining features of the phenomenon *dignified dying* seem to match the dimensions of the Dignity-Conserving Model of Care: “Social Dignity Inventory” (Factor 1); “Dignity Conserving Repertoire” (Factor 2) and “Illness-Related Concerns” (Factor 3).

The results of our investigation showed that the level of representativeness of the defining items of the phenomenon, in the context of clinical practice, relate to nurse’s professional experience.
in palliative care, years of experience in this field and to specific education in palliative care. It was shown that these correlate positively with a greater representativeness attributed by nurses to certain defining features of the concept of dignified dying in their nursing practice. This provides nurses with additional clinical competences allowing them to identify these features in their clinical practice, and to add value to them, making them representative of the phenomenon dignified dying.

Table 1. Mean, scores and standard deviation of characteristics of dignified dying (5-point Likert responses converted to a 1-point scale (0 – never to 1 – very often))

<table>
<thead>
<tr>
<th>CHARACTERISTICS OF DIGNIFIED DYING</th>
<th>Mean</th>
<th>SD</th>
<th>Min-Max score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbalizes relief of pain</td>
<td>0.89</td>
<td>0.173</td>
<td>0.25-1.00</td>
</tr>
<tr>
<td>Verbalizes physical comfort</td>
<td>0.87</td>
<td>0.178</td>
<td>0.25-1.00</td>
</tr>
<tr>
<td>Expresses control of symptoms</td>
<td>0.84</td>
<td>0.197</td>
<td>0.00-1.00</td>
</tr>
<tr>
<td>Resolves personal and family concerns</td>
<td>0.76</td>
<td>0.225</td>
<td>0.00-1.00</td>
</tr>
<tr>
<td>Expresses feelings of loss</td>
<td>0.74</td>
<td>0.219</td>
<td>0.00-1.00</td>
</tr>
<tr>
<td>Feelings of sorrow, grief and detachment processed through mourning</td>
<td>0.73</td>
<td>0.220</td>
<td>0.00-1.00</td>
</tr>
<tr>
<td>Participates in decisions for care and treatment</td>
<td>0.72</td>
<td>0.255</td>
<td>0.00-1.00</td>
</tr>
<tr>
<td>Consciously dealing with emotions relating to impending death</td>
<td>0.72</td>
<td>0.233</td>
<td>0.00-1.00</td>
</tr>
<tr>
<td>Express expectations about the impending end of life</td>
<td>0.70</td>
<td>0.230</td>
<td>0.00-1.00</td>
</tr>
<tr>
<td>Expresses acceptance of dying</td>
<td>0.69</td>
<td>0.234</td>
<td>0.00-1.00</td>
</tr>
<tr>
<td>Reviews life experience</td>
<td>0.69</td>
<td>0.224</td>
<td>0.00-1.00</td>
</tr>
<tr>
<td>Shares feelings of loss with significant others</td>
<td>0.69</td>
<td>0.225</td>
<td>0.00-1.00</td>
</tr>
<tr>
<td>Expresses spiritual concerns</td>
<td>0.68</td>
<td>0.216</td>
<td>0.25-1.00</td>
</tr>
<tr>
<td>Verbalizes spiritual contentment</td>
<td>0.67</td>
<td>0.247</td>
<td>0.00-1.00</td>
</tr>
</tbody>
</table>
Implications
This study provided an understanding of dignified dying from the perspective of nurses in Portugal that often care for dying people in their daily practice in a variety of hospital and community settings. These findings validated the use of ICNP® survey in Portugal and its representativeness in the context of dignified dying from the nurses perspectives.

References

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4. How do we teach nursing diagnoses?
Assessment of a teaching experience.

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³Nursing Deparment, Adiyaman University Health School, Adiyaman/TURKEY

Introduction
There are various limitations in the teaching and usage of a common language system utilized in nursing practice in Turkey. Common language in the nursing profession is provided with a nursing diagnosis. The common language systems used in nursing such as NANDA nursing diagnosis have gained prominence in the Turkish nursing literature by providing the transfer of nursing practices to electronic environments and recording them in health
care system (Carpenito 2005; Potter and Perry 2009). Standardized nursing diagnoses a problem solving method, help determine the problems correctly, plan interventions and achieve expected results (Potter and Perry 2009). It is necessary to have professional knowledge and skills to be able to implement the nursing processes thoroughly. The educational process is important in the development of these skills (Çam et. al. 2004). During the educational phase, students will learn diagnose the problems correctly as well as acquiring the skills for structural and terminological aspects of the diagnosis procedures (Altun 1998). It is only through training in nursing that nursing students - the nurses of near future - will be competent enough in common language systems used in nursing.

**Purpose**

The aims of study is to assess the effectiveness of the method (integration of the related lessons and designed skill lab implementations, case studies and a theatrical performance) used in teaching nursing diagnosis.

**Method**

In this framework, content and method arrangements were undertaken in the teaching of nursing diagnosis to all first year nursing students. Integration of courses in the first year curriculum related to teaching of nursing diagnosis (Nursing Process, Physical Assessment and Fundamentals of Nursing) was provided. Also case studies (whose scenarios were prepared earlier) suitable for the content of each unit were teaching was done using mannequin in the nursing skill /practice lab. Nursing students
were expected to obtain competence in the stages of data collection and providing correct nursing diagnosis under the guidance of the instructor in charge.

Two plays were designed before starting the clinical practice after the completion of theoretical teaching and lab implementations. Scenarios were prepared by the instructors in charge and they were presented by the fourth year nursing students who were members of the theatre club. The plays were enriched with the help of humor in order to increase entertainment value in addition to instructional value of the plays. The plays which included all cases that can be experienced in an 8-hour clinical setting in a hospital were performed in the university theatre with a hospital setting. During some of the plays, first year students also acted to ensure their active participation. The negative and positive aspects of the play were discussed during each intermission with the first year students. Following the play used as a teaching model, students were given a “Questionnaire Regarding the Teaching Model Utilizing Plays” to obtain their feelings, thoughts and ideas regarding the instructional value of the activity. The students who had the learning experience and the students who did not have this experience were compared so that the effect of nursing diagnosis in clinical practices in the second year of nursing education on student ideas and thoughts could be evaluated. “Socio-Demographic Data Form”, “Perception of Nursing Diagnosis Survey-PND”, “Problem Solving Inventory-PSI” and “California (Critical Thinking Disposition Inventory-Turkish Version- CCTDI-T” were used in comparisons.
Data Collection Tools:
1- Socio-Demographic Data Form; includes questions regarding age, gender, year at school and academic achievement.
2- Perception of Nursing Diagnosis Survey-PND; developed by Olsen, Frost and Orth (1991), reflects the use, practicality, objectives, aims and limitations of nursing diagnoses. Reliability and validity of the scale Turkish was undertaken by Korhan et.al (2012). The 5-point Likert type scale has 30 items and 4 subscales: definition and representation of nursing profession, clear diagnosis of the patient’s case, ease of use and conceptual direction. The scores in the scale change between 1 and 5 with low scores positive perceptions towards nursing diagnosis (Halverson et.al. 2011).
3- Problem Solving Inventory-PSI; developed by Heppner and Peterson to determine nurses’ problem solving levels were tested by Taylan and Şahin for Turkey. PSI is a tool that assesses what individuals think about their own problem solving behavior and approaches. Items in the scale consist of randomly listed negative and positive statements about problem solving. The 6-point Likert type scale has 35 items with a total score of 32-192 where low scores represent efficiency in problem solving and point to behavior and attitudes related to successful problem solving. High scores on the other hand represent inability to come up with effective solutions for problems at hand. The scale has three sub scales: problem solving confidence, approach/avoidance and personal control (Taylan 1990).
4- California Critical Thinking Disposition Inventory-Turkish Version- CCTDI-T; was developed in the framework of Delphi
project implemented by American Philosophical Association in 1990 and its reliability and validity studies in Turkish were undertaken by Kökdemir (2003). A 6-point Likert type scale is composed of 51 items and 6 subscales: Truth-seeking, Open-mindedness, Analyticity, Systematicity, Self-Confidence and Inquisitiveness. The total of subscales provides the critical thinking disposition score. The minimum and maximum scores for the subscales are 10 and 60 respectively. The total score for the scale changes between 60 and 360, where scores below 240 display low critical thinking disposition and scores above 300 display high critical thinking disposition (Kökdemir 2003; Dirimeşe and Dicle 2006).

5- Questionnaire Regarding the Teaching Model Utilizing Plays includes three open ended questions that assess student views regarding the instructional model containing the performance of plays.

Findings
Table I displays the findings regarding the socio-demographic characteristics of the participants.
Table I. Distribution of Students According to Socio-Demographic Characteristic

<table>
<thead>
<tr>
<th>Socio-Demographic Characteristics</th>
<th>Participated in the theatre activity</th>
<th>Did not participate in the theatre activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Freq.</td>
<td>%</td>
</tr>
<tr>
<td>Female</td>
<td>43</td>
<td>81.1</td>
</tr>
<tr>
<td>Male</td>
<td>10</td>
<td>18.9</td>
</tr>
<tr>
<td>X² = 0.105, p = 0.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean age</td>
<td>20.72 ± 0.79</td>
<td>20.11 ± 0.70</td>
</tr>
<tr>
<td>Mean academic achievement</td>
<td>2.66 ± 0.34</td>
<td>2.86 ± 0.35</td>
</tr>
<tr>
<td>X² = 70.586, p = 0.45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The nuclear</td>
<td>46</td>
<td>86.8</td>
</tr>
<tr>
<td>The extended</td>
<td>4</td>
<td>7.5</td>
</tr>
<tr>
<td>The scattered</td>
<td>3</td>
<td>5.7</td>
</tr>
<tr>
<td>X² = 5.146, p = 0.161</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Level of Încome</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income&gt;Expenditure</td>
<td>4</td>
<td>7.5</td>
</tr>
<tr>
<td>Income=Expenditure</td>
<td>35</td>
<td>66.0</td>
</tr>
<tr>
<td>Income&lt;Expenditure</td>
<td>14</td>
<td>26.5</td>
</tr>
<tr>
<td>X² = 2.514, p = 0.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>53</td>
<td>100.0</td>
</tr>
</tbody>
</table>

81.1% of 1st group students who participated in the theatre activity were females and 18.9% were males. 78.7% of the 2nd group students who did not participate in the activity were females and 21.3% were males. Academic achievement average score for the 1st group students was found to be 2.66 ± 0.34 compared to the average score of 2.86 ± 0.35 for the 2nd group. Family structures of students show that the majority of students in each group (1. group
%86.8, 2.group %90.1) lived in nuclear families. Assessment of income levels shows that 6.0% of the 1st group students and 78.7% 2nd group students had equal income and expenses. No statistically significant differences (p>0.05) were identified between the two groups in the distribution for gender, academic achievement, family type and income levels and that groups were homogenous in that respect (Table 1). The average age for the 1st group was 20.72 ± 0.79 whereas average age was 20.11 ± 0.70 for the 2nd group with no statistically meaningful differences between the two groups in terms of average age. The groups were not found to be homogenous in that respect.

Table II. Distribution of Students According to PND, PSI and CCTDI-T Scores

<table>
<thead>
<tr>
<th>Scales</th>
<th>Participated in the theatre activity</th>
<th>Did not participate in the theatre activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>X</td>
</tr>
<tr>
<td>PND Average Scores</td>
<td>53</td>
<td>2.26</td>
</tr>
<tr>
<td>t= 6.456  p&lt; 0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSI Average Scores</td>
<td>53</td>
<td>98.67</td>
</tr>
<tr>
<td>t= 0.366  p= 0.715</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCTDI-T Average Scores</td>
<td>53</td>
<td>232.10</td>
</tr>
<tr>
<td>t= 0.366  p= 0.715</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2 displays the distribution of student scores for PND, PSI and CCTDI-T average scores. The PND average score for 1st group students was found to be 2.26±0.34, whereas it was 2.66±0.31 for the 2nd group. Statistically significant differences were observed in terms of PND average scores (p<0.001). No statistical differences were observed between PSI scores of both student groups (1. group
98.67±16.41; 2. group 98.01±16.82) and CCTDI-T scores (1.group 232.10±32.33; 2.group 234.20±28.25) (p>0.05).

Table III. Relationships Among Of Age, Academic Achievement, PND, PSI and CCTDI-T Average Scores

<table>
<thead>
<tr>
<th>Scales, Age and Academic Achievement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Average</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Achievement Average</td>
<td>-0.192*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PND Average Scores</td>
<td>-0.172</td>
<td>0.040</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSI Average Scores</td>
<td>0.197*</td>
<td>-0.024</td>
<td>0.100</td>
<td></td>
</tr>
<tr>
<td>CCTDI-T Average Scores</td>
<td>0.029</td>
<td>0.051</td>
<td>-0.192*</td>
<td>0.296**</td>
</tr>
</tbody>
</table>

* p<0.05 ** p<0.01

Table III displays the relationship among age, academic achievement, PND, PSI and CCTDI-T average scores. A meaningful and positive relationship was observed between average age and PSI average score (r=0.19 p<0.05). also, a negative significant relationship was identified between student CCTDI-T average scores and PND (r=-0.19 p<0.05) and PSI (r=-0.29 p<0.01) average scores. The evaluation of student ideas regarding the use of theatre activity as an instructional method shows that 62% of the students stated that theater activity combined and reinforced theoretical and practical aspects; 56% mentioned that the realism and factuality of the implementation facilitated learning and 52% expressed that the plays provided opportunities for them to observe all aspects of a hospital environment. The activity mainly centered on decrease in their concerns regarding clinical practices (64%) and the activity was entertaining and instructional (31%). The majority of the
students (78%) thought that “the theatre plays were very realistic”, 44% stated that “they learned a difficult process such as nursing diagnosis while having fun” 80% mentioned that “they were proud of their school”.

**Results**
The students were pleased with the nursing diagnosis training provided with the help of theatre activity model and their perceptions are positive regarding nursing diagnosis. The problem solving and critical thinking dispositions of students in the both groups were found to be at similar levels with low levels of critical thinking disposition and with not very high problem solving skills. Students were satisfied with the activity and learned while having fun. The activity can be said to have achieved the learning objective.

**Suggestions**
- The use of theatre activity instructional model used in nursing process and nursing diagnosis should be continued and courses regarding NANDA nursing diagnosis should be provided,
- Different educational models that includes active student participation would be used in teaching nursing diagnosis and studies should be planned to assess the effectiveness of these models,
- Focusing more on issues related to problem-solving skills and critical thinking in education curriculum,
- The opening of elective courses on critical thinking and problem solving skills in education curriculum.
References
1. Online peer support for young people experiencing depressive symptoms: a pilot study of effectiveness

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Introduction and Background
International figures estimate that up to 10% of people experience major depression within the European Union (WHO 2005). Amongst college students, rates of depressive symptoms range from 13.9% (Curran et al. 2009) to 48% (Bayram & Bilgel 2008). However young people are reluctant to seek professional help for mental health problems (Turner et al. 2007) and as such alternative support mechanisms need to be considered. One such approach could include internet support. There is little doubt that young people are active users of the internet for health information. Indeed, Horgan & Sweeney (2010) reported that among 18 to 24 year old students, 30.8% had used the internet for mental health information and 68% would use the internet for mental health support if required. Thus the internet presents a potentially viable option for the delivery of mental health interventions to this population. In addition, research has shown that 83% of University
students would turn to a friend of the same age if they had a problem (Hope et al. 2005). This suggests that support from peers may be considered the most favoured form of support by students. Much of the literature evaluating online peer support relates to cancer care (e.g. Lieberman 2005, Blank and Adams-Blodnieks 2007, Hoybye, et al. 2005). In relation to online support in mental health, a small number of studies have explored the effects of forums and chat rooms on people who self-harm (Murray 2006, Whitlock 2006), people with eating disorders (Carrard et al. 2006, Ljotsson et al. 2007) and those with varied mental health problems (Johnsen et al. 2002). Results indicated that online discussion forums can help increase problem solving skills, decrease alienation and isolation, decrease stress (Johnsen et al. 2002) and decrease frequency of self-harm (Murray 2006).

Focussing specifically on depression, studies have predominantly evaluated online CBT or other professional online interventions (e.g. Clarke et al. 2005, Griffiths & Christensen 2007, Robertson et al. 2006). However, a small number of studies have examined peer support. Houston et al. (2002) found that when peer to peer online support was offered, it reduced depressive symptoms amongst those who used the site regularly. Focusing on college students, Shaw & Gant (2002) examined the effect of chat room discussions among 46 psychology students on depression, loneliness, self-esteem and social support. Findings indicated that the use of the chat room significantly reduced depressive symptoms and loneliness and increased self-esteem and social support. Similarly, Morgan & Cotten (2003) examined the relationship between
internet activities and depressive symptoms in 287 first year university students and found that the use of chat rooms was associated with reduced depressive symptoms. These studies highlight the potential benefits of interacting with peers on the internet and how informal support via chat rooms can reduce depressive symptoms; however they offer little information on peer support processes.

There is no conclusive evidence on the effect of online peer support with people experiencing depressive symptoms and in fact few studies have used peer support as an intervention. While internationally sites exist to offer support to people with depression, few have been evaluated and no service was found that focussed particularly on young adults (18-24 year olds).

**Research Methodology**

The study aimed to evaluate the effect of online peer support on depressive symptoms in 18 to 24 year old students. A web site was designed specifically for young people experiencing depressive symptoms (www.losetheblues.ie). The web site provided a forum to allow participants to offer peer support to each other. It also provided information on depression and links to other supports. Data were collected using the Centre for Epidemiological Studies Depression Scale (CES-D), (Radloff 1977. A score higher than 16 indicates the presence of depressive symptoms. Data were collected at entry into the study and again at six weeks. Qualitative data were collected from forum posts over a three month period. Participants were recruited from one University in Ireland. Only those who were aged between 18 and 24 years and scored above 16 on the CES-D
were eligible to register to use the online forum. The eligible participants were able to create an account using their university email address. Quantitative data were entered into PASW (Version 15) and descriptive and inferential statistics performed. Thematic analysis was used to analyse the forum posts. Ethical approval to carry out this study was granted from the University Teaching Hospitals Ethics Committee.

**Findings**

The sample consisted of 118 students, 64% of which were male, with a mean age of 21 years. The majority of students (53%) lived away from the family home. The mean (SD) CES-D score at baseline was 36.75(7.94). No statistically significant difference was found between men and women or based on age. After 6 weeks participants (n=118) were asked to complete the CES-D a second time so that comparison could be made, however only 16 individuals completed the posttest questionnaires. While analysis was performed to determine differences, any differences were not expected to be statistically significant due to the small sample size. The Wilcoxon Signed Ranks test was used to compare the CES-D scores. The median (IQR) CES-D score was 37.00 (33.0 to 43.25) at baseline and 33.50 (22.25 to 40.50) post-intervention. While a clinical difference can be noted it was not statistically significant (p=0.133). Forum posts (n=53) were analyzed from 17 different users over three months. A number of themes emerged.

**Symptoms of Depression and the Loneliness of College Life**

The most discussed difficulty experienced by the participants was loneliness, which was associated with poor socialisation skills. The
participants described difficulties in ‘fitting in’, not having friends and having problems getting to know people. Often the loneliness was reported as developing due to the participants being away from home and having difficulty in adjusting to college life, independence and self-sustainability.

The participants discussed many features of their low mood. Typical features of depression described included poor concentration, sleep disturbances, appetite disturbances, mood swings, irritability, paranoia, stress and self-consciousness. A number of participants (n=8) also described a lack of self-worth, low self-esteem and being unable to cope. There was a strong sense of hopelessness emerging from the posts, with participants discussing their ‘bleak outlook’, ‘feeling stuck’ being ‘out of control’ and feeling overwhelmed.

The participants shared various amounts of their personal stories. They focused on different issues such as bullying, parental alcohol abuse, financial problems, and relationship problems. In addition some participants discussed the current poor economic situation in Ireland, the lack of job prospects and forced emigration.

Benefits of the website: Sharing and identifying with others
Many of the participants discussed how sharing their feelings helped them in the immediate term. They suggested it was ‘nice’ to have someone to talk to and that it was good to say what was going on aloud (albeit in writing). They described a sense of not being alone, and of having a shared understanding of each other’s difficulties. They also compared themselves to others and as a result believed their situation was not as bad as they thought. The
participants commented that the anonymity of the site was good and for many it was their first time sharing their feelings.

*Advice Giving and Receiving: Emotional and Informational Support*

The participants sought and offered advice, focusing on both practical information and emotional support. The practical information sought focused on the student counseling services available, medication management, exercise, study advice and other professional support services. Participants also sought advice on how to help with poor concentration, study skills and negative thinking.

**Conclusion**

This pilot study has demonstrated that online peer support has the potential to be of benefit to young people experiencing depressive symptoms. Of note, there were a large number of male participants in this study. Typically males demonstrate lower levels of help seeking behaviour than females (Turner et al. 2007) and thus this finding suggests that this type of support may be particularly appealing to males. Many of the scores on the CES-D at baseline were very high, with 91% (n=107) scoring over 27 and 35% (n=40) scoring over 40. Bay et al. (2007) suggests that scores over 27 on the CES-D indicate the presence of severe depression. This may be related to people with more debilitating symptoms being more likely to seek support or it could be an indication of the depth of the problem among university students. No conclusions can be drawn as to whether the intervention had any effect on depressive symptoms due to the small sample size. This was as a result of
retention problems. Poor attrition rates in internet based research are not uncommon, particularly among younger age groups (Nicholas et al. 2010). In addition, technology over the past number of years has changed rapidly. During the course of this study, this rapid change became evident with an explosion in the use of smart phones, tablets and social media. While technology advanced the website did not evolve with it. Furthermore, the participants in this study were 18-24 year olds, ‘digital natives’, they see and use technology differently to their older counterparts, they want everything to be instantaneous (Prensky 2010). In this study such instantaneous functions were not provided. Consideration should be given in the future to developing an application for smart phones and tablets to allow quick access and updating of forum posts, which may improve retention.

The forum posts offer some useful insights into the factors influencing depression in college students. It is evident that loneliness is a common feature and may be attributed to difficulties in adjusting to college life. While college creates an opportunity for growth it can also create an opportunity for self-doubt and disappointment, can damage self-esteem and lead to feelings of inadequacy (Jackson & Finney 2002). The participants described giving and receiving emotional and informational support. This supports Dennis’s (2003) conceptualisation of peer support. The participants were comforted by the sense that they were not alone, a frequently observed benefit of support groups in general. The small sample in the pre-test post-test element of the study is a major limitation as such findings, particularly in relation to effect
need to be interpreted with caution. However this pilot study does provide some useful insights into the development of online interventions, the experience of depressive symptoms for college students and the potential benefits of peer support. Many of the difficulties experienced by students are unique to the college setting and maybe as a result of difficulties with adjustment. They add to a limited body of knowledge on understanding the experience of depression through the eyes of young people, particularly students. It is recommended that further research is needed to determine the effect of online peer support for people with depressive symptoms using mixed methodologies. Studies involving young people need to consider technological advancements and need to have clear plans to deal with attrition.

References


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loneliness, self-esteem, and perceived social support. Cyberpsychology and Behavior 5(2), 157-171.

2. Life logging to support daily life among people with dementia

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Introduction
Since the beginning of the twenty-first century there has been an increased development of information technology (IT) systems with the aim to support people with dementia living in their own homes. Many of these technology applications have focused on memory support and reminiscing through life story multimedia devices (cf. Astell et al., 2010; Damianakis, Nishihata, Smith, Baecker & Marziali, 2010; De Leo, Brivio & Sautter, 2011; Hansson et al., 2007). In recent year the development of IT applications for people with dementia has included the concept of life logging. This means collecting personal behavioral data that later on can be used to support individual needs and enable the person to manage daily life situations. For the person with dementia life logging has been used to support remembrance, help to manage daily life activities, to maintain social contacts, and to enhance feelings of independence and security. Life logging to support people with dementia was developed and evaluated in The MemoryLane project (www.memorylane.nu) and
further developed in the ongoing Dem@Care project (www.demcare.eu). In the MemoryLane project the aim was to support remembrance and stimulate conversation about recent daily activities and events between the person with mild dementia and his/her partner by using a digital photo diary. In the Dem@Care project life logging is also used to make clinical assessments of function ability in daily life. Both the MemoryLane and the Dem@Care project use a user-driven development approach where the participants are actively involved in all phases of the development process. In connection to the two projects studies were made with the aim to explore the experience of using a life logging device, and the issues connected to acceptance and integration of the device into daily life.

**Method**

The studies were designed as explorative multiple case studies (cf. Yin, 2009) of interventions with a mainly qualitative approach.

**Subjects**

The studies are based on data from nine couples where one in the couplehood had the diagnosis of Alzheimer’s disease. Inclusion criteria for their participation were that they had a diagnosis of Alzheimer’s disease, were living in their own homes and were willing to participate in the study.

**Interventions**

The life logging device was a digital photo diary consisting of a SenceCam, which automatically took photos, an adapted smart phone with a GPS function that could annotate locations of the photos, and a computer with an integrated touch screen including
software to review, filter and sort photos. The person with dementia wore the camera during the day, and in the evening the partner connected the camera and the smart phone to the home station to transfer collected data. The couples could thereafter review the photos and save those of interest. During this process it was also possible to add a heading and a describing text to the photos.

Data collection and analysis

Data were collected over a time period of six to 18 months depending on type of data. For collecting data on the experiences of using the life logging device both participant observations, individual semi-structured interviews with the person with dementia and their partner, and screening instruments were used in three sequences over the time period of six months. Additional data to explore acceptance and integration of another digital assistive device to support activities in daily life was collected through repeated participant observations and semi-structured interviews with the person with dementia and their partner over a time period of 18 months. (cf. Patton, 2002). The analyses of different types of data were done stepwise, starting with analyzing different data for each participant separately. Secondly, an integration of all data for each couple was made, and finally the overall content of data was integrated and analyzed for common pattern of content. Data from interviews and participant observations was analysed with a method for qualitative content analysis (cf. Graneheim & Lundman, 2004).
**Result**

The results reviled that acceptance and integration of a digital assistive device as the life logging device is a process influenced by both specific factors and more general. The specific factors identified were how the device matched the participant’s expectations, the ability to learn and understand the device, gaining experience through actual use, support from the partner, and how the device was perceived among family and friends. An important general factor for acceptance of digital assistive devices seemed to be how the device not only matched, but also affected the self-image of the person with dementia.

The couples who became regular users of the life logging device, the digital photo diary, had a common and realistic expectation on the device, were able to understand and learn the functions and overcome the threshold were the use became a common regular activity. Among the sporadic users the expectations on the digital photo diary often were vague and unrealistic, which affected their interest to use it. Encouragement and support from the partner were of great importance, as well as mutuality in the willingness to use the device. Attention from family, friends and community members also had an impact on if becoming regular or sporadic users. Some of the persons with dementia were anxious about negative reactions from others, which affected their willingness to wear the camera in public. This also seemed to be related to their own acceptance of having dementia and their openness about it. Conversely, those who were open about the disease and wore the camera in public received a lot of positive attention and became
included in conversations in a way they not had been previously. For the regular users the digital photo stimulated and facilitated the conversations within the couple, and gave them a meaningful and enjoyable shared activity. The digital photo diary also contributed to an increased community and promoted relationship between the couples and their family members.

An important general factor for acceptance of digital assistive devices seemed to be how the device not only matched, but also affected the self-image of the person with dementia. Even if the functions of the devices are developed in a user-driven approach and adjusted to the individual needs of the person with dementia, the person might only accept to use some functions and rejected others. The functions that were accepted were those that corresponded to their desires and confirmed their self-image. Functions reminding them of their cognitive declines were often rejected. An example was one of the persons with dementia who had high expectations on the digital assistive device, but soon became disillusioned when he realized that the device could not solve his dementia related problems in a way that he had hoped. He also had expectations on receiving a technical advanced device that he could show off for his friends, but found the tested device to ordinary to impress on others. For him it seemed important to maintain an image of being a capable person not in need of help, and that the use of the device in different ways constituted a threat to that image and thereby to his self-image.
Discussion

The aim of the case studies was to explore the experience of using a new digital device, and the issues connected to acceptance and integration of the devices into daily life. The phenomenon of acceptance in relation to the use of technical devices is well known and studied in many contexts, and the technology acceptance model (TAM) (Davis 1989) is widely used to understand it. It focuses on perceived usefulness and perceived ease of use that together will lead to an intention to use the device. The TAM model has later been developed further among other researchers and variables related to both human and social factors has been included (Legris, Ingram & Collerette, 2003; Heeriink, Kröse, Evers & Wielinga, 2010). Acceptance is connected to an ability to perceive and imagine how something can be used. This requires the capacity for abstract thinking, an ability that declines in dementia (DSM-IV-TR, 2000). As a consequence, it becomes difficult to perceive usefulness and ease of use, which is the base for the TAM theory (Davis, 1989). The results confirm the participant’s difficulties of perceiving how the logging device was going to be used. An example was one of the participants who first after using the device for a longer period, supported and encouraged by his partner, realised the real purpose and the usefulness of the device. It is reasonable to conclude that in order to experience usefulness of a device, the person with dementia must be supported in learning and understanding the use of the assistive device by own experience.
An important general factor for accepting and integrating new digital devices seems to be the self-image of the person with dementia. A problem identified in the results was that even if time was spent on individualising the functions of the device according to their needs, the self-image could still be a problem. It can be assumed that a denial of dementia related needs is connected to a desire to preserve one’s own self-image. When introducing digital devices it is therefore important to consider what level of needs that is to be supported. A desired self-image can be an obstacle in the adoption of digital devices, no matter how individualized, unobtrusive or intelligent the devices might be (Thielke et al., 2011), and no matter how obvious the needs of the person with dementia is to others. Both perceived and actual attention from friends and community members also seemed to have a major impact on the acceptance and integration of the device. Some of the persons with dementia were uncertain about the responses from others, which made them insecure and resistant to use the device. Level of insecurity and resistance seemed to be related to their own acceptance of having dementia and their degree of openness about it. After receiving comments during a social event one person with dementia refused to wear the camera in public again, and for another the major concern was what he would answer if people posed question about the device. These examples of resistance or insecurity can be interpreted as a fear of being stigmatized when using a digital device and pose a threat to the self-image of the person with dementia. In contrary, the positive attention received
when being open about the disease and the need of a digital device seemed to have a positive impact on the self-image.

Acceptance and integration of a digital device into daily life is a process with special dimensions due to the cognitive impairments of the person with dementia. This has to be considered when introducing new digital devices by providing time and consider each person’s individual needs in the different factors of the process and adjust the support accordingly. Most important is to consider how the digital device matches and affects the self-image of the person with dementia. A digital device that supports the self-image have greater potential to be accepted and integrated into daily life, and by that also have a potential to promote a person centered support.

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References


3. Developing an eHealth intervention to support children and young people’s (with chronic illnesses) transition to adult healthcare services.

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Transition to Adult Healthcare

Advances in medical care over the last 20 years have meant that more than 85% of children with chronic medical conditions today will survive into adulthood with many transferring to adult care (Reid et al., 2004). In Ireland and worldwide, the numbers of young adults with congenital heart effects (Moons and Meijboom, 2010) (CHDs), cystic fibrosis (CF)(The Cystic Fibrosis Registry of Ireland, 2012), and diabetes(Jordan et al., 2007) are increasing rapidly. In a parallel research study, we are investigating the transition experiences of young people (with CHD, CF, diabetes), parents and HCPs. Transition is the ‘purposeful, planned movement of adolescents and young adults with chronic physical and medical conditions from child-centred to adult-orientated health care systems’ (Blum et al., 1993). A well planned transition leads to improved adherence to appointments(Vanelli et al., 2004), improved patient satisfaction(Zack et al., 2003) and parent satisfaction(Craig et al., 2007), stable or improved disease control
(Dugueperoux et al., 2008), improved relationships with HCPs
(Scott et al., 2005) and promotion of autonomy (Reid et al., 2004). Inappropriate or inadequate transition is associated with poor clinic attendance, loss to follow-up, risk of non-adherence to treatment, increased morbidities increased emergency/hospital admissions (Gurvitz et al., 2007) and adverse health outcomes (Tuchman et al., 2010, Nakhla et al., 2009, Moons et al., 2009). Clearly effective transitional care can prevent deterioration in young people’s health and their disengagement with healthcare (Moons et al., 2008, Kennedy and Sawyer, 2008).
Increasingly ICT is seen as an integral component of promoting self-care as it appears to improve the synthesis of information, delivery of knowledge, and efficiency of communication (Suris et al., 2010). Websites developed for young people with diabetes have reported improvements in knowledge (Whittemore et al., 2010), problem-solving and self-management (Mulvaney et al., 2010, Mulvaney et al., 2011) and HbA1c levels (Pinsker, 2011). Providing young people with clear information and anticipatory guidance are simple changes in practice that may lead to dramatic improvements in transition experiences (Reid et al., 2004, Reiss et al., 2005, Sawyer et al., 2007).

**Research Aim**
To develop information materials and a websites to improve young people’s access to information and preparation for transition.

**Methods**
Using the data obtained from young people in our transition project (TRYCIS), we identified young people’s informational needs
regarding transition. This data was used to structure participatory workshops with participants from the 3 disease groups: cystic fibrosis, congenital heart disease, and diabetes. The transition age is generally around 18 years but preparation for transition should begin at 14 years (Department of Health, 2008, American Academy of Pediatrics, 2002). The materials were co-designed with young people (14-18 years) pre-transfer and young adults (18-25 years) post-transfer using participatory research methods and an iterative process. Young people’s views of websites design and preferences for information-sharing will be outlined and discussed. We will conclude with a discussion of the challenges with developing materials (from the interview data) and co-designing the materials for a website to support young people with chronic illnesses transition to adult services.

**Results**

The data indicated that young people are generally unprepared for transition, receive inadequate information, lack opportunities for discussion or development of self-management skills and receive limited information about adult services echoing other research (van Staa et al., 2011, Tuchman et al., 2008, Dovey-Pearce et al., 2005). They experience difficulty finding information with websites being looked at for health information despite their lack of consistency and quality. One patient reported using Google maps to locate the adult clinic. Young people expressed a need for information on all aspects of the transition process. Informational needs were collated into 3 key areas that were: preparation for transfer, facilities and staff in the adult healthcare service and links
between services. In relation to transition, young people need to know when the transfer will happen, how it will be handled and how they can prepare themselves for managing their illness alone. They need information on how to find and access adult healthcare services, facilities available, what clinics look like, the names and roles of staff in the adult service, clinic times, and how relationships may alter. They need information on how child and adult services communicate information about them, how to obtain a summary of their illness management and how to handle clinic appointments alone.

We used this data to construct interview schedules and then conducted further interviews with groups of young people (from 3 tracer conditions) to develop the information materials and inform the co-design of the website. It is important to involve young people in the design and planning of the intervention so that it is age and developmentally appropriate and resonates with the needs and lives of the young people rather than being professionally dictated (McDonagh and Kelly, 2010). Participatory research (PR) involves co-learning and reciprocal transfer of expertise, shared decision-making and mutual ownership of process and products of the enterprise (Litt 2003). Four principles underpinned the user-designed participatory approach; consultation and cooperation (with relevant stakeholders), experimentation (with alternative designs), contextualisation (testing with users & providers) and iterative development (modification in response to evaluation) (Waller et al., 2006). The project was guided by an advisory group that included: parents, young people with chronic illness, health
psychologist, digital technology expert, webdesign expert, nurse, and a researcher with webdesign expertise.

**Implications**

We need to find ways of disseminating findings beyond traditional academic formats so that we can reach young people and improve their transition experiences. An educational intervention using ehealth technology has an increased chance of engaging young people because it is socially acceptable and embraced by users and peers (Waller et al., 2006). It is essential that the materials developed for a website are co-designed by young people with a chronic illness who have made or will make the transition to adult healthcare services. The next stage is the refinement and testing of the website to ensure that it is reflective of young people’s needs and preferences and also dynamic, visually attractive, and easy to access.

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4. Digitalising the population health information tool: an Irish public health nursing initiative

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**Background**

This oral presentation describes a nurse led initiative to migrate a population health tool from a paper based format to digital resource for electronic data collection storage and access. The presentation reviews the project from a health informatics
perspective demonstrating how nurses can work at a European level to inform health informatics standardisation

**Research Aim/Question/Purpose**

To develop and locally pilot a digital version of the Population Health Information Tool (PHIT) from the existing paper based version using a digital pen and paper as a vehicle for data collection. To create a bespoke PHIT database to support nursing case managers nationally in order to provide individual patient care in the primary care setting. This database will also generate population outcome data, summary views and reports facilitating integration with National Client Registries and patient health records.

**Methods/Process**

The Population Health Information Tool (PHIT) is a resource designed to support public health nurses in Ireland to improve healthcare quality and outcomes. The Initial version of the tool implemented and tested in paper format from 2008 has recently been funded to migrate to an electronic solution. This presentation reports on the process and progress of the project and explores how health informatics standards are used to source a technological solution to achieve the project goal: to achieve a single entry collection of quality patient data at the point of care, presented within a model that is fit for purpose and is cost effective. The PHIT is endorsed by the national body responsible for the strategic development of nursing and midwifery (HSE 2011) and the professional institute representing community nurses (ICHN).
Findings/Outcomes
Will be reported upon at presentation

Implications
Will be reported upon at presentation

Keywords: Population Health, Health Informatics Standards, eHealth
Chapter 5 – Promoting Safety and Care Through eHealth

1. What do safety incident reports tell us about patient privacy and data protection?

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Patient safety is monitored with reporting adverse events. However, incident reporting systems have many background variables and events can be classified in various ways. This paper highlights the importance of including patient privacy and data protection as critical factors ensuring patient safety.

Patient safety is a globally important factor in patient quality health care. WHO has initiated means for securing safe procedures for patient care and various indicators have been created to be able to follow the safety status in health care organizations (WHO, 2012). This has also involved the implementation of incidence reporting systems. Whether hospital or national level system it is crucial that the data collection is based on valid and reliable means. (Runciman, 2002; Doupi, 2009.) In Finland since 2007 an electronic incident reporting system called “HaiPro” has been used in hospitals for reporting adverse events. Adverse events i.e. real incidences and near misses are recorded with a web-based survey
tool which is totally anonymous for reporters. The reports are classified into 14 categories, medication management (50 %) and communication and information management (20 %) being the leading categories based on statistics. (Keistinen & Kinnunen, 2008.) Information management has changed considerably when electronic health records are used in practice. These new tools used for sharing information between professionals and administrators may also have unintended consequences in patient care. (IOM, 2011.)

The purpose of this study is to find out how incidences focusing on patient privacy and data protection are recorded in the category of communication and information management in the incident reporting system in one university hospital.

The study approach is retrospective. The data consists of communication and information management-related adverse event reports (N=785) in the HaiPro system, which were collected under three years. The data (n= 127) was analyzed with an inductive observation matrix and the description of the event was the most important item to be further classified. The results are presented using descriptive statistics.

Based on the results patient identification seems to be one important factor to improve patient safety. Patient id bracelets are not in common use in Finnish hospitals. Further, it seems that means of sharing and disseminating patient information are not used in a safe way. Although electronic systems are in use, still a lot of information is following the patient in loose paper format causing harm. Additionally, there are knowledge deficits in ICT.
literacy among health care professionals based on descriptions of ICT usage. Thus, despite that patient privacy and data protection are not items to be followed in the adverse events’ reporting systems it seems that also these things harm patients and should be monitored regularly.

One solution to strengthen patient privacy is to create also on-line incident reporting systems for patients and relatives. This would make the reporting more comprehensive and give also feedback for developing clinical practice. Especially it seems that regular education in confidentiality and data protection guidelines are needed as well as analysis to further develop work processes.

*Keywords:* patient safety, privacy, information management, data protection

**References**

2. Hospital-acquired conditions (never-events): relationship to NIC-NOC

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Significance of the Issue of Never Events
Hospital-acquired conditions (never events) including medical errors continue to be a leading cause of morbidity and mortality in the United States. A “never event” refers to events that should never happen in a hospital, and if they do, can cause serious injury or death (Smith, 2008). It is reported that as many as one out of every 25 patients suffer injuries from errors and that preventable healthcare-related conditions cost the economy $17-29 billion USD each year (Mattie & Webster, 2008; Smith, 2008). In response to this rapidly increasing problem, selected federal agencies will no longer reimburse hospitals for the additional expenses incurred when a patient experiences a never event. Nurses can play a very important role in promoting safety and evidence-based practice to prevent these events from occurring.

Historical Works on the Issue
Several key pieces of legislation and literature works have led us to this point and will be presented briefly here. While these works focus on the United States, hospital-acquired conditions are issues that all health care professionals internationally face. The literature includes:
• The development of Diagnostic-related groups (DRGs) have reduced the variation in amount of reimbursement for procedures, but despite this cost saving there are critics of this method. DRGs do not help with the reimbursement for complications, especially those acquired in the hospital.

• Institute of Medicine (IOM) reports have called attention to the significant morbidity, mortality and costs associated with never events. The Institute reported that over 2 million patients each year are affected by hospital-acquired conditions, resulting in 10,000 deaths. These reports renewed professional organizations emphasis on improving care in our nation’s hospitals (Mattie & Webster, 2008).

• Continuing with the theme of the IOM publications, a National Quality Forum report came forward identifying events that were largely preventable—another step to heighten awareness of the issue. In addition, this report reinforced the lack of solutions to address the occurrences of never events in hospitals. Even though all of these reports documented the problem within our healthcare system, it is the contention of Mattie and Webster (2008) that since they publishing there has been no significant decrease in the incidence of never events.

• A private organization called the Leapfrog Group has called for more work on the link between reimbursement and patient outcomes. They support the notion that hospitals should not receive payment for never events occurring within their facility.
States associations have also become active in pushing the agenda for reform. Spurred by state and federal initiatives, many hospital associations have announced a policy recommending member hospitals work to stop never events that occur in their hospitals, since they are preventable.

In addition, media coverage of celebrities’ experiences of never events has also fueled the call for an increased emphasis on patient safety.

In summary, this is not just one federal agency issue but a broader public health initiative. To date, the progress on reducing medical errors and hospital-acquired conditions is negligible. Straube and Blum (2009) contend that waiting to address these problems any longer is not acceptable. Thus, starting in 2013 the Federal government will not reimburse hospitals for any care given that was provided to patients do to a documented hospital-acquired conditions.

Role for Nursing
Nurses can play a significant role in hospital-acquired conditions by performing accurate, detailed assessment and develop short-term and long-term plans for quality care. Nurses will need to be vigilant regarding their documentation of the assessment of the clinical status of the patient (Welton, 2008). More than ever will documentation be a critical component of quality care. With this in mind, models (see below) have been developed using nursing sensitive outcomes to assess for the risk of a never event—such as a fall or uncontrolled blood glucose level. The purpose of this presentation is to present this new paradigm format and approach
of using NOC and NIC standardized language (Bulechek, Butcher, Dochterman, & Wagner 2013; Moorhead, Johnson, Maas & Swanson, 2013).

The purpose of this model is to use NOCs to assess the patient status, use NIC to suggest relevant nursing interventions and then evaluate the impact of the interventions and their nursing activities through the selection of other related nursing outcomes. In addition, outcomes are used to measure the impact of the consequences of inadequate care, when the never event continues to occur.

Using the NOC-NIC-NOC Model, the relationship between the outcomes prior to intervention and post intervention were examined. Chart reviews of data collected at admission were conducted on fallers and non-fallers hospitalized on the same unit, similar age (within 10 years of one another) and same gender. The reviewer (Swanson) collected information on the NOC indicators indicating risk for falls. In addition, nursing outcomes and NIC nursing activities documented in patient records to validate the NOC-NIC-NOC Model of nursing care for these selected never events were noted. Information from this quality assurance program evaluation will be provided on the indicators of the assessment outcomes that more frequently occurred in fallers than in the non-faller group. This grouping of indicators may help to identify whose individuals who have a greater likelihood of falling and facilitate nursing to implement fall protocols in an effort to prevent complications due to falls in the hospital. In addition, we
will be able to identify the most frequently used intervention labels and nursing activities.

**Results**

The following results were noted in the patient chart review. At admission, fallers (N=21) had more cardiovascular problems and hygiene issues. While the non-fallers (N=21) at admission had more muscular/skeletal problems, more falls in the last year, and more vision problems. In addition, faller admission data matched the NOC indicators of the following outcomes:

- Fatigue Level (0007)
- Medication Response (2301)
- Mobility (0208)
- Self-Care: Activities of Daily Living (ADL) (0300)
- Self-Care: Toileting (0310)

These data compare the fallers and non-fallers at Admission:

<table>
<thead>
<tr>
<th></th>
<th>Fallers</th>
<th>Non-Fallers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fallen in the last 30 days</td>
<td>50%</td>
<td>35%</td>
</tr>
<tr>
<td>&gt;20 second Get up and Go</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>Poor Balance</td>
<td>51%</td>
<td>20%</td>
</tr>
<tr>
<td>Unsteady gait</td>
<td>50%</td>
<td>20%</td>
</tr>
<tr>
<td>Activities of Daily Living issues</td>
<td>38%</td>
<td>10%</td>
</tr>
<tr>
<td>Ordered sedatives on admission</td>
<td>43%</td>
<td>5%</td>
</tr>
</tbody>
</table>

The major nursing intervention (**NIC**) used at the time of the fall was Surveillance (6650). Of this NIC that was selected the main nursing activities used were Bed/Chair alarms and 15-30 minute checks.

The outcomes (**NOC**) used to evaluate the fallers after the fall were: Fall Occurrence (1912) and Fall Prevention Behavior (1909).
Conclusion
In conclusion, the data showed that the same NOCs are NOT used to assess both the risk for a fall and the evaluation of the impact of the intervention implemented after the fall. This project served to support the Model and the use of NOC-NIC-NOC in patient care. The following diagram presents the Model of care using NOC-NIC-NOC.

Manifestations of Risk for Falls
References


3. Information received from medication errors – using a web-based error reporting system

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Background

“Medication error is any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer” (NCCMERP 2012). Among hospital patients, errors involving medications are frequent. Preventing errors is important, because preventable adverse events have substantial consequences, including hospital admissions, prolonged hospital stays, additional resource utilisation, time away from work, as well as lower patient satisfaction. Medication errors can cause different harm to patients, even a patient’s death. (Barker et al. 2002, Ford et al. 2006.)

A major factor to improve patient safety in medication processes is to collect information about errors and near misses. Based on this, it is possible to identify changes that can be done, whereby the potential for errors should diminish in the future. (Thomas & Panchagnula 2008.) In recent years, reporting systems have been created to give health care professionals the possibility to report errors. The reporting systems are effective for collecting reliable information on errors, both rapidly and in real time. (Miller et al. 2006.) Criticism towards the voluntary reporting systems has also been stated. It is estimated that only 10 to 20 percent of errors are ever reported, 90 to 95 percent of which cause no harm to the patient (Griffin & Resar 2009). The effort is not only to send reports to the reporting databases, but is also important to understand how they are used for learning and for safety improvement.
Methods

Data collection
The material of the study was collected retrospectively from one of Finland’s five university hospital web-based error-reporting databases called HaiPro. This hospital has 800 patient beds and in the year 2010, there were 226,997 days of treatment altogether. Between January and December 2010, there were 1617 error reports in the HaiPro database, of which n= 671 were connected to medication and analysed.

All health care professionals (physicians, nurses, pharmacists, therapists) who take part in patient care are able to report the detected errors or near misses to the error-reporting database. The reporting is made easy, fast, and can be done on any workstation computer in hospital wards and clinics, both anonymously and voluntarily. The HaiPro -system collects data on incidents with web-based information-collection forms. Some of the fields are predefined lists and three of the fields are for free text description.

Data analysis
The unit of the occurred error, who the reporter was by profession, when the error happened, the error’s stage, type, severity and its consequences to the patient and unit, as well as contributing factors of the error, including the medicine product involved in the error, were analysed. Information of the error detection and prevention were analysed from the free text descriptions. The qualitative material was quantified and classified to different categories on the ground of the contents. Two research experts analysed the material in collaboration (the principal investigator
and hospital pharmacist). All categorising of errors was jointly agreed. The material was processed statistically using the SPSS for Windows 19.0 programme.

**Results**

A total of 671 medication error reports were analysed. Most of them (83%) were reported by registered nurses. Pharmacists reported 5.4% and physicians 2.5% of the incidents. Many of the reported errors occurred on the day shift (42%). About two thirds (69.2%) of them happened to the patient; the rest were near misses. The majority of the errors did not cause any harm to patients (65.7%) or to units (32.5%). Of the errors, 0.3% were estimated to cause severe harm to patients. Most of the errors were administration or documenting errors. The most common types of error were wrong doses (26.0%) or omissions (24.0%) The most salient factors contributing to errors were communication and information transmission as well as the working environment, equipment and resources. Commonly, several medicines were linked to errors - mostly psycho-pharmaceutical drugs or intravenous/intramuscular antibiotics.

Medication errors in this study were detected in different ways and in different phases of medication processes. About one-fifth (21.0%) of the medication errors were detected during documenting or when reading the documents. During medicating the patient is usually the last chance to prevent the error before it happens to patients. In this study, 14.2% of errors were detected in this connection. The personnel gave different views of how medication errors could be prevented. Increasing attention and
caution in different phases of the medication process and increasing common management policies and guidelines were the most common views.

**Discussion**

In this study the material collected from the web-based error-reporting system was used. The meaning of the study was to show the critical factors and phases of medication processes, wherein it needs to be emphasised that more errors could be prevented. Nurses and other health professionals should absorb good practices, such as communication, co-operation, concentration, and checking, as part of the normal commission during the medication process that the possibility of preventing errors could increase. The system should encourage them by offering the necessary resources, such as employees, education, orientation, and possibilities of work without interruptions, for implementing the safer medication practices. In many countries, legislation and a strategic base guide the promotion of patient safety. These instructions should be evaluated and implemented in practice. This study has some potential limitations. It is a well-known fact that only a part of the errors are noticed (Evans et al. 2006, van den Bemt et al. 2007), and only a part of them are reported for many reasons, such as disagreement with definition, reporting effort, fear, or administrative response (Wakefield et al. 2005, Evans et al. 2006, McBride-Henry & Foureur 2006). The used error-reporting database is voluntary and anonymous. That is why it is assumed that the material is selected and represents only a part of actual errors. Finally, the generalisation of study results has
challenges because the results are collected in specific time periods for one year, in one hospital, and in one country. Therefore, it is possible that the aspects related to culture or time period have effects on the study results. However, the results show a similarity to previous international studies.

**Conclusion**

There is a need to improve safety in the medication process for diminishing the harm that happens to patients and for increasing the quality of health care. An error-reporting system can give important information regarding errors and contributing factors. The information is needed on the basis of developing the safety practices in health care settings.

**Acknowledgements**

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**References**


Chapter 6 – Nursing Terminologies and Documentation Systems

1. Achieving quality nursing documentation for integration into care pathways

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Background

While it is assumed that the quality of nursing documentation reflects the quality of care delivered, this is not necessarily the case. The ability of the nursing record to portray the work of the nurse is frequently problematic, thus rendering nursing work invisible. It is imperative that this issue is tackled prior to the wide scale implementation of electronic care pathways for health within Ireland.

Research Aim/Question/Purpose

This paper reports on a project to introduce standardised language into the paper record as the first step in clarifying nursing knowledge and its relevance to patient care. While standardised languages such as NANDA-I, NIC, and NOC are commonly
associated with electronic records which have inbuilt language capabilities, the problem posed by introducing standardised language into the paper record require a different approach. This project arose in response to a need to address the shortcomings in a paper record in a small acute city hospital and to meet the needs of standardised care pathways within the acute setting.

**Methods/Process**

A working group was set up to take the problem through from the initial exploration stage to implementation of the new documentation. Initially outside experts were consulted to present as wide a field of possibilities as would allow for innovative thinking. At the early stage the project team concentrated on education around standardised languages and the potential benefits. NANDA-I, NIC and NOC based on Marjory Gordon’s Functional Patterns of Health were the languages of choice.

**Findings/Outcomes**

Twenty four months later, using action research a robust system of nursing documentation has been implemented. Preliminary results demonstrate that nursing documentation is more focused, complete and relevant to the patients’ needs. Results demonstrate that the staff have mastered the terminology and are including previously omitted material such as psychosocial care into the nursing record. The record is now capable of plotting the nursing input or nurse sensitive outcomes of patient care. The next phase will be to incorporate meaningful nursing data into clinical care pathways.
Implications
This work had implications for nursing documentation as well as for quality audits and hospital accreditation by external accrediting bodies.

Keywords: nursing documentation, Gordon's functional health patterns, action research, collaboration

2. Clinical evidence based standardized nursing care plan: a review of 489 nursing care plans

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Background
Standardized Nursing Care plans are quite frequently used in clinical practice. Usually, standardized care plans are prepared based upon expert opinions or tradition, but rarely those care plans are evidence based. The data warehouse in the Centro Hospitalario Universitario de A Coruña (Spain) has given us the opportunity of building up a specific standardized nursing care plan based on the revision of the nursing care plans used during five years (489) in the Nefrology service of the above mentioned Hospital. This study is being conducted in the “Unidad de Nefrología del Centro
Hospitalario Universitario de A Coruña (CHUAC)” in Spain. It is based upon the study presented in the AENTDE/NANDA-International Congress in Madrid in 2010. The study in 2010 considered more than 200 patients who received nursing care after a kidney transplantation, a kidney-pancreas transplantation or pancreas transplantation, in the above mentioned unit. The present study increases the number of patients to around 500, by extending the years considered. Nursing diagnostic is the basis upon which Nursing care plans are developed, nursing interventions and nursing outcomes are selected taking into account nursing diagnostic.

**Research Aim/Question/Purpose**

To elaborate the basis for building up a Standardized Nursing Care Plan for patients who need a kidney or Reno-pancreatic transplantation. Based on the clinical evidence of the revision of a large number of nursing care plans Using the webs of critical reasoning described in the OPT Model (D.J. Pesut).

**Methods/Process**

The authors are using the data warehouse instruments developed by CHUAC to retrieve the needed data related to the use of nursing diagnoses in patients who have suffered a kidney, kidney-pancreas or pancreas transplantation during the years 2007, 2008, 2009, 2010 and 2011. Revision of 487 nursing care plans, developed with the software GACELA ® in the Nefrology Service in CHUAC (Spain), between 2007 and 2011. Data has been analysed using SPSS 19. The 20 most prevalent nursing diagnoses had been
identified using the critical reasoning web, the prioritisation of Nursing diagnoses has been made.

**Findings/Outcomes**

After the analysis with SPSS and the use of critical reasoning, the 20 most prevalent nursing diagnoses were identified. That represented 87.7% of the total amount of nursing diagnoses used by nurses. Using the critical reasoning webs, the nursing diagnoses were associated and prioritized in order to build up the basis for the development of clinical evidence based standardised nursing care plans.

**Implications**

The use of the available data stored in clinical datawarehouses, facilitates information that constitutes clinical evidence. Clinical evidence is a necessary base to build Nursing Knowledge, which is essential for professional development. Nursing data stored in big clinical datawarehouse have not been used enough until nowadays. This study and other similar studies are needed to build scientific knowledge, based upon clinical experience that afterwords can be contrasted and compared with other scientific evidences, inorder to strengthen Nursing knowledge bases and enhance best clinical nursing practise.

*Keywords: Standardised Nursing Care Plans, Nursing Languages, Nursing Methodology, Clinical data warehouse, Electronic Health Records*
3. Developing an international nursing documentation audit instrument: Expert consensus study

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Background
To provide safe care, nurses ought to accurately describe patients’ current health status, constantly assess the ongoing nursing process to detect risk states and prevent critical incidents. Digital support systems may be helpful to come to accurate nursing documentation. Intelligent digital support systems contain pre-defined, correct linkages between diagnoses, interventions and outcomes and can guide nurses in diagnostic reasoning, in choosing and evaluating evidence-based interventions and outcome indicator. No information is available on what standards a digital support system is based and on how a digital support systems can be helpful to provide accurate nursing documentation.

Aim
This study aims to explore expert opinions about essential determinants to be used for developing and testing an audit instrument for intelligent digital documentation systems in nursing. The function of this consensus-based and psychometrically tested instrument is to measure the accuracy of
the nursing process documentation in hospitals internationally related to a standard for intelligent digital documentation systems.

**Method**

Instrument development:

1) Developing literature-based determinants of high quality nursing documentation in digital support systems

2) Setting up an online Delphi technique structure for setting a standard for intelligent digital nursing documentation.

3) Delphi panels for content validity of determinants for high quality nursing documentation in intelligent digital nursing documentation

4) Analysing and reporting results

Expected outcomes will lay the basis for further development of an internationally applicable instrument to measure accuracy in nursing documentation. Determinants of high quality nursing documentation allow international comparability of nursing data. Quality determinants are also essential for electronic documentation because Electronic Health Records (EHR) are a relevant data source for future nursing research.

**Purpose**

The purpose of this study is international expert consensus and content validity of criteria - or determinants - for developing and psychometric testing of an evidence-based documentation standard in digital support systems. The criteria/determinants will provide the items for an audit instrument to measure the accuracy in nursing documentation internationally.
Background and literature review
In clinical practice, documentation in the patient record is part of nurse’s daily routine. Documentation is essential for adequate, safe and efficient nursing care (Wilkinson 2007, Institute of Medicine, 2004, Wang, Hailey & Ping, 2011). Inaccurate nursing documentation can be a cause of nurses’ misinterpretations, and may cause unsafe patient care (Koczmar 2005, 2006). Therefore, the World Alliance for Patient Safety recommends further research toward medical and nursing documentation to be able to identify and report potential areas for improvement. Subsequently, best practices can be established to provide decision-makers with options when shaping strategies to improve patient safety (World Alliance for Patient Safety 2008). To provide safe care, nurses ought to describe the patient’s current health status, constantly assess the ongoing nursing process to detect risk states and prevent critical incidences (Gordon 1994; Müller-Staub, Needham, Odenbreit, Lavin, & van Achterberg, 2010). Quality nursing documentation promotes effective communication in the health care team, which facilitates continuity and individuality of care (Urquhart, Currell, Grant, & Hardiker, 2009; Wang, et al., 2011). Clear, reliable, and accurate communication between health professionals is essential to patient safety and the efficient operation of hospitals (Jefferies, Johnson, & Griffiths, 2010).
For nurses’ accountability, it is obvious that the nursing documentation not only has to be accurate and complete but also legible, either handwritten or typed. Poorly legible handwriting
could obviously be harmful to the patient because, it might be misinterpreted (Koczmarak et al. 2005, 2006; Whyte 2005; Saranto & Kinnunen, 2009; Wang, et al., 2011). Flaws in documentation quality effect patient outcomes and the evaluation of quality measurement (Wang, et al., 2011), and insufficient recording of psychological, social cultural and spiritual aspects of care were reported (Müller-Staub, 2007; Törnvall & Wilhelmsson, 2008; Wang, et al., 2011).

The content and structure of the nursing process is internationally acknowledged as constituting the theoretical background of the elements needed for accurate nursing documentation (Häyrinen, Lammitakanen, & Saranto, 2010; Alfaro-LeFevre, 2010; American Nurses Association, 2009). On the basis of observations and the admission assessment, nurses derive nursing diagnoses in order to plan interventions and to evaluate outcomes (Johnson et al. 2007, Gordon 2003, 2005, Alfaro Le Fevre, 2010).

As stated by the World Alliance for Patient Safety (2009), the lack of standardized nomenclature for devices and reporting hampers good written documentation. An instrument is needed to evaluate the quality of nurses’ documentation. Such an instrument fosters the development of criteria for accuracy in nursing documentation internationally, and evaluation results would distinguish areas for documentation improvement. This instrument will provide opportunities for further research on quality of nursing documentation between countries and/or states (Wang, et al., 2011). Hospital benchmarking can positively influence patient safety. However, benchmarking is unachievable as long as a
psychometrically tested instruments with established feasibility, reliability and validity for international use in general hospital settings are not available (Wang et al., 2011). On the basis of systematic reviews including 118 studies about nursing documentation, (Saranto & Kinnunen, 2009; Wang et al., 2011) concluded that this area of nursing should focus more on accuracy of nursing documentation. Published studies used mostly questionnaires, interviews, observations, and descriptive evaluations as methods of data collection (Saranto & Kinnunen, 2009). Knowledge about the accuracy of nursing documentation in patient records would be helpful in improving the structure and quality of the content of handwritten and electronic patient records (Kurihara et al. 2001; Häyrinen, et al., 2010; Odenbreit, 2008, 2010a, 2010b).

Accuracy measurements about nursing documentation were carried out in nationwide measurements by using psychometrically tested instruments (Björvell, Thorell-Ekstrand & Wredling, 2000; Müller-Staub, Lunney, et al., 2008; Müller-Staub et al., 2009; Paans, Sermeus, Nieweg, & van der Schans, 20101,3). However, multi-centre and multi-country studies are missing. No information is available about the accuracy of nursing documentations based on international measurements with a consented, single, reliable and valid instrument. An international “golden standard” for accurate nursing documentation is not yet acknowledged, and an evidence-based instrument based on international consensus is missing.
Especially an instrument based on a standard for digital support systems is lacking. Decision-support tools can guide nurses in stating accurate nursing diagnoses, however ‘intelligent software systems’ including accuracy in documentation need to be tested. Such systems contain pre-defined, correct linkages between diagnoses, interventions and outcomes and can guide nurses in diagnostic reasoning, in choosing and evaluating evidence-based interventions and outcome indicator. This may also contribute to the development of standardized nursing language and facilitate developments of electronic nursing documentation tools (Institute of Medicine, 2004).

To assess the accuracy of the nursing documentation in general hospitals, there is a need for a reliable and valid instrument to quantify accuracy variables to be able to benchmark outcomes internationally.

**Theoretical framework**

*Accurate nursing documentation ought to contain:*  
(1) *Patients’ personal information* and a description of the *admission data*, such as information from the assessment interview (Curtis 2001, Arnold & Mitchell 2008).  
(2) *Accurate nursing diagnoses*. The basis of diagnostic concept development in nursing was layed by the North American Nursing Diagnosis Association (NANDA) in 1988. Nursing diagnoses are seen as a core element of the nursing process (American Nurses Association, 2009). Nursing diagnoses are the basis to choose nursing interventions to achieve preferred patient outcomes (ICN, 2004; NANDA International, 2012).
Diagnoses are reported in terms of a Problem, an Etiology, and Signs and symptoms, also known as the PES structure. The PES structure explains the content of nursing diagnoses: Each diagnosis contains a problem label and definition (P), aetiology or ‘related factors’ (E), and signs and symptoms (S) or ‘defining characteristics’ (Gordon 1994; Gordon, 2008, 2011). All parts of the PES structure are to be measured: Accuracy of the diagnostic concept, accuracy of related factors and accuracy of defining characteristics (Lunney & Müller-Staub, 2011; ISO 2011).

(3) **Accurate and effective nursing interventions.** Nursing interventions are defined as nursing treatments which are based on education, knowledge, and knowledge sources - such as handbooks or protocols - and clinical reasoning (Johnson *et al.* 2007; Bulechek, Butcher, & Dochterman, 2008; de Cordova et al., 2010, Paans et al 2010). Nursing interventions describe the actions of nurses on behalf of the patient to improve outcomes. Meaningful nursing interventions are nursing diagnosis specific (Gordon, 2008, 2011; Müller-Staub, Lunney, et al., 2008; Müller-Staub et al., 2010; Müller-Staub, et al., 2009). The literature suggests to document the intervention plan and documentation after performance of interventions (ISO, 2011; American Nurses Association, 2009).

(4) **Nursing outcomes** refer to changes in a patient’s status, including symptoms, functional abilities, knowledge state, coping strategies, and self-care (Johnson *et al.* 2007; Bulechek et al, 2008). Outcomes have to be measurably formulated and documented. Nursing outcomes can relate to an individual patient,
to the unit of the family, a community state, behaviour or perception and can be measured along a continuum (Johnson et al. 2007). These outcomes are documented in nurses’ progress evaluations and outcome reports, which gives nurses the opportunity to evaluate the care given and to describe intervention results (Lunney 2001, Wilkinson 2007, Lunney 2007).

**Previous instruments**

In a literature review Paans et al. (2010) identified seven relevant instruments. All seven instruments based on a literature review but were used and psychometrically tested in a national context only:

- The Ziegler Criteria for Evaluating the Quality of the Nursing Process (ZCEQNP) instrument (Ziegler 1984, Dobrzyn 1995) is composed of 12 specific criteria.
- The NoGA instrument (Nördstrom & Gardulf 1996) is a quantitative instrument that evaluates the structure of nursing documentation (Nördstrom & Gardulf 1996, Nilsson & Willman 2000).
- The Scale for Degrees of Accuracy in Nursing Diagnoses (Lunney 2001) is a 7-point ordinal scale that measures the accuracy of diagnoses relative to identified signs and symptoms (Lunney 2001).
- The Cat-ch-Ing (Björvell 2002) is an instrument that measures both quantity and quality criteria of documentation based on the nursing process and on Swedish regulations for documentation practice (Björvell 2002).
- The Quality of Nursing Diagnosis (QOD) instrument (Florin et al. 2005) lists 14 criteria that are used to measure the accuracy of
nursing diagnoses. The QOD was based on the ZCEQNP (Ziegler 1984, Florin et al. 2005).

To measure the quality of and the relationships among diagnoses, interventions, and outcomes, Müller-Staub et al. developed the instrument named Quality of Diagnoses, Interventions and Outcomes (Q-DIO) (Müller-Staub, Lunney, et al., 2008; Müller-Staub, et al., 2010; Müller-Staub, et al., 2009; Müller-Staub, Needham, et al., 2008). The Q-DIO consists of 29 items categorised into four groups: (1) nursing diagnoses as a process, (2) nursing diagnoses as a product, (3) nursing interventions, and (4) nursing-sensitive patient outcomes (Häyrinen, et al., 2010; Jefferies, et al., 2010; Müller-Staub, Lunney, et al., 2008; Müller-Staub, et al., 2010; Müller-Staub, et al., 2009; Urquhart, et al., 2009). Q-DIO is an expert instrument that can serve as a basis for developing a more general, international tool.

The D-Catch instrument was developed in 2007-2008 and bases on the Ca-ch-Ing instrument and the Scale for Degrees of Accuracy in Nursing Diagnoses (Paans et al. 2010). Quantity and quality variables were used to assess the accuracy of nursing documentation with 10 items (Paans et al. 2010).

None of the aforementioned instruments were originally developed to measure accuracy in nursing documentation in intelligent digital support systems on an international level, nor were they tested in a multi-centre study. We conclude, that no such instrument for international use is available. An international instrument has to be developed to measure the accuracy of nursing documentation across international hospital settings.
Objectives
This study aims to explore expert opinions about essential determinants to be used for developing and testing a valid and reliable instrument for use in the context of intelligent digital support systems. The function of this consensus-based and psychometrically tested instrument is to measure the accuracy of the nursing process documentation in hospitals internationally.

Methods
The following stages are planned:
1) Developing literature-based determinants of high quality nursing documentation
2) Setting up an online Delphi technique structure and determining experts
3) Delphi panels for the content validity of determinants for high quality nursing documentation
4) Analysing and reporting results

Reliable outcomes can be obtained through Delphi panels consisting of a relatively small group of homogenous experts (Akins et al. 2005). Working with at least ten researchers from eight countries is planned. Twelve researchers were recently (2011) informed about the idea to start an international project as described above. These researchers showed interest for participation and support the need for this study. Inclusion criteria for experts are:
- Demonstration of a thorough understanding about the nursing process and nursing documentation
• Expert in nursing process evaluations with published research on the subject, preferably with expertise in instrument development
• A master’s or doctoral degree in Nursing Science

A second international panel consists of expert nurses working in clinical settings/hospital practice to represent actual documentation traditions and habits. Inclusion criteria are:

• Knowledge of state of the art nursing documentation systems (handwritten and electronics) and working in practice settings
• Expertise is in developing or implementing nursing documentation systems
• Knowledge about actual E-Health strategies and meaningful use of standardized nursing language

Post-graduate specialization, or a master’s/doctoral degree in nursing science or in nursing informatics.

After successful completion of this study (stages 1-4), the following stages are planned for consecutive studies:

1) Development and testing of an internationally applicable instrument to assess three dimensions of documentation quality: content, process and relevancy (Waltz, et al., 2010). Consensus-based determinants will provide the items of the instrument.

2) Pilot Study
Using a pilot version of the conceptually based instrument, pairs of reviewers shall assess approximately 150 patient records from four different nursing wards in two hospitals in at least six participating countries. Nursing documentation in all kinds of documentation systems will be included and assessed according to the new standard. To be eligible as reviewers all nurses to be selected for the measurement in the pilot study have to have their specialty in nursing documentation in hospital practice. This process will provide valuable information enabling the research team to refine the measurement process and the instrument.

3) Data analysis: Feasibility, reliability and validity testing
Internal consistency, classical item analyses, factor analyses and testing construct validity using explorative factor analysis with principal components, and varimax rotation to identify underlying constructs.
Intra-class correlation coefficients (one way, single) analyses and the results of weighted kappa (Kw) analyses with linear weighting, according to Fleiss et al. (2003) are to be calculated and compared.

1) Delphi panels for content validity of determinants for high quality nursing documentation in digital support systems
To prepare the panellists a letter will be sent containing the study introduction and the aims of the Delphi technique. Delphi
techniques apply at least three rounds including constant comparison (Hennink, Hutter, Bailey, 2011).

a) First Delphi round: Based on a literature review on accuracy in nursing process documentation in intelligent digital support systems, the list of determinants will be offered and panellists will be asked to make judgements about the list of determinants’ and their content validity. Each expert will also judge whether or not - and to which degree - the determinants can be used to measure accuracy in nursing documentation, and if the determinants were indeed essential in measuring accuracy in nursing documentation internationally. Panellists will also be invited to offer additional, qualitative comments on each determinant.

b) Second and further Delphi round(s): The first panel results will be feed-backed to the panellists. The aim of this round is to seek consensus for additions and/or deletions submitted and about the qualitative comments given in the first round. Further rounds as needed are added to gain in-depth knowledge and a common understanding to foster content-validity.

c) The percentages of consensus on each determinant are shown to the panellists, and opportunities are given to make last changes or adaptations. The aim of this round is to foster expert-validation by enhancing the degree of consensus of each determinant.

d) Last round: The consensus reached will be presented and can’t be altered. However, feed-back is asked to get panellists’ final comments on the reached degrees of expert-validation.

2) Plan for data analysis and reporting results.
To evaluate the Delphi panels’ consensus the method for data analysis developed by Lawshe, (1975) will be used. It is described by the formula:

\[
CVR = \frac{ne - N/2}{N/2}
\]

The CVR presents a content-validity ratio: \(ne\) stands for the number of panellists indicating ‘essentials’ about each specific determinant, and \(N\) stands for the total number of panellists (Lawshe, 1975; Björvell, 2002). The content validity ratio between the expert panellists (and ranges) shall be reported in a paper to be published in an international peer reviewed journal.

**Results**

In December 2012 a pilot Delphi panel was carried out in the Netherlands. Based on the results of this pilot, in 2013 the first international Delphi round will be carried out. The results of the Dutch pilot will be presented at the ACENDIO conference in Dublin, March, 2013.

**Ethical considerations**

For ethical reasons, the participants of the Delphi panel will be informed that all information, including the analysis of the results of the survey, will be used for research purposes only and that data will be anonymized.

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Chapter 7 – Nursing Interventions and Outcomes

1. Effectiveness of nursing interventions to improve outcomes of patients with heart failure in a cardiovascular outpatient health education setting in Brazil

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Background
Healthy People Initiatives and WHO suggest that the multidisciplinary team must encourage patients and families to have healthy behavior and self care. The main causes of hospitalizations due to decompensated HF are excessive sodium and fluid intake and noncompliance to medication treatment. Patients with HF give little priority to diet, exercise and daily weight check. Patient education by nurses is an action that influences attitudes and behavior and helps decrease patient apprehension about the treatment. The use of standardized nursing nomenclatures can aid nurses to assess effectiveness of their actions in this context.
Research Aim/Question/Purpose

1) To describe NANDA-I diagnoses (ND), NOC outcomes and NIC interventions used in an outpatient health education setting for patients with heart failure (HF) in Brazil. 2) To identify effectiveness of NIC interventions to improve outcomes.

Methods/Process

On the first phase, instruments for data collection, interventions and outcomes were constructed and refined in scientific meetings by 6 cardiac nurse specialists (2PhD, 2MsN) based on a literature review and on their clinical experience and then pre-tested with 5 patients. In a scientific meeting of senior expert nurses at the Center for Nursing Classification and Clinical Effectiveness of the University of Iowa, another NOC outcome was suggested for inclusion. On the second phase, nurses started consultations using the instruments. Thirty patients with HF referred to the setting were attended by cardiac nurse specialists face to face every two months and received a telephone call in the month between the presential consultations. The progress of NOC indicators was identified after three presential consultations.

Findings/Outcomes

The ND identified in all of the patients was Ineffective Self Health Management. The outcomes retrieved from the literature review were Cardiac Disease Management and Cardiac pump effectiveness. The outcome Adherence Behavior was included after the meeting in Iowa. The interventions used were Health Education and Teaching: Disease Process. Evident improvement of the
indicators of NOC outcomes was observed comparing first to second, second to third and first to third consultations.

**Implications**
The use of standardized nursing nomenclatures made it possible for nurses to assess effectiveness of their actions. Two NIC interventions led to improvement of three NOC indicators for patients with HF identified with Ineffective Self Health Management in an outpatient health education setting.

**Disclosure**
No significant relationships.

*Keywords: Self-care, Education, nursing process*

2. The outcomes of clinical specialist and advanced practice in nursing and midwifery in Ireland: the SCAPE study.

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**Aim:** to explore undergraduate and postgraduate nurses/midwives experiences of using a blended model of teaching and learning to study eHealth and use of ICT in healthcare.

**Background:** Information and communication technology (ICT) has the potential to impact positively on the delivery of nursing/midwifery care and resultant patient outcomes. ICT is relevant to nurse/midwifery education as it enables flexible
learning through provision of online teaching and learning resources. Nurses, midwives and their managers need educational preparation in this area in order to exploit its benefits and develop eHealth initiatives. The focus of this original research is on online learning and how teaching informatics contributes to professionally preparing nurses, midwives, and their leaders.

**Methods** A 3-point model was designed to incorporate two pedagogical approaches: Web based and classroom based. Students were allocated to secure electronic groups and contributed to a threaded discussion in point one of the model. The lecturer conducted a review of the group’s work in point two and students conducted a peer review in point three. Students subsequently received a face to face lecture prior to commencement of the next cycle.

Undergraduate students completed a course that focused mainly on the relevance of ICT and eHealth in order to deliver nursing/midwifery care. Postgraduate students completed a course on the relevance of ICT and eHealth to generate evidence and on developing their professional contribution to this area as leaders in nursing or midwifery.

Two cohorts of students (n=38 undergraduate, 12 Doctoral) completed an open ended questionnaire that aimed to capture their experiences of using a blended model of teaching and learning.

**Findings**

All students evaluated their experiences positively and four themes emerged: (i) **Learner / content interaction**: *I found this excellent. It allowed discussion in a structured way and was*
excellent preparation for the assignment. (UG student): (ii) learner / learner interaction, it was a valuable learning experience, it makes you work harder when you know that your peers are going to be reading your work, and it is a good incentive. (UG student) (iii) learner / lecturer interaction: This was such a different approach to teaching – wonderful....knowing how you were doing made such a difference (PG student), (iv) learner / interface interaction: I was really nervous about doing this course because I’m 52yrs and find using computers hard....but the online parts allowed me ask the questions I wouldn’t in lectures......imagine now I’m fairly confident about directing how our hospital will share patient data!! (PG student).

Conclusions

Web-based courses may facilitate an enhanced understanding of course content. At undergraduate and postgraduate levels, nursing/midwifery education must recognize the importance of ICT to prepare the nursing/midwifery professions embrace current advances to benefit patient care and develop eHealth initiatives. At postgraduate level, nursing/midwifery education must recognise the importance of preparing our future nursing/midwifery leaders utilise information and communication technology in order to generate evidence and develop as nurse/midwife leaders of this area.

Keywords: Discussion boards, Information and communication technology, ICT, EHealth, Nurse education, Midwifery education, Virtual learning environment
3. Nursing interventions to promote dignified dying in Portugal

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Background
The concept of dignified dying has been identified as a focus of attention of nurses in the context of nursing care to dying patients (ICN 2001). Dignified Dying has been identified “as a nursing phenomenon – an aspect of health that is relevant to nursing practice - and as a desired nursing outcome” (Jo et al. 2011, p. 392). However, it is not known which nursing interventions Portuguese nurses implement and what importance these assume in their daily practice while caring for dying patients.

The International Classification for Nursing Practice (ICNP®) catalogue Palliative Care for Dignified Dying identified nursing interventions specific to promoting dignified dying and supports the systematic documentation of care (Doorenbos et al. 2011). Based on this catalogue (Palliative Care for Dignified Dying Survey), the study’s purpose is to provide an understanding of palliative care nursing interventions in Portugal and it’s importance as rated by nurses according their personal practice.

Aim
This study focuses on the nursing interventions to promote dignified dying while caring for terminal ill patients and it aims to
describe as well to characterize nursing interventions to promote dignified dying in Portugal according to the nurse’s education, context of care, and length of professional experience.

This study attempts to contribute to the improvement of nursing care in the context of end of life care by making the care model culturally congruent.

**Methods**

This is an exploratory, cross-sectional descriptive study with a quantitative approach. Data was collected between the beginning of 2010 and the end of 2011. A total of 456 surveys were sent or delivered in person, and 267 were returned, at a response rate of 58.6%.

The sample included 267 nurses in a total of 18 health care institutions and 33 wards/teams, including the majority of palliative care wards and teams working in Portugal. The instrument for data collection was translated and adapted from the ICNP® catalogue *Palliative Care for dignified dying Survey.* Nurses who in their daily practice care for dying patients were invited to participate in the study, including nurses working in palliative care teams, community care and in hospital wards for acute care. Authorization for this study was obtained from the participating institutions, and surveys were delivered in person or by postal mail.

Nurses were requested to rate the importance of 105 nursing interventions for the promotion of dignified dying listed on a five-point Likert response set: 1 - very important; 2 – moderately Important; 3 – slightly important; 4 – not at all important; 5 – not
applicable. The survey also included demographic items and the possibility of freely adding other interventions, considered by them, to promote dignified dying. A descriptive and inferential analysis of the data was performed. Relationships were established between the data obtained and descriptive variables of nurses: education, context of care, and length of professional experience.

Results
The total sample was 267 nurses working in Portugal. The mean age of the participants was 32.5 ± 7.7 years and the average of length of professional experience was 9.7 years. The majority of the participants (71.2%) indicate Licentiate degree as their highest degree in nursing education and worked in the hospital (81.4%). Most of the participants work in palliative care settings (62.1%) and has some specific education in palliative care (56.2%). The majority of participating nurses cared for dying patients often (29.2%) or very often (60.7%).

As to the level of importance awarded by nurses to the nursing interventions integrated in the Palliative Care for dignified dying survey, from the ICNP® catalogue, in the promotion of dignified dying, more than half of the interventions (57) were considered “very important”. The remaining interventions were considered mostly “moderately important” or at least “slightly important”. Table 1 lists the 20 nursing interventions ranked by average importance ratings to promote dignified dying from this study.
Table 1. Nursing interventions ranked by average importance ratings

<table>
<thead>
<tr>
<th>RANK</th>
<th>INTERVENTION</th>
<th>Mean score</th>
<th>Standard deviation</th>
<th>Min-Max score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Maintain dignity and privacy</td>
<td>1.06</td>
<td>0.245</td>
<td>1-2</td>
</tr>
<tr>
<td>2</td>
<td>Administer pain medication</td>
<td>1.09</td>
<td>0.317</td>
<td>1-3</td>
</tr>
<tr>
<td>3</td>
<td>Manage pain</td>
<td>1.12</td>
<td>0.373</td>
<td>1-4</td>
</tr>
<tr>
<td>4</td>
<td>Manage dyspnoea</td>
<td>1.18</td>
<td>0.452</td>
<td>1-4</td>
</tr>
<tr>
<td>5</td>
<td>Provide privacy</td>
<td>1.18</td>
<td>0.47</td>
<td>1-4</td>
</tr>
<tr>
<td>6</td>
<td>Establish trust</td>
<td>1.21</td>
<td>0.5</td>
<td>1-4</td>
</tr>
<tr>
<td>7</td>
<td>Support caregivers</td>
<td>1.22</td>
<td>0.491</td>
<td>1-3</td>
</tr>
<tr>
<td>8</td>
<td>Provide emotional support</td>
<td>1.23</td>
<td>0.487</td>
<td>1-4</td>
</tr>
<tr>
<td>9</td>
<td>Protect patient rights</td>
<td>1.26</td>
<td>0.54</td>
<td>1-4</td>
</tr>
<tr>
<td>10</td>
<td>Protect confidentiality</td>
<td>1.27</td>
<td>0.537</td>
<td>1-3</td>
</tr>
<tr>
<td>11</td>
<td>Ensure continuity of care</td>
<td>1.28</td>
<td>0.561</td>
<td>1-4</td>
</tr>
<tr>
<td>12</td>
<td>Teach about managing pain</td>
<td>1.30</td>
<td>0.569</td>
<td>1-4</td>
</tr>
<tr>
<td>13</td>
<td>Encourage emotional expression</td>
<td>1.31</td>
<td>0.558</td>
<td>1-4</td>
</tr>
<tr>
<td>14</td>
<td>Support decision making process</td>
<td>1.32</td>
<td>0.528</td>
<td>1-3</td>
</tr>
<tr>
<td>15</td>
<td>Support psychological status</td>
<td>1.35</td>
<td>0.596</td>
<td>1-4</td>
</tr>
<tr>
<td>16</td>
<td>Support family decision making process</td>
<td>1.36</td>
<td>0.553</td>
<td>1-3</td>
</tr>
<tr>
<td>17</td>
<td>Manage medication</td>
<td>1.37</td>
<td>0.615</td>
<td>1-4</td>
</tr>
<tr>
<td>18</td>
<td>Teach about managing dyspnoea</td>
<td>1.37</td>
<td>0.634</td>
<td>1-4</td>
</tr>
<tr>
<td>19</td>
<td>Consult for pain management</td>
<td>1.38</td>
<td>0.636</td>
<td>1-3</td>
</tr>
<tr>
<td>20</td>
<td>Respect belief system</td>
<td>1.38</td>
<td>0.636</td>
<td>1-4</td>
</tr>
</tbody>
</table>
The interventions considered by Portuguese nurses’ views as most important used to promote dignified dying are mainly related to the symptom management (“administer pain medication”, “manage pain” or “manage dyspnoea”). Interventions related to the preservation of dignity and privacy of the patient, the support to the family, the communication and emotional support, and the spiritual comfort were also considered important.

The three most important interventions to promote dignified dying were considered to be “maintain dignity and privacy”, “administer pain medication” and “manage pain”. We could observe that the interventions considered most important belong to the types of action “managing” and “attending”, this is related to the specificity of nursing interventions associated to the model of care for dying patients in end of life care (Volker et al. 2004). The results for the ten most important interventions coincide with those of similar studies in South Korea (Jo et al. 2011) and Philippines (Doorenbos et al. 2011).

The importance attributed by nurses to the interventions described in this study varies with the level of nursing education, the context of nursing care, palliative care experience and palliative care education. In addition to the interventions mentioned in the survey, participants suggested other 97 nursing interventions important in the promotion of dignified dying indicating the importance of presence, availability, listening, and support to the family (e.g. “being present”, “active listening”, “conducting family meetings”).

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Implications
This study provides new insights into the palliative care provided by Portuguese nurses. According to research that described nursing interventions to promote dignified dying in other countries (Coenen 2007, Jo et al. 2011, Doorenbos et al. 2011), this findings suggests that The ICNP® Palliative Care for Dignified Dying catalogue lists nursing interventions that are appropriate and relevant to promoting dignified dying in Portugal.

References
Chapter 8 – Decision-Making and Decision-Support

1. The result differences between the use of 4 levels method and 6 levels method in the diagnostic reasoning process in nursing

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Introduction
The nursing process is a framework and a frame of thinking for the nursing profession. Carpenito (2006) considered the nursing process to consist of assessment, problem identification, planning, intervention and evaluation. Wilkinson (2007) stated that the nursing process is a cyclical process involving assessment, diagnosis, planning, implementation and evaluation.

Two important components of the nursing process are patient assessment and activating nursing diagnoses. The process by which a nurse arrives at a diagnosis using diagnostic reasoning, is considered to be complex and this process is viewed differently by different authors (Jones, 1988). Several authors describe different steps in the process of diagnostic reasoning. Carnevali (1984) says

The purpose of this study was to identify the differences between the two methods of diagnostic reasoning, namely the four levels method (Wilkinson) and the six levels method (Nurjannah) in terms of ease of use, accuracy, effectiveness, usefulness and the possibility of implementation in a clinical setting. To date, there has been no research conducted to compare different methods of diagnostic reasoning.

**Methodology and method**

This is a descriptive comparison research study using cross sectional design. All participants were attendees of the Diagnostic Reasoning workshop in seven sites in Indonesia.

As many as 309 participants, consisting of nurse practitioners, academics and students participated in this research. The total number of attendees of the workshop was 384. Data were collected from 26 May 2012 to 2 June 2012 in seven sites in Indonesia. All participants were attendees of workshops associated with diagnostic reasoning who were willing to take part in the study. The participants were taught the 4 levels method and the 6 level method in formulating diagnosis and subsequently given a questionnaire with Likert scale and open questions.

In the workshop, participants were given the same scenario in which they applied ‘diagnostic reasoning’ using the 4 levels method (Wilkinson) and the 6 levels method (Nurjannah).

In using the 4 levels method, participants could only use NANDA taxonomy as a reference. In this activity, participants only applied
the Wilkinson’s method to the first level (data interpretation) to reach the stage in which ‘possible nursing diagnoses/collaborative problems’ would be determined.

In using the 6 levels method, the tools included NANDA taxonomy; the ISDA (Intan’s Screening Diagnoses Assessment) (Nurjannah, 2012c), the following publications: The Fast Method of Formulating Nursing Diagnoses for Diagnostic Reasoning in Nursing and Nursing Process, NANDA, NOC and NIC in Indonesia language; and a poster with the title ‘The map of Nursing Diagnoses’. The sample of ISDA can be accessed from the web (Nurjannah, 2012b).

Statistical analysis with the Wilcoxon signed-rank test was performed using SPSS version 20 and a qualitative analysis was done on the answers of the open questions.

**Result and Discussion**

**Age of participants**

The participants’ mean age was 30.55 years (SD 7.858, range 18–62). The majority of participants were older than 24 years (82%, n = 309) which means that they had mostly graduated from nursing school and had been working or teaching ever since. The fact of having completion their education may have contributed to their capability to think critically about the scenario described and also to differentiate between the two different diagnostic reasoning methods.

A study conducted by King (2006) in Kentucky on 164 nurse practitioners and 65 students showed that diagnostic reasoning ability increased influenced by age and experience and decreased as
a result of greater acknowledged use of intuition (King, 2006), however, this study in Indonesia does not explore this topic in any more detail.

Characteristics of participants
Nurse educators (38%, n = 309) and clinical nurses (31%, n = 309) were dominant groups in this study. Considering this phenomenon, a workshop about the diagnostic reasoning process may attract the attention of these two groups as the clinical nurses need to determine diagnoses in their practice and nurses educators have a benefit for teaching their the student related to diagnostic reasoning process.

Work experience of participants
The majority of participants had work experience (75%, n = 309) ranging in duration from less than one year to more than 10 years. Work experience may contribute to the ability of an individual to analyze the scenario in the workshop process. The intuition and common sense of nurses who are dealing with clients will influence how they interact with the data in the scenario.

Statistical results
The results of the statistical analysis indicated that the 6 levels method was considered easier to use, more accurate, more useful and more likely to be implemented in a clinical setting than the 4 levels method (p=0.000). The majority of the qualitative results pointed out the ISDA (Intan’s Screening Diagnoses Assessment) as one of the tools in the 6 levels method that simplified the diagnostic formulation. The poster ‘The map of nursing diagnoses’ was considered to be an innovation in nursing and helped nurses to
understand the relationship among nursing diagnoses. The qualitative data also indicated difficulties in understanding the language used, which might have occurred because not all of the ISDA was translated into Indonesian language. Therefore, it is suggested that the ISDA should be more widely socialized and entirely given in Indonesian language.

Some other comments from the qualitative data also show the need to simplify the tools used in the diagnostic reasoning method (6 levels method). Based on this suggestion, the 6 levels method of diagnostic reasoning (Nurjannah) has been revised and the levels can be seen below (Nurjannah, 2012a):

1. Classify data and use the ISDA or the publication *The Fast Method of Formulating Nursing Diagnoses for Diagnostic reasoning in Nursing* if necessary to find the possible nursing diagnoses and collaborative problems
2. Activate possible nursing diagnoses and collaborative problems
3. Read or learn from appropriate references about those possible nursing diagnoses and collaborative problems and determine:
   A. If the diagnoses are confirmed
   B. If the diagnoses are ruled out
   C. If more assessment is needed related to those nursing diagnoses and/or collaborative problems
4. Using the Poster ‘The Map of Nursing Diagnoses’ for nursing diagnoses which have an ‘A’ category
5. Continue focus assessment if necessary (for nursing diagnoses and collaborative problems of category A and C)

6. Label the diagnoses

This method has been tested in research conducted from 19 November to 5 December 2012 in twelve sites in Indonesia and the results will be published in 2014.

Conclusion

This study shows that the ISDA can be considered to be a powerful tool to help nurses in the process of diagnostic reasoning. To further explore its usefulness in a clinical setting, and to possibly refine and expand on the tool itself, further research into using the ISDA in a clinical setting will be conducted in several sites in Indonesia in 2013 and the results will be presented at The 1st ISDA conference in Jakarta Indonesia, in 2014.

References

2. Nursing process with focus on nursing diagnosis of NANDA-I as a tool for the empowerment of nurses in post anesthetic recovery room

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Introduction
A study held in Santa Catarina - Brazil, in which nurses presented the application of Nursing Process\(^1\) as a suggestion regarding empowerment. The Nursing Process started in Brazil with Horta in the 70s\(^2\), which initially applied six steps, being five of those currently used: Assessment, Diagnosis, Planning, Implementation and Evaluation. This method is similar to the process of scientific investigation\(^3\). In order to use the Nursing Process, skills such as critical thinking, judgment and cognition are needed \(^4\). The Nursing Process is regulated by COFEN Resolution 358/2009 \(^5\), which implies in its implementation in public and private environments where nursing care occurs.

Objective
Identify the priority Nursing Diagnoses in a Post- Anesthesia Recovery Room (PARR).

Methods
This is a quantitative, exploratory and descriptive study. The scenario was the PARR of Nossa Senhora da Conceição Hospital (HNSC), located in southern Brazil. It is an institution under the Ministry of Health, offering care in all specialties of a general hospital, and which has 801 beds \(^6\). The PARR of this hospital consists of 32 beds that are intended for patients who underwent gynecology, oncology, ophthalmology and bariatric and general surgery. The current nursing staff in the PARR of HNSC is as follows: three in the morning, three in the afternoon and two nurses on each night, whereas during the night one nurse is also responsible for Sterilization and Supply Center. Regarding nursing
technicians, the staff is of approximately twenty in the morning and afternoon shifts and thirteen on each night. The pilot Project was designed by nurses from the Surgical Room (SR) and PARR. The study was conducted between May and June, 2011. Initially the nurses from the SR and PARR have built a data collection instrument based on Horta\textsuperscript{2} and NANDA \textit{International}: This instrument consisted of a minimum of 10 Nursing Diagnoses considered important for patients in this area. After that, training about Nursing Process was carried out for nurses, assistants and technicians from the SR and PARR by two university professors with experience in Nursing Process. About fifteen nurses from the SR and PARR, and around eighty nursing assistants and technicians were trained. Then, the application of the instrument was performed in the PARR. Data analysis occurred according to descriptive statistics. The study was approved by the Ethics Committee of the institution, n° 232/07.

\textbf{Results}

Ten instruments were filled in, and the Nursing Diagnoses and their frequency were: Fear 6 (60%); Risk for bleeding 8 (80%); Risk for Infection 9 (90%); Nausea 5 (50%); Acute pain 5 (50%); Ineffective breathing pattern 4 (40%); Hypothermia 8 (80%); Impaired skin integrity 4 (40%); Risk for unstable blood glucose 3 (30%); Self-care deficit for bathing / hygiene 3 (30%). There were not added any other nursing diagnoses.

\textbf{Discussion}

Fear might be related to the possibility of unsuccessful surgery or wrong procedures. Whatever the surgical procedure, this will be
related to a difficult situation for patients and their families\textsuperscript{8}. Risk for bleeding is connected to loss control performed in post-surgery, and for being a potential complication. A study illustrates hemorrhage as a general complication possible for all patients operated on any part of the body\textsuperscript{9}. Risk for infection is related to the presence of the orotracheal tube, drains and probes. A surgical site infection may occur due to a surgical procedure. This type of infection is defined as the one that attacks tissues, incised organs and cavities manipulated during the procedure\textsuperscript{10}. Nausea is related to the type of surgery, anesthetics, pain, and prolonged fasting. Nausea and vomiting in the postoperative phase are very common complications. Despite advances in the field of anesthesiology, the incidence of nausea and vomiting occurs in about 20\% to 30\% of patients\textsuperscript{11}. Acute pain is associated with surgical manipulation. Another study reinforces that acute pain happens in response to surgical process and adds that its intensity is influenced by many factors, such as: incision site, extent of tissue trauma, presence of drains, physical, cultural and emotional conditions\textsuperscript{12}. Ineffective breathing pattern is related to the use of anesthetics. In a survey it was noticed that nursing diagnose risk for altered respiratory function has occurred (93.33 \%) in a PARR assessment\textsuperscript{13}, highlighting the importance of careful patient ventilation in the postoperative period. Regarding hypothermia, this is frequent by the use of anesthetics, time and exposure to air-conditioning without adequate protection. Hypothermia is also caused by central nervous system depression and other related surgical environment aggravating circumstances, and it may lead to malaise, hypoxemia,
cyanosis and other risk situations in post-surgery. Impaired tissue integrity was expected to be higher due to surgical incision. The risk of unstable blood glucose is related to diabetic patients in prolonged fasting. The risk of unstable blood glucose was identified in less than ten patients in post-operative of general surgery in a research by Souza, 2012 in the same way that this nursing diagnosis was identified in few instruments/patients 3 (30%) in this study. Self-care deficit for bathing / hygiene is relevant due to postoperative immobility. A research related to Self-care deficit for intimate hygiene showed frequency higher than 50% in post cardiac surgery. However, other surgeries have also caused bed immobility.

**Conclusion**

Nursing diagnoses have been identified as considered priority in PARR. Thus, nursing care was held with quality in an individualized way. It was concluded the need for implementation of this methodology in all patients admitted in the PARR. Due to its importance, it is believed that it must be extended to other areas of HNSC. This study promotes patient safety and results in the nurse autonomy, empowerment and visibility through the use of the Nursing Process, when the nurse registers, monitors and evaluates the care provided. For the implementation of this study to occur, it is necessary to reorganize the actions of nurses in the PARR of HNSC.

*Key-words: Power, Nursing Care, Role of nursing professionals.*
References


3. Investigation of the relationship between nurses’ problem solving levels and status of determining nursing diagnoses

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Introduction

A discipline in the field of health, nursing includes theoretical knowledge and skills. Nursing diagnoses that direct the diagnosis of patient problems and the planning and implementation of care determine the approaches that the nurses are responsible from and authorized with (Carpenito 2005). Development of nursing diagnoses in the last 25 years and the studies undertaken in the field have supported the development of nursing profession (Sieleman 1999; Zarzycka and Gòrajek-Jòwik 2004). Appropriate identification of nursing diagnoses, a crucial stage of nursing process, greatly contributes to increasing the independent functions during care, enriching care quality, developing autonomy, generating communication and cooperation with other health disciplines and among colleagues, ensuring the provision of a holistic approach to individuals under nurse care and preparing legal and ethical documents (Birol 2011; Potter and Perry 2009; Taylor et. al. 2005; Roark 2003). Revisions in nursing law in
Turkey in 2007 redefined the roles and responsibilities of the nurses. According to this law, nurses are responsible for patient care by utilizing all steps in the nursing process (T.R. Official Gazette, 2007).

Nursing process is both a systematic approach in nursing care and a problem solving method (Birol 2011; Sabuncu 2008). According to World Health Organization, nursing process is the systematic use of scientific problem solving methods in nursing care for the benefit of the patients (WHO 1994). Nursing care through problem solving process will also provide an important evidence base for the profession. During the nursing process, nurses face numerous and different problems whose solutions require problem solving skills in addition to knowledge and experience. A professional nurse should always foresee problems.

The use of problem solving skills by nurses in all stages of nursing process will increase nursing quality. Therefore, it is imperative to determine problem solving levels of nurses.

**Purpose**

Study aims to determine nurses’ problem solving levels and level of identifying nursing diagnoses as well as investigating the relationship between these two variables.

**Method**

Universe of the descriptive study comprised of nurses employed in a public hospital in Bolu Province. Study did not utilize sampling techniques and the entire universe was included (n=138); however the study was completed with 102 nurses who agreed to participate and who were not on leave at the time of the study. Response rate
was found to be 73.9%. Although nursing process was not actively used at the time of the study in the implementation hospital, work is ongoing by hospital administrators to employ nursing process in the context of revisions in nursing law.

“Personal Identification Form/Demographic Information”, “Problem Solving Inventory” (PSI), “Determining Nursing Diagnosis (DND) case studies” and “nursing diagnosis list” were used in data collection. Validity and reliability of “Problem Solving Inventory” developed by Heppner and Peterson to determine nurses’ problem solving levels were tested by Taylan and Şahin for Turkey. PSI is a tool that assesses what individuals think about their own problem solving behavior and approaches. Items in the scale consist of randomly listed negative and positive statements about problem solving. The 6-point Likert type scale has 35 items with a total score of 32-192 where low scores represent efficiency in problem solving and point to behavior and attitudes related to successful problem solving. High scores on the other hand represent inability to come up with effective solutions for problems at hand. The scale has three sub scales: problem solving confidence, approach/avoidance and personal control (Taylan, 1990). A sample case study prepared by the researchers to identify the level of determination in nursing diagnoses was handed out along with a diagnoses list that contained various nursing diagnoses regardless of their existence in the sample case. The nurses were asked to check the nursing diagnoses they identified in the sample case. Correct and incorrect diagnoses are scored +1 and -1 respectively. The sample case prepared by the researchers
included data that allowed for identification of 7 nursing diagnosis, therefore the total score and the level of identification of nursing diagnosis is between -3 and 7.

Written Case Study

<table>
<thead>
<tr>
<th>Case:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age: 60 years</td>
</tr>
<tr>
<td>Gender: Male</td>
</tr>
<tr>
<td>Diagnosis: Rheumatoid Arthritis</td>
</tr>
<tr>
<td>General Condition: Has difficulty in meeting basic needs, uncared, compatible with treatment, has stable vital signs</td>
</tr>
<tr>
<td>Ward: Internal Diseases</td>
</tr>
<tr>
<td>(This care was presented to nurses in a comprehensive manner.)</td>
</tr>
</tbody>
</table>

The nursing diagnoses identified for this case: changes in sleep pattern, pain, fear, deficiency in self-care, activity intolerance, constipation and risk of infection.

Data Analysis

Data was analyzed for frequency, percentages, mean, ANOVA and Pearson Correlation with the help of a statistical package program.

Finding

Findings were evaluated by considering the relationship of personal demographics of the nurses (socio-demographic, work conditions and training on problem solving skills), identification of nursing diagnosis and levels of problem solving skills and dependent variables with some independent variables.
Table 1: Distribution of Nurses According to Socio-Demographic Characteristic (n=102)

<table>
<thead>
<tr>
<th>Socio-Demographic Characteristics</th>
<th>Freq.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age</td>
<td>33.27±5.40</td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>76</td>
<td>74.5</td>
</tr>
<tr>
<td>Single</td>
<td>24</td>
<td>25.5</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health vocational high school</td>
<td>19</td>
<td>18.16</td>
</tr>
<tr>
<td>Undergraduate education</td>
<td>16</td>
<td>15.7</td>
</tr>
<tr>
<td>Through distance undergraduate education</td>
<td>45</td>
<td>44.1</td>
</tr>
<tr>
<td>Bachelor</td>
<td>22</td>
<td>21.5</td>
</tr>
</tbody>
</table>

Table 1 displays the socio-demographic characteristics of the nurses who took part in the study. Average age of the nurses was calculated to be 33.27±5.40 years and all participants were females. 74.5% of the nurses were married, 44.1% had associate degree through distance education and 21.5% had bachelor’s degree.

Table 2: Distribution of Nurses According to Work Conditions (n=102)

<table>
<thead>
<tr>
<th>Work Conditions</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Work Year</td>
<td>12.86±6.37</td>
<td></td>
</tr>
<tr>
<td>Working Unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal Unit</td>
<td>51</td>
<td>50.0</td>
</tr>
<tr>
<td>Surgical Unit</td>
<td>32</td>
<td>31.4</td>
</tr>
<tr>
<td>Emergency-Intensive Care</td>
<td>19</td>
<td>18.6</td>
</tr>
<tr>
<td>Duty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical nurse</td>
<td>88</td>
<td>86.3</td>
</tr>
<tr>
<td>Supervision clinical nurse</td>
<td>14</td>
<td>13.7</td>
</tr>
<tr>
<td>Night Shifts per Month</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No shifts</td>
<td>17</td>
<td>16.7</td>
</tr>
<tr>
<td>3-4</td>
<td>12</td>
<td>11.8</td>
</tr>
<tr>
<td>5-6</td>
<td>43</td>
<td>42.2</td>
</tr>
<tr>
<td>7 and above</td>
<td>30</td>
<td>29.4</td>
</tr>
</tbody>
</table>
Table 2 assesses the work conditions of the nurses who took part in the study. It was observed that the nurses in the study had 12.86±6.37 years work experience, half (50.0%) worked in internal unit, the majority (86.3%) worked as clinical nurse and 42.2% had 5-6 night shifts a month.

Table 3: Distribution of Nurses According to Training on Problem Solving Skills and Their Ideas on Contribution of Problem Solving Skills on Nursing Profession (n=102)

<table>
<thead>
<tr>
<th>Receiving training on PSS during their professional education</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received</td>
<td>62</td>
<td>60.8</td>
</tr>
<tr>
<td>Not received</td>
<td>40</td>
<td>39.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Receiving training on PSS during their career</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received</td>
<td>51</td>
<td>50.0</td>
</tr>
<tr>
<td>Not received</td>
<td>51</td>
<td>50.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Believing on contribution of PSS to the profession</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Believing</td>
<td>97</td>
<td>95.1</td>
</tr>
<tr>
<td>Not believing</td>
<td>5</td>
<td>4.9</td>
</tr>
</tbody>
</table>

Table 3 shows that 60.8% of the nurses who took part in the study received training on problem solving skills during their professional education and 50.0% received training during their career. 95.1% of the nurses were found to believe problem solving skills contributed to the profession.
Table 4: Distribution of Nursing Diagnosis Identification and Problem Solving Inventory Scores (n=102)

<table>
<thead>
<tr>
<th>Scale v Subscale</th>
<th>Min.</th>
<th>Max.</th>
<th>Mean</th>
<th>Sd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defining the Nursing Diagnosis</td>
<td>0</td>
<td>7</td>
<td>3.25</td>
<td>2.14</td>
</tr>
<tr>
<td>Total Scores</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem Solving Inventory Total Scores</td>
<td>51</td>
<td>115</td>
<td>83.73</td>
<td>15.32</td>
</tr>
<tr>
<td>Subscale-Problem solving confidence</td>
<td>10</td>
<td>43</td>
<td>21.08</td>
<td>6.51</td>
</tr>
<tr>
<td>Subscale- Approach/avoidance</td>
<td>25</td>
<td>65</td>
<td>44.35</td>
<td>8.94</td>
</tr>
<tr>
<td>Subscale- Personal control</td>
<td>6</td>
<td>25</td>
<td>14.75</td>
<td>4.19</td>
</tr>
</tbody>
</table>

Examination of DND and PSI scores of nurses in Table 4 shows the DND average score to be 3.25± 2.14 and PSI average score to be 83.73± 15.32. Average PSI sub scores were found to be 44.35±8.94, 21.08 ± 6.51 and 14.75± 4.19 for approach/avoidance, problem solving confidence and personal control respectively.

Table 5 examines the distribution of nursing diagnosis identification and problem solving inventory scores according to nurses’ level of education. It was observed that DND and PSI total average scores of the nurses did not change according to level of education and the difference was not statistically significant (respectively; F=0.671 p=0.57, F=0.501 p=0.68).

Table 5: Distribution of Nursing Diagnosis Identification and Problem Solving Inventory Scores According to Level of Education (n=102)

<table>
<thead>
<tr>
<th>Education level</th>
<th>DND Score</th>
<th>PSI Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Sd</td>
</tr>
<tr>
<td>Health vocational high school</td>
<td>3.0</td>
<td>1.91</td>
</tr>
<tr>
<td>Undergraduate education</td>
<td>2.81</td>
<td>2.81</td>
</tr>
<tr>
<td>Through distance undergraduate education</td>
<td>3.29</td>
<td>1.93</td>
</tr>
<tr>
<td>Bachelor</td>
<td>3.73</td>
<td>2.37</td>
</tr>
<tr>
<td></td>
<td>F=0.671</td>
<td>p=0.57</td>
</tr>
</tbody>
</table>
Table 6: Distribution of Nursing Diagnosis Identification and Problem Solving Inventory Scores According to Department (n=102)

<table>
<thead>
<tr>
<th>Working Unit</th>
<th>DND Score</th>
<th>PSI Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Sd</td>
</tr>
<tr>
<td>Internal Unit</td>
<td>2.88</td>
<td>2.27</td>
</tr>
<tr>
<td>Surgical Unit</td>
<td>3.88</td>
<td>1.93</td>
</tr>
<tr>
<td>Emergency-Intensive Care</td>
<td>3.21</td>
<td>1.69</td>
</tr>
</tbody>
</table>

F=2.165  p=0.12  F=1.242  p=0.29

According to Table 6, DND and PSI total average scores of the nurses did not change according to department they worked in and the difference was not statistically significant (respectively; F=2.165  p=0.12, F=1.242  p=0.29).

Table 7: Relationships Among Years of Experience, DND, PSI and PSI Subscale Average Scores

<table>
<thead>
<tr>
<th>Scales and Working Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Year Average Scores</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DND Average Scores</td>
<td>-0.063</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSI Average Scores</td>
<td>-0.067</td>
<td>-</td>
<td>0.485*</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PSI Subscale</strong>- Problem solving confidence</td>
<td>-0.223*</td>
<td>-</td>
<td>0.379**</td>
<td>0.756*</td>
<td></td>
</tr>
<tr>
<td><strong>PSI Subscale</strong>- Approach/avoidance</td>
<td>-0.075</td>
<td>-</td>
<td>0.405*</td>
<td>0.797*</td>
<td>0.495*</td>
</tr>
<tr>
<td><strong>PSI Subscale</strong>- Personal control</td>
<td>0.017</td>
<td>-</td>
<td>0.635*</td>
<td>0.423*</td>
<td>0.395*</td>
</tr>
</tbody>
</table>

* p<0.05 ** p<0.01

Table 7 shows the relationships among years of experience, DND, PSI and PSI subscale average scores for the nurses. While there was no meaningful relationship among years of work and DND and PSI total average scores, a medium level negative relationship was identified in the "problem solving confidence" subscale of PSI (r=-0.22  p<0.05). A medium level negative relationship was found between DND and PSI total average scores of the nurses (r=-0.48
p<0.01). While a medium level negative relationship was identified DND and the “problem solving confidence” and “approach/avoidance” subscales of PSI, there is a low level meaningful negative relationship was found between “personal control” subscale (respectively: r=-0.37 p<0.01, r=-0.40 p<0.01, r=-0.25 p<0.01).

**Results**

Problem solving skills and levels of identification of nursing diagnosis were found to be at medium level with negative and meaningful relationships between DND and PSI total average scores.

**Suggestions**

According to the results of the study; the following are suggested;

* Providing opportunities for training in the topic in order to increase competences in identification of nursing diagnoses,
* Generating electronic-based nursing processes regarding the topic and ensuring active use,
* Providing sample case discussions in the framework of in-service training programs,
* Starting pilot implementations in the hospital regarding the nursing process and use of nursing diagnoses.

**References**


Chapter 9 – Promoting Patient Participation

1. Using the Nursing Interventions Classification (NIC) and the Nursing Outcomes Classification (NOC) to promote patient participation in care

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College Of Nursing, University of Iowa, Iowa City/IA/UNITED STATES OF AMERICA

Introduction

New editions of the Nursing Interventions Classifications (NIC) and the Nursing Outcomes Classifications (NOC) were published in 2013. Standardized and coded nursing terminologies for nursing interventions and patient outcomes are critical to building the knowledge base of nursing, describing nursing treatments, and documenting patient outcomes in electronic records. These classifications also describe the phenomenon of interest to nurses, allow nurses to share observations and knowledge with each other, make the work of nursing visible, support the evaluation of care, build evidence for expert practice, and foster nursing research. The NIC and NOC are maintained and updated at the Center for
Nursing Classification and Clinical Effectiveness at the University of Iowa, College of Nursing.

**Highlights of NIC and NOC**

Twenty years after it was first published, NIC has 554 interventions in the sixth edition. An intervention is defined as “any treatment, based upon clinical judgment and knowledge, that a nurse performs to enhance patient/client outcomes” (Bulechek, et al., 2013, p. xv). Many of the previously published interventions were revised for the sixth edition based on current nursing practice and 23 new interventions were added. Examples of new interventions are *Life Skills Enhancement*, *Listening Visits*, *Prescribing: Diagnostic Testing*, *Surgical Instrumentation Management and Wound Care: Nonhealing*. The Classification has a taxonomic structure with seven domains and 30 classes for ease of use that has remained the same since the third edition. Each intervention has a code. New interventions have been added as they were published. Along with linkages to NANDA International nursing diagnoses, this edition also provides specialty area core interventions, including 5 new specialty areas, for a total of 49 specialties. Another feature of NIC is that it contains time estimates for each intervention and the minimum level of education needed to safely and competently perform each intervention. NIC is designed to be comprehensive of the interventions nurses provide across specialties, patient populations, and healthcare settings.

The Nursing Outcomes Classification was first published in 1997 with 190 outcomes and in the publication of the fifth edition has expanded to include 490 outcomes. Since the 4th edition was
published in 2008, 107 new outcomes have been developed. A nursing outcome is defined as “an individual, caregiver, family, or community state, behavior or perception that is measured along a continuum in response to a nursing intervention(s)” (Moorhead, et al., 2013, p. ix). Each outcome has a code and an associated group of coded indicators that are used to determine the current status of the individual, family or community in relation to the outcome. The outcomes are measured using a 5-point Likert scale where 5 is the best rating and 1 is the worst. The nurse using NOC can look at the outcome achieved after intervention by determining a change score. This change score is the difference between the baseline rating prior to intervention compared to the rating post intervention. Use in practice has demonstrated that this is an effective way to quantify the impact of nursing interventions on patient knowledge, behavior and status. Examples of new outcomes are Abstract Thinking, Hypertension Severity, Lifestyle Balance, Exercise Participation, Gait, and Electrolyte Balance. Like NIC, linkages to NANDA International nursing diagnoses and core outcomes for specialty practice are included. In addition NOC outcomes are linked to the Eleven Health Patterns published by Gordon (2011). A new class, Health Management, was added to the taxonomic structure of NOC (7 domains and 32 classes). Many of the new outcomes focus on patient knowledge and behaviors associated with chronic conditions that require efforts by the patient and family to manage their health on a day to day basis. In the third edition of the linkage work (Johnson, et al., 2012) examples of NIC and NOC linked to clinical conditions were added.
to the book. This greatly influenced the development of outcomes to capture the efforts of patients to learn about their condition and modify and change personal behaviors. Twenty-three new outcomes focused on knowledge have been added to NOC, seven focused on risk control and twelve outcomes that describe efforts by the patient to self-manage a chronic condition.

**Increasing Patient Participation in Care**

As the incidence and complexity of care increases in societies around the world, nursing terminologies must have the concepts that allow for continuing care outside the boundaries of the traditional care settings such as acute care hospitals. Nurses are challenged to meet the education needs of patients during short hospital stays and must determine a means to continue to educate patients where they reside. Nursing interventions focused on teaching need to become accessible to patients through the use of technology. Today many patients learn about their clinical conditions through web searches. Nurses need to provide excellent sources of information using technology that can be easily used by patients of all ages to address the current trend in the United States focused on patient-centered care. In this context organizations are challenged to increase participation by patients and family members in the care processes within organizations and as patients move to other care facilities and return to their homes. Some of the new outcomes developed for the 5th edition of NOC can be used to measure patients’ knowledge of a health condition, determine their risk, and learn the skills and behaviors needed to self-manage their condition. Using the measurement scales developed for each
outcome patients can communicate with a nurse care provider between clinic visits about their health status and share concerns they have in carrying out a treatment regimen. Nurses can also impact compliance with self-care activities through more frequent monitoring of patients with chronic health conditions.

The NOC outcome *Knowledge: Disease Process* defines the process as the characteristics, cause and contributing factors, and effects of the disease. NOC has outcomes focusing on the knowledge of the patient/caregiver, the patient/caregiver’s management of the disease, or the risk of a specific disease specifically *Knowledge: Cardiac Disease Management, Self-Management: Cardiac Disease and Risk Control: Cardiovascular Disease*. The Knowledge outcomes (e.g., *Knowledge: Lipid Disorder Management, Knowledge: Cardiac Disease Management*) rate the patient or caregiver’s understanding of the specific disease, its treatment, disease progression and prevention of complications. In the NOC fifth edition the class Health Management was added to document the current focus on patient involvement in the care process. Sixteen outcomes are in this class and the outcomes rate the actions of the patient or caregiver to manage a specific disease.

A simple example of how NOC can be used to increase participation in care is to focus on the problem of hypertension. This clinical condition is a worldwide health challenge due to its high frequency and associated risks for comorbid diseases such as cardiovascular and kidney disease. It is expected that the number of individuals with this condition will total 1.56 billion by 2025 (Kearney, et al., 2005). Nurses can play a major role in reducing the incidence and
severity of this condition by having tools to both educate patients about hypertension and help them change personal behaviors through the use of behavioral self-monitoring. This technique involves repeated self-observation, evaluation, and recording of personal behavior to support behavior change. Research has shown that offering patients a choice in selecting behaviors to change substantially increases self-monitoring compliance and self-reported behavior change (Olson, et al., 2011).

Table 1 (see over) is the outcome Knowledge: Hypertension which identifies the educational components of this clinical condition. A patient can use the tool to measure their knowledge of different components of hypertension. This assessment of the patient’s knowledge can be used to identify needed content for an educational intervention. As the patient lives with the disease this outcome can be evaluated and new developments in the treatment of hypertension can be provided as needed. This interaction can be at a routine appointment or facilitated by technology. A second outcome focused on the patient’s ability to self-manage this condition is an important part of the treatment plan. Continuous monitoring of both the patient’s blood pressure and personal behaviors to manage their hypertension is critical. Table 2 depicts the outcome Self-Management: Hypertension. The patient can rate his/her ability to self-manage the indicators included in this outcome at specific intervals and share this information with the health care provider using technology. The importance of selecting indicators to help the patient learn to control his/her blood pressure is critical and the importance of specific indicators may
change as the patient lives with the disease or as the condition changes.
Table 1: NOC Knowledge Outcome

**Knowledge: Hypertension Management--1837**

**DEFINITION:** Extent of understanding conveyed about high blood pressure, its treatment, and the prevention of complications

**OUTCOME TARGET RATING:** Maintain at_______ Increase to______

<table>
<thead>
<tr>
<th>OUTCOME OVERALL RATING</th>
<th>None</th>
<th>Limited</th>
<th>Moderate</th>
<th>Substantial</th>
<th>Extensive</th>
<th>NA</th>
</tr>
</thead>
</table>

### Indicators:

| 183701 | Normal range for systolic blood pressure | 1 | 2 | 3 | 4 | 5 | NA |
| 183702 | Normal range for diastolic blood pressure | 1 | 2 | 3 | 4 | 5 | NA |
| 183703 | Target blood pressure | 1 | 2 | 3 | 4 | 5 | NA |
| 183704 | Methods to measure blood pressure | 1 | 2 | 3 | 4 | 5 | NA |
| 183705 | Potential complications of hypertension | 1 | 2 | 3 | 4 | 5 | NA |
| 183706 | Available treatment options | 1 | 2 | 3 | 4 | 5 | NA |
| 183707 | Benefits of long-term treatment | 1 | 2 | 3 | 4 | 5 | NA |
| 183708 | Signs and symptoms of exacerbation of hypertension | 1 | 2 | 3 | 4 | 5 | NA |
| 183709 | Correct use of prescribed medication | 1 | 2 | 3 | 4 | 5 | NA |
| 183710 | Medication therapeutic effects | 1 | 2 | 3 | 4 | 5 | NA |
| 183711 | Medication side effects | 1 | 2 | 3 | 4 | 5 | NA |
| 183712 | Medication adverse effects | 1 | 2 | 3 | 4 | 5 | NA |
| 183713 | Importance of adherence to treatment | 1 | 2 | 3 | 4 | 5 | NA |
| 183714 | Importance of informing health professional of all current medication | 1 | 2 | 3 | 4 | 5 | NA |
| 183715 | Importance of keeping follow-up appointments | 1 | 2 | 3 | 4 | 5 | NA |
| 183716 | Benefits of ongoing self-monitoring | 1 | 2 | 3 | 4 | 5 | NA |
| 183717 | Recommended schedule for monitoring blood pressure | 1 | 2 | 3 | 4 | 5 | NA |
| 183718 | Benefits of weight loss | 1 | 2 | 3 | 4 | 5 | NA |
| 183719 | Benefits of lifestyle modifications | 1 | 2 | 3 | 4 | 5 | NA |
|-------------------------------|----------------|------------------------|
| Strategies to manage stress  |                |                        |
| Prescribed diet               |                |                        |
| Strategies to change dietary habits |            |                        |
| Strategies to limit sodium intake |              |                        |
| Strategies to increase diet compliance |          |                        |
| Adverse health effects of alcohol use |         |                        |
| Importance of tobacco abstinence |              |                        |
| Benefits of regular exercise  |                |                        |
| Reputable sources of hypertension information |        |                        |
| Available support groups      |                |                        |
| When to obtain assistance from a health professional |    |                        |
| Benefits of disease management |                |                        |
Table 3 highlights the use of NIC and NOC for patients with hypertension. A care plan for a patient with hypertension may vary depending on the type of hypertension and the point at which the hypertension is diagnoses. The nurse plans care for the patient considering these factors. Nine different outcomes are suggested in this table. Each outcome has major interventions and suggested interventions listed for the nurse to consider as part of the treatments provided to assist the patient to control their blood pressure and develop the expertise needed to self-monitor and manage their condition. The combination of selected NICs and NOCs depicts the complexity of behavior changes that are needed to assist the patient with hypertension to prevent complications and assume an active role in their treatment.

Summary

NIC and NOC provided important concepts in providing patient-centered care and increasing the participation of patients and their families in the treatment of chronic illnesses and conditions. Technology offers new ways of collecting important information about how the patient is learning about their condition and adapting personal behaviors to best live with the disease. These efforts are essential to improving the health behaviors of the many individuals living with multiple chronic conditions. Nursing is well suited to help families meet these challenges and use technology to better assist patient in their self-management efforts.
Table 2: NOC Self-Management Outcome

**Self-Management: Hypertension -- 3107**

**DEFINITION:** Personal actions to manage high blood pressure, its treatment, and to prevent complications

**OUTCOME TARGET RATING:** Maintain at ______  Increase to ______

<table>
<thead>
<tr>
<th>OUTCOME OVERALL RATING</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Consistently</th>
</tr>
</thead>
</table>

**Indicators:**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Definition</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>310701</td>
<td>Monitors blood pressure</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>310702</td>
<td>Performs correct procedure for blood pressure measurement</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>310703</td>
<td>Checks calibration of home blood pressure device</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>310704</td>
<td>Maintains target blood pressure</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>310705</td>
<td>Uses medication as prescribed</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>310706</td>
<td>Monitors medication therapeutic effects</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>310707</td>
<td>Monitors medication adverse effects</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>310708</td>
<td>Monitors medication side effects</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>310709</td>
<td>Uses only nonprescription medication approved by health professional</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>310710</td>
<td>Participates in recommended exercises</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>310711</td>
<td>Uses strategies for weight reduction</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>310712</td>
<td>Maintains optimum body weight</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>310713</td>
<td>Follows recommended diet</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>310714</td>
<td>Limits sodium intake</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>310715</td>
<td>Limits high calorie fluids</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>310716</td>
<td>Limits high calorie snacks</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>310717</td>
<td>Decreases food portions</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>310718</td>
<td>Limits caffeine consumption</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>310719</td>
<td>Uses stress management strategies</td>
<td>1 2 3 4 5 NA</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
<td>Level 1</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>310720</td>
<td>Uses relaxation techniques</td>
<td>1</td>
</tr>
<tr>
<td>310721</td>
<td>Participates in smoking cessation regimen</td>
<td>1</td>
</tr>
<tr>
<td>310722</td>
<td>Eliminates tobacco use</td>
<td>1</td>
</tr>
<tr>
<td>310723</td>
<td>Follows recommendations for alcohol use</td>
<td>1</td>
</tr>
<tr>
<td>310724</td>
<td>Uses strategies to maintain adequate sleep</td>
<td>1</td>
</tr>
<tr>
<td>310725</td>
<td>Uses diary to monitor blood pressure over time</td>
<td>1</td>
</tr>
<tr>
<td>310726</td>
<td>Monitors for complications of hypertension</td>
<td>1</td>
</tr>
<tr>
<td>310727</td>
<td>Contacts health provider when not in target range</td>
<td>1</td>
</tr>
<tr>
<td>310728</td>
<td>Keeps appointments with health professional</td>
<td>1</td>
</tr>
<tr>
<td>310729</td>
<td>Uses support group</td>
<td>1</td>
</tr>
<tr>
<td>310730</td>
<td>Uses reputable sources of information</td>
<td>1</td>
</tr>
<tr>
<td>310731</td>
<td>Uses available community resources</td>
<td>1</td>
</tr>
<tr>
<td>310732</td>
<td>Seeks financial resources</td>
<td>1</td>
</tr>
<tr>
<td>310733</td>
<td>Uses social support</td>
<td>1</td>
</tr>
</tbody>
</table>

**Domain:** Health Knowledge & Behavior (IV)  
**Class:** Health Management (FF)  
**5th edition 2013**
### Table 3: Linkage Example

<table>
<thead>
<tr>
<th>NOC-NIC LINKAGES FOR HYPERTENSION</th>
<th>Major Interventions</th>
<th>Suggested Interventions</th>
</tr>
</thead>
</table>
| **Compliance Behavior: Prescribed Diet**  
   Definition: Personal actions to follow food and fluid intake recommended by a health professional for a specific health condition | Nutritional Counseling  
   Teaching: Prescribed Diet | Nutritional Monitoring |
| **Knowledge: Diet**  
   Definition: Extent of understanding conveyed about recommended diet | Nutritional Counseling  
   Teaching: Prescribed Diet | Self-Efficacy Enhancement  
   Teaching: Individual  
   Weight Reduction Assistance |
| **Knowledge: Hypertension Management**  
   Definition: Extent of understanding conveyed about high blood pressure, its treatment, and the prevention of complications | Teaching: Disease Process  
   Teaching: Prescribed Diet  
   Teaching: Procedure/Treatment | Exercise Promotion  
   Health System Guidance  
   Smoking Cessation Assistance  
   Vital Signs Monitoring |
| **Knowledge: Medication**  
   Definition: Extent of understanding conveyed about the safe use of medication | Teaching: Prescribed Medication | Learning Facilitation  
   Learning Readiness Enhancement  
   Self-Responsibility Facilitation  
   Teaching: Individual |
| **Knowledge: Weight Management**  
   Definition: Extent of understanding conveyed about the promotion and maintenance of optimal body weight and fat percentage congruent with height, frame, gender, and age | Nutritional Counseling  
   Weight Management | Behavior Modification  
   Exercise Promotion  
   Teaching: Group  
   Weight Reduction Assistance |
| **Medication Response**  
   Definition: Therapeutic and adverse effects of prescribed medication | Medication Reconciliation  
   Surveillance | Medication Management  
   Teaching: Prescribed Medication |
<table>
<thead>
<tr>
<th>Smoking Cessation Behavior</th>
<th>Counseling</th>
<th>Coping Enhancement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition: Personal actions to eliminate tobacco use</td>
<td>Self-Responsibility Facilitation</td>
<td>Self-Efficacy Enhancement</td>
</tr>
<tr>
<td></td>
<td>Smoking Cessation Assistance</td>
<td>Self-Modification Assistance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stress Level</th>
<th>Anxiety Reduction</th>
<th>Distraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition: Severity of manifested physical or mental tension resulting from factors that alter an existing equilibrium</td>
<td>Meditation Facilitation</td>
<td>Self-Hypnosis Facilitation</td>
</tr>
<tr>
<td></td>
<td>Relaxation Therapy</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight Loss Behavior</th>
<th>Exercise Promotion</th>
<th>Mutual Goal Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition: Personal actions to lose weight through diet, exercise, and behavior modification</td>
<td>Nutritional Monitoring</td>
<td>Nutrition Management</td>
</tr>
<tr>
<td></td>
<td>Weight Reduction Assistance</td>
<td>Self-Awareness Enhancement</td>
</tr>
<tr>
<td></td>
<td>Support Group</td>
<td></td>
</tr>
</tbody>
</table>

References


OUTCOME CONTENT REFERENCES (Table 1)


OUTCOME CONTENT REFERENCES (Table 2)

193


2. eHealth solutions as an opportunity for empowering responsibility

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Introduction
A responsible citizen takes charge of her wellbeing as much as her life situation, resources and competencies permit (in line with Waller 2005). In this paper ways to promote an active, take-charge attitude towards health and wellbeing are sought by empowering the citizen. The empowering opportunities of e-health solutions are discussed, with an emphasis on citizen centric e-health solutions such as the navigator-like Coper concept (Meristö et al. 2010) which is analysed more closely in the context of cardiovascular disease.

The aim of the paper is to describe, how the Coper concept can offer opportunities to empower citizens in taking responsibility of their health and wellbeing. Also the critical points and key elements of the Coper on the care pathway of heart patients are discussed.

Empowerment as the framework in the care of cardiovascular disease
Atherosclerotic cardiovascular disease (CVD) is a chronic disorder developing insidiously throughout life and often progressing to an advanced stage by the time symptoms occur. It remains the major cause of premature death in Europe. CVD is strongly connected to
lifestyle. The World Health Organization (WHO) has stated that over three-quarters of all CVD mortality may be prevented with adequate changes in lifestyle. (Perk et al. 2012)

Increasing patient adherence is an important part of heart failure self-care management. Increasing patients’ knowledge about the goals and expected effects of advice on behavior remains a first-line intervention, but is often not enough. By assessing a patient’s personal situation, interventions can be tailored to the individual patient. (Jaarsma et al. 2012.) Healthcare providers can help patients engage in optimal self-care by identifying the source of barriers (Baumann 2012). Continuous assessment is needed to increase behavioral changes in patients with heart failure. (Jaarsma et al. 2012.)

One line of engagement in self-care is the emphasis on empowerment, i.e. enhancing people’s abilities to solve their own problems and feel in control of their lives (Gibson 1991). As motivation is influenced by perceived competence as well as perceived autonomy in choosing to act (Vallerand 1997), empowerment and motivation are intertwined. Evidence on the effectiveness of empowerment to enhance wellbeing is abundant (see e.g. Wallerstein 2006).

Measuring empowerment outcomes depends on the situation and on the level of inquiry. In the micro level empowerment outcomes may include e.g. perceived control, competence and efficacy, problem solving and decision making skills and actions taken to make a change. (Zimmerman 1995.) On the community level empowerment outcomes might include evidence of pluralism, new
organizational coalitions and better access to community resources (Perkins & Zimmerman 1995).
Choices in the everyday are crucial for either healthy or unhealthy living. Empowered individuals are better equipped to making good choices. With a forward looking interpretation of responsibility as a take-charge attitude towards health (Waller 2005, Cappelen & Norheim 2004), instead of a backward looking concept of blame and accountability, responsibility may be pursued within the empowerment framework.

**e-Health in Finland**

In Finland national eHealth policies and strategies are focusing on patients information systems and My eHealth records. The National Development Programme for Social Welfare and Health Care programs (2012-2015) aims at adjusting the information and information systems so as to support clients and professionals. The main goal is to organize social welfare and health care structures and services in a client-oriented way. The implementation of the National e-Archive of Health Information (KanTa) is one of the key elements of e-health development in Finland. It is phased so that the health care organizations must connect to the national information service system by the year 2014. (KanTa 2012.) The KanTa model is described briefly in the next section before focusing on the Coper concept.

1.1. **The National e-Archive of Health Information KanTa**

The KanTa architecture is a system of electronic national healthcare services and its administrative model. The Patient Records Archive is a healthcare service data system in active use,
which allows centralised electronic archiving of patient records and long-term storage of the data. The archive plays a central role in passing information between healthcare organisations and operational units as the data is in a technically uniform format. A national patient data management service has records of patient consents to disclose information and possible refusals of disclosure, together with cancellations of consents and refusals. The Patient Records Archive log and control services help to ensure that patient records are used in compliance with data security and legislation. All uses and disclosures of patient records are entered in a log which permits ex-post control. One part of The KanTa architecture is the Prescription Centre and Archive. (KanTa 2012.)

In the Kanta architecture, My Health Information is a personal online service for the citizens. In the service, people over 18 years of age can view their own electronic prescriptions and patient records and print out a summary of their electronic prescriptions. Clients can also request a summary of their electronic prescriptions. (Kanta 2012.)

1.2. The Coper as a citizen-led solution for eHealth

The Coper is a concept for a citizen-led information system that works as a navigator guiding the individual in her daily endeavours, especially concerning health and wellbeing (Meristö et al 2010). It integrates the official service provider led information systems into a tailored one stop service platform organized around the needs and desires of the individual in her present life situation. It also combines official data with self-reported monitoring data on health issues and makes it possible to manage all relevant issues in life
seamlessly and with cooperation of all the needed service providers locally, regionally or even globally.

As a visionary concept the Coper is a holistic model of an ideal state of integration. So far, the concept has been piloted only partially in the retirement phase and with families having a baby (Meristö et al. 2010). In the Pumppu project funded by the ERDF the Coper concept is applied to the care pathway of heart patients.

Real life partial solutions can be found in e.g. personal health record solutions. In the Finnish context the national e-archive of health information (KanTa) is a step towards such a system. However, with the Coper the health process is turned around with the individual as the process owner for whom the services are organized. The Coper concept gives the individual more control in her life as it provides her with a picture of the present state and the future possibilities in taking care of her own health and wellbeing. Therefore we see the Coper concept as a viable it-based solution to empowerment.

**Empowerment through eHealth solutions – empirical findings**

The empowering possibilities of the Coper concept are investigated based on a focus group interview of 4 heart patients with an average age of 70 years on technological aids and on the problems on the care pathway (Jääskelä & Karstila 2012). Also a survey for 337 retirement aged residents about their information needs and electronic service habits is utilized (Sarapisto 2009) and 66 interviews of heart patients of their experiences on their care pathway (Tuohimaa et al. 2012).
In both the interview cases the heart patients felt in need of more information especially in the rehabilitation phase, e.g. on symptoms after the operation, on medication and it’s side effects and on equipment available for home use. They also needed information on safe exercise options and other practical guidance. Providing information in all the stages of the caring process would then be a practical element of the Coper.

The interviewees felt in need of a constant dialogue with the health care providers. More support was needed to cope with everyday life. Friends and family members were crucial in offering support. It-solutions cannot fully replace face-to-face interaction. As a complementary option solutions resembling the face-to-face encounter such as the wellbeing TV have gained good feedback from the elderly (Liesmäki 2011).

Especially in the focus group interview the care pathway was considered as fractured with a lack of continuity. With the Coper concept self-management and the care offered by multiple service providers can be merged into a holistic picture of the life situation and the care pathway needed for health improvements. Working as a navigator the Coper would be one possible solution for guiding the individual in the care process.

Regardless of all the benefits of implementing e-health solutions, also questions of accessibility to technology and competence for its use should be considered (Nurmela and Viherä 2004), especially when empowerment is pursued. The focus group interviewees had differing experiences in using it-equipment and most were hesitant of their abilities to use such tools. The most familiar it-equipment
was the mobile phone but anxieties about malfunctions made interviewees worried. In the survey data (Sarapisto 2009) the younger retirees were more interested in using it-tools in the health care setting than the older ones. Therefore, it is possible that in the years to come, the acceptance of e-health solutions in home use will improve, especially if positive experiences cumulate.

**Discussion**

At present the heart patients see the care process as fragmented and uncertain with discontinuities and gaps in the information flow. Elements of the Coper such as the provision of information and guidance on the care pathway would be of relevance for the patients. Better control in life is a basic element of empowerment and hence fundamental in the framework for empowering responsibility.

However, the interaction preferences and abilities for technology use must be acknowledged. eHealth solutions should not be the only option. Instead, they should be seen as a complementary solution to face-to-face communication and paper documents. eHealth solutions provide an opportunity to enhance empowerment only if they are citizen centric and offer solutions to real problems on the care pathway, listening to the needs and preferences of the potential users. This guarantees also motivation for their use.

With the Coper concept a holistic picture of the life situation and the care pathway needed for health improvements emerges. Also health promotion and prevention can be seamlessly integrated into the care pathway. Working like a navigator the Coper can guide the
individual in her decisions for a healthier life style. The critical point is to wake the interest in health and wellbeing before anything happens. The actual care process can be supplemented with a tailored set of support and information. Also the use of the services of public, private and third sector service providers is made easier with the Coper. The Coper provides the individual new possibilities to participate in decision making. Therefore the Coper concept has potential in producing empowerment if implemented with sensitivity for individual needs and preferences. As a result, take-charge responsibility towards one’s own health and wellbeing can be better achieved.

References

Chapter 10 – Promoting Self-Care in the Community

1. Promotion of self-care management on patients with COPD

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Introduction
COPD is a chronic and progressive disease with pulmonary and extra pulmonary effects that contribute to a progressive reduction of available energy for self-care. The World Health Organization (WHO, 2008 p.30) predicts that by 2030 it is the third leading cause of death worldwide.

The treatment of COPD aims to control the progression of the disease and includes pharmacological and non-pharmacological components.

COPD by its chronicity, prevalence and associated comorbidities, has great impact on the quality of life of patients and on health care costs.

The GOLD (GOLD, 2010) recommends developing skills of self-care management for patients, as one of the strategies to be used for the control of disease progression and to reduce its impact on health systems.
The development of self-care skills enables the patient to effectively manage the drug regimen (eg.: use of inhalers, oxygen, ...) and nonpharmacological (eg.: development of a facilitator awareness; knowledge about the disease; about exacerbations; self-control dyspnea; stress management strategies; adaptive strategies for self-care). Skills that are intended to develop the client’s ability to adopt behaviors that allow controlling disease progression and reduce the impact on quality of life.

Self-care is one of the central concepts of the discipline of nursing and consequently one of the largest areas of action of nurses in clinical practice.

Often patients with COPD are hospitalized for acute exacerbations of the disease. Hospitalization may constitute itself as an opportunity for nurses challenging patients to develop self-care management skills.

At present there are no guidelines to guide the development of self-care management skills such patients in the hospital setting (Effing et al 2009). Fact that challenges nurses to develop and test new solutions.

In a Portuguese hospital context, nurses developed a broader study of action research (AR) in which this study belongs. The route of AR developed was intended to give more systematic to nurses action for promoting self-care management of therapeutic regimen in patients with COPD (Padilha, 2013).

**Methodology**

We used a constructivist approach and an action research methodology developed in five phases (Mckay & Marshall, 2002).
In collecting used qualitative and quantitative approaches. We conduct comparative analysis and iterative data. The study took place in a hospital service of medicine and outpatient, with the participation of 52 nurses and 99 patients, having lasted for 14 months.

In the first phase of AR we identified the need to help nurses developing the capacity to design, implement and document the decision-making process, optimizing the information system in use, using ICNP. Contributing to change the model of care focused primarily on the management of signs and symptoms of the disease.

In the second phase of AR, nurses devised a change in the care model in use directed toward the development of a model that would give importance to the skills of patients with COPD to self-manage the treatment regimen.

The change in the model of care in use was supported by the availability of information on the state of the art and the development of nurses skills in the process of decision making in nursing. The development of nursing skills were made in the context of group and individual.

We used the model of Argyris & Schon II (1982), and a learning strategy in double circuit (Vasconcelos & Mascarenhas, 2007) as well as principles of organizational learning (Senge, 1990). We based the change wrought in the involvement and participation of nurses.

Nurses developed consensus guidelines for clinical practice and material support to decision making using the ICNP. This materials
described: data; diagnoses; nursing interventions and outcomes. We also developed decision support flowcharts in paper. We parameterize the contents of the nursing information system to facilitate the documentation of nursing care.

In implementation of change in clinical practice (3rd phase of AR), we used strategies based in reflection on action and in the action (Argyris, 2005), in group and individual to support nurses. The principal researcher was present during action in the context of the study as technical/scientific resource for nurses, promoting reflection on action in group meetings and in the change of nursing shifts and, reflection in action with the nurses individually.

**Results**

In this study we observed the shift from a model of care almost exclusively rooted in the management of signs and symptoms of the disease, and the consequences of changes in bodily processes on self-care, to a model that integrated self-care management of therapeutic regimen for patients with COPD.

In implementing the change we observed the evolution of a model of care based in a system essentially compensatory or partially compensatory in the field of self-care for, a support system for education and development (Orem, 1993) in those patients who could benefit from this type of action of the nurses.

Table 1 shows the evolution of the change wrought in the documentation of the process of decision making of nurses.

The change wrought enabled the development of skills of nurses to make decisions on the self-care management of the therapeutic
regimen and to perform its documentation in the information system in use.

Table 1 - Documentation of the decision-making process of nurses before and after the change, in nursing information system in use (NIS).

<table>
<thead>
<tr>
<th>Diagnostics</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management signs and symptoms of disease</td>
<td>16.8%(n=92)</td>
<td>6.5%(n=109)</td>
</tr>
<tr>
<td>Self-care</td>
<td>37.2%(n=203)</td>
<td>12.1%(n=203)</td>
</tr>
<tr>
<td>Self-care management of therapeutic regimen</td>
<td>0.36%(n=2)</td>
<td>62.4%(n=1043)</td>
</tr>
<tr>
<td>Total in areas exposed</td>
<td>54.4%(n=297)</td>
<td>81%(n=1355)</td>
</tr>
<tr>
<td>Other</td>
<td>45.6%(n=249)</td>
<td>19%(n=317)</td>
</tr>
</tbody>
</table>

Total diagnoses documented in NIS  
100%  
(n=546)  
100%  
(n=1672)  

Conclusion

The change implemented allowed empower nurses for the process of decision making in nursing, using ICNP, contributing to change the model of care in use, and contributing to help patients with COPD to successfully manage the treatment regimen.

Promoting the involvement and participation of nurses proved to be an effective strategy for individual and organizational change. Change that allowed nurses to become more significant for patients with COPD and for the health system.

References


2. Home care nurses’ experiences when PDAS is introduced

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Introduction
Home care nurses’ work is characterized by distributed practice, i.e. the main activities are taking place in patients home. Ensuring quality and safe care for patients requires that nurses have access to relevant and up-dated information about patients during their daily home visits. Traditionally, Norwegian home care nurses use paper lists which contain basic information about their patients. After the nurse has visited a patient, she or he takes notes on the list and when returning to the main office they record information in the patient’s health care record.

Hong and colleagues have pointed out that nurses need to improve work efficiency by replacing paperwork with for example introducing portable information systems (Hong et al., 2009). We will report on a study where home care nurses used Personal Digital Assistants (PDAs) with access to the patient’s electronic health care record (EHR) and patient lists as an information source during their visits. More specifically we investigated how home care nurses used PDAs and their experiences when having information at the point-of-care.
Methods
We conducted a combination of an observational study and interviews with nurses in one Norwegian municipality. After patients consent about participation, we followed nurses during their daily rounds, at total of 29 home visits. In addition 11 personal interviews were conducted both with the nurses we followed and nurses who had experience with using PDAs. We initially applied a thematic analysis separately on the observations and interviews (Thagaard, 2003). Thereafter we collapsed and synthesized the findings from the two data sources.

Results
Ordinary and unexpected information needs
The nurses accessed and used the PDAs along two axes 1) an ordinary time line information management axe according to their daily routines, and 2) an unexpected information need axe. The ordinary time line axis was related to the nurses’ routine during their work. Before leaving their office they accessed a patient list on their PDAs to orient themselves of who to visit the actual day. In addition they accessed the PDAs before entering the patient home aiming to have information about the patients’ need, after leaving the patient’s home to record if necessary, and thereafter sending their rapport to the patient’s EHR.
Sometimes unexpected situations occurred, representing the information need axe. They then accessed and searched for relevant information. One example illustrates this. A nurse discussed a wound procedure with the patient and next of kin. They were unsure if a decision to change the routine had taken place.
The nurse looked into the patient health care record to find the correct procedure.

*Experiences*

We identified that the nurses were dependent on having access to relevant information during their daily visits to their patients. An overall impression was that they were very satisfied with having accurate information at the point-of-care. However, sometimes the nurses had experienced that the mobile networks was unstable. The consequence was inaccessible information since they were not able to log into the patient’s EHR. This resulted in that some made their own back-up systems were they continued to use paper lists in addition to PDAs for securing accessible relevant information.

*Discussion and Implications*

Our study showed that home care nurses use PDA in several information situations during their daily visits to their homebound patients. The nurses appreciated that they had an overview of the patients they were responsible for, and that they were able to finish their documentation at the point-of-care. A previous study (Tapper et al., 2012) support our finding that nurses reported both positive and negative experiences with the new technology. Use of PDAs in home care facilitates access to patient information at the point-of-care. Stable mobile networks is needed when PDAs is introduced. This study indicates some of the areas which need to be accounted for in further development and implementation of PDAs in home care.
References


3. Hospital at home: Telemedicine discharge of COPD (chronic obstructive pulmonary disease) patients to the home environment

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Background
An estimated 350,000 people in Norway suffer from chronic obstructive pulmonary disease (COPD) with c.1400 deaths each year attributed to the disease [1]. In 2020 COPD is predicted to be ranked globally as the third fatal disease [2]. Patients often suffer numerous exacerbations with frequent readmission to hospital. The COPD patient briefcase technology has been under development in Denmark since 2006, and is now being tested for the first time outside Denmark at Dalane District Medical Centre.
(DDMC) in Norway, a decentralized unit attached to Stavanger University Hospital. 18 primary health care areas are involved in the COPD patient briefcase project including a total population of 330,000.

**Aims**

The Norwegian Department of Health is planning a more coordinated, systematic care provision for all patients, with more efficient integration between primary and specialist healthcare, delivering treatment at the appropriate level. Patients should not experience barriers between different levels of funding, but a comprehensive total care pathway. The COPD patient briefcase delivers quality-assured, specialist consultation to the patients within their home environment [3].

Primary aims of the project include enabling patients to have more quality days in their own home, with shorter stays in hospital and fewer readmissions. With the support of the COPD patient briefcase one can give patients an increased sense of security and empowerment, by providing expert multidisciplinary consultation, monitoring and education. This is an effective and user friendly way of utilizing available resources, while freeing capacity within the hospital.
Equipment

The COPD patient briefcase is a special laptop with on/off switch, alarm, spirometry function, and finger clip for pulsoximetry. It is extremely easy to operate. Communication via a to-way audio-visual screen utilizes available communication modalities already in the patients` home (broadband, telephone, satellite etc.) A local technician connects the device up. Inclusion criteria for patients are a COPD diagnosis, in a phase which is worse than usual, and an FEV1 under 50% of that expected. The patient must be living at home and have contact with either the district nurse or own doctor because of the COPD diagnosis.

Method

The briefcase is on loan to the patient for 14 days. Patient and nurse arrange 30 minute consultations each day. FEV1, FVC and blood-oxygen saturation is recorded, a subjective record of how the patient feels is taken, and a standard checklist on status is entered.
Physiotherapy and occupational therapy consultations are set up as required to give motivation and assist coping strategies. Data is encrypted, made anonymous, and stored electronically. In addition multidisciplinary patients` notes are kept.

**Results**

The initial Danish user study shows a 46% improvement regarding readmissions to hospital in the group using the telemedicine patient briefcase contra the control group [4]. There was also a 68% improvement regarding total days stay in hospital in the telemedicine group [5]. 97% of those who received consultation with the COPD patient briefcase would recommend it to others in the same situation. 86% felt that they had received the help they needed concerning their lung disease. 14% received the help they needed to a certain extent.

DDMC, COPD patient briefcase user-survey [6] registered 90 patient care pathways up to 1.11.11, with 900 telemedicine consultations (+ 360 additional telephone consultations). Patients were between 55 and 90 years of age, with the majority over 65 years. Virtually all managed to use the technology without assistance. 80% reported that the COPD patient briefcase contributed to the fact that they felt more secure when being discharged from hospital, and 65% reported that use of the COPD patient briefcase had an important effect on their coping strategies.

**Conclusion**

Reported gains include prevention of some readmissions, early intervention, improved patient insight, feeling secure, better coping strategies, better quality of life, and very satisfied patients. With
regards to the ethical dilemma, cold technology versus warm caring hands, patients in Norway report that the COPD patient briefcase gives the experience of uninterrupted direct contact with a specialist not always possible during a hospital stay on a busy medical ward. Further specific research is necessary, and is already planned.

Future developments with specialist telemedicine in the home environment include multidisciplinary treatment of cardiac failure, diagnostic blood analysis, diabetes, post-natal control and palliative team support.

The project is now in the process of being integrated into DDMC’s regular service and economic framework. Remuneration for telemedicine and it’s place in society is being debated at the highest political and professional level.

A user friendly profile and professional service, which helps patients with a chronic disease to experience quality time within their homes, is an important foundation on which to build elements of future health care.

**Acknowledgment**

Dalane District Medical Centre project wishes to extend appreciation to the Norwegian Department of Health and voluntary organizations.

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Chapter 11 – Nursing and Informatics

1. Attitude of health workers towards hospital information systems.

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Development of informatics, introduction of information systems in everyday work of health workers has brought a number of changes which resulted in a different way of work, modernization and standardization of working processes in all segments of health protection.

A goal of information technology implementation in a hospital system is to provide exact and important information to authorized users at the right place (where required), at the right time (when needed and without a delay) and in a proper form (clear, adapted, visual information). Human factor, visible via resistance to changes, is a phenomenon widely present. Previous researches have revealed that the largest concern is caused by users’ acceptance of changes, their attitude towards the new system and their expectations. From this point of view, organizational history and institutional memory about previous technological initiatives

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can influence acceptance of a new technology and in that way influence a success of its implementation\textsuperscript{3}.

**Goal of the Survey**

The goal of the research is to determine an attitude of health workers in the Clinical Hospital Centre (CHC), Zagreb towards computerization in their institutions and, in general, interest shown by health workers for education in informatics with an aim to ease internal communication, reduce administrative tasks, and to determine if introduction of hospital information system (HIS) would alleviate work of health workers.

An aim is to answer a question if an attitude of health workers towards a need for computerization of health system is influenced by their age, education level, and formal education in informatics and previous experience in a work with computer. On the other side, there is a hypothesis that health workers “have been avoiding” using computers due to fear of insufficient data protection. We have tried to determine if a type of health services and a working position can influence the attitude and if participation at different educational programs results in better acceptance of computerization of the health system. This research has covered 375 health workers, out of which 15 (4\%) have been excluded due to incorrectly filled questionnaires. Research results are based on response of 360 health workers (96\%) who correctly filled in questionnaires in Clinical Hospital Centre, Zagreb.

\textsuperscript{3} Brumini, G., Bilić-Zulle, L., Bišćan, J.: Stav liječnika i medicinskih sestara o informatizaciji u zdravstvu. Medix 2004; 54/55
Survey itself (questionnaire) has gathered data on stands and opinions of health workers (nurses, medical doctors, medical radiology engineers, laboratory engineers...) A purpose and content of a questionnaire, as well as a goal of a survey were explained health workers prior to filling in the questionnaire. In order to avoid receiving socially acceptable answers, I tried using indirect procedures of asking direct questions to find out an attitude of health workers towards hospital information system. An assumption was that a conclusion on certain phenomenon can be drawn from a standpoint about that phenomenon i.e. conclusions are not necessarily based on a premise, but can also be influenced by attitudes and values of examinees. Participants in survey were selected via random selection method. Survey was anonymous in order to get responses in line with a real attitude of health workers, not socially accepted answers. Research was conducted in parallel and during the same period 17 September – 20 November 2009.

Results of this survey point important features for establishing standard procedures for preparation of health staff and technical support for introduction of computerization system. Basic idea for the survey was initiated by nurse practice while introducing computerization in the hospital system of CHC, Zagreb.

**Results of the Survey**

Gender division of survey participants covered 257 females and 103 males. Analysis of their educational level showed 173 survey participants with high school degree, 115 nurse bachelors or undergraduate degree, medical radiology and/or medical laboratory level and 72 workers with a graduate degree. Majority of
survey participants, 155 is of younger age (18 – 35 years). Number of participants of senior age is 109 (51 – 65 years), while number of participants of middle age was 96 (36 – 50 years). Working experience of participants was: up to 7 years – 96; from 8 – 15 years – 75; from 16 – 22 years – 64 participants, from 23 – 30 years – 83 and 49 participants over 30 years of working experience. Thirty nine (39) participants are managers in CHC Zagreb and 321 are not. According to the type of health service, 122 workers do administration for stationary and 238 for infirmary (specialized and advisory) health services.

Survey about type of computer education workers possess shows that the largest number of participants 39.17% is self-thought, 28.62% has had computer education during their regular schooling, 15.55% attended a computer course on their own initiative, 8.33% attended a computer course organized by a company, while the same percentage of 8.33% participants stated that they did not have any type of computer education. When level of computer educations is compared with an educational level, it can be concluded that health workers with high school education are mainly self-thought (47%). Health workers with an undergraduate degree are self-thought in a percentage of 35% and 34% of them gained computer education during regular schooling. Thirty five percentages (35%) of health workers with a graduate degree attended a computer course on their own initiative.

Computer is used on daily basis for private and/or business purposes by 74.72% participants; 14.17% stated that they were using computers often (more than once a week), while 11.11%
stated that they use computers occasionally – more often than once a month. When frequency of computer usage is compared with age of survey participants, computer is used on daily basis mainly by participants of younger age 88%. The lowest usage is by participants of senior 53%.

A question: "Do you feel ‘fear’ or ‘hostility’ towards computer work?”, was answered affirmatively by 7.22% of participants and analyzed data do not show significant difference between participants of different age. The survey has shown that the largest number of workers who are familiar with a term “HIS” is of younger age and with a graduate degree. Health workers who attend trainings, seminars and congresses once a month are also familiar with this term. A term HIS is known to the same percentage of participants with different position in an organization (managerial / non-managerial position). Considering the life age, largest number of participants of younger age, 107 of them (69%) is familiar with a term HIS. Participants with a graduate degree who attend educational lectures, seminars and congresses, 64 of them (89% of participants with a graduate degree) attend courses once a month, and only 8 (11% with a graduate degree) does that once a year. Health workers with an undergraduate degree, 73% of them, attend educational lectures several times a year. Participants with high school degree – 49% never attend educational lectures, while 16% does that once a year and 35% attends lectures several times a year. The most acceptable way of information sharing in CHC Zagreb is in a written form. Almost half of the survey participants, 45.28% stated that written
information is, in their opinion, the most credible way of information sharing. One third of participants, 30.83% sees CHC Zagreb web page as the most acceptable way of information sharing. Verbal information provided by their boss is seen as the most acceptable way of information sharing by 19.45% of participants. Data analysis has shown that participants with high school degree find verbal information from their boss as the most acceptable way of information sharing, while participants with a graduate degree do not accept verbal information as way of information sharing at all.

Graph 1: Ranking scale – importance of the hospital system computerization for improvement of quality of work

Survey participants were asked to make their personal ranking scale on how important computerization of hospital system is for their quality of work. Ranking scale was from 1 to 4, where number 1 stands for high importance and number 4 for the lowest importance (graph 1). Health workers, 48.61% find work overload and lack of personnel as the most common problem linked with computerization of hospital system. Almost half of the participants
(45.6%) identified lack of or inadequate equipment as the second problem linked with computerization. Inability to improve their informatics knowledge is identified as the third problem by 36.67% of participants. Lack of general knowledge/education in informatics has been identified by 33.61% of participants as the fourth important problem health workers meet during their work. Mainly only survey participants with a graduate degree have uninterrupted access with their users name and password to a computer during adequate hours, while participants with high school degree do not have, to the same extend, uninterrupted access to a computer with their user name. Computerization of a hospital system has been seen as necessary by 97% of participants.

**Conclusion**

Successful implementation of computerization of the hospital system largely depends on an attitude of workers towards it. There is no doubt that educational level, especially level of informatics knowledge, plays an important role in computerization acceptance, which has been proved by surveys conducted in hospitals within the country and abroad\(^4\).

Positive attitude of health workers should be encouraged and further developed via organization of educational programs in informatics and by improving availability of computer equipment. Analyzed data support importance of formal education in

informatics for attitude of survey participants towards computerization of hospital system. As computer science is a young science in medicine and has been introduced into schooling system only recently, participants of younger age had an opportunity to gain formal computer education, unlike participants of middle and senior age. Analyzed data also show that survey participants of younger age, with undergraduate and graduate degree, who possess formal computer education, use computer on daily basis and have knowledge about computerization, are more interested in innovations in health institutions than others who do not have that knowledge.

The survey has also shown that participants are not “avoiding” use of computers because of fear for data protection, but because of work overload and the fact that computers are not available to them during adequate working hours in the amount which satisfies their working needs. It is important to emphasize that computer education should not end with formal education. It is necessary to organize courses and assure continuous education in medical informatics for all workers in medical institutions to keep them informed about newest achievements in informatics. Encouragement of participants to attend educational courses, seminars and congresses and to familiarize themselves with HIS will contribute to general positive attitude towards computerization and better acceptance of computer tools. Data obtained during this survey show that computerization of hospital system is necessary and beneficial for the society and CBC Zagreb itself. Reasons pro computerization stated by survey participants are: better, faster
and more efficient internal communication and/or communication with patients; reduced administrative workload – a patient does not have to register several times for several programs; alleviated statistical data processing; easier access to patient data and their medical history.

Based on conducted surveys on attitude of health workers towards computerization in general and based on survey I conducted, we can conclude that CHC Zagreb is ready for implementation of hospital information system.

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2. Nursing diagnoses in an intensive care unit: the Turkish experience.

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In intensive care units, where many life-saving instruments are used most frequently, many invasive treatment interventions are applied to patients without their consent. It is only possible for patients in intensive care units to be unaffected or minimally affected by these poor conditions by individualized nursing care. Hence, intensive care unit nurses need to effectively diagnose any problems of patients in their care, promptly define care objectives, plan nursing interventions, apply them and evaluate their outcome (Terzi & Kaya 2011).

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). Ehrenberg and Ehnfors (2001) compared patient records against nurses’ reports and found that between 41% and 89% of the patient problems identified by nurses
were not registered. Ehrenberg and Birgersson (2003) suggested that the lack of nursing diagnosis in the records could be due to nurses’ lack of knowledge and skills in formulating nursing diagnosis. 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).

**Purpose**

This study was planned as a descriptive study with the purpose of determining nursing diagnosis used by nurses working in the intensive care unit.

**Design and sample**

This descriptive study was carried out in the ICU of a university hospital in Turkey. The sample of the study consisted of 45 intensive care unit nurses.

The nurses were between 18-48 years of age, their mean age being $24.7\pm5.45$. 57.8% of the nurses held a bachelor's degree, while 75.6% indicated that they were trained in nursing during their undergraduate education. 13.3% have received in-service training. Only 44.4% have indicated to regularly use nursing diagnosis in planning patient care.

**Instrument**

Researchers prepared a sample case based on a real patient being treated in the intensive care unit. Based on the literature and suggestions of specialists, 18 nursing diagnosis were determined: Nutritional imbalanced; Oral mucous membrane, impaired; Skin
integrity, risk for impaired; Infection, risk for; Constipation, risk for; Ineffective breathing pattern; Ineffective airway clearance; Self-care deficit syndrome; Mobility, impaired physical; Disturbed sleep pattern; Anxiety; Death anxiety; Communication, impaired verbal, Fall, risk for; Knowledge deficit; Coping, ineffective; Self harm, risk for; Spiritual distress.

**Data collection and analysis**

A data collection form regarding the socio-demographic characteristics of nurses and the sample case analysis was used for data collection. Nurses were gathered in a silent meeting room and given the data collection form. The sample case was verbally read to them once by the researcher, an explanation was made regarding how to assess it and they were required to identify the nursing diagnosis of the case. Then, diagnosis identified by the nurses assessed in accordance with the functional health patterns. Number and percentage distribution was calculated in the data analysis and One-Way Anova test was performed.

**Findings**

Four of the predetermined nursing diagnosis components were not identified by any of the participating nurses: Knowledge deficit; Coping, ineffective; Self harm, risk for; Spiritual distress. The highest percentage of identified diagnosis was “skin integrity, risk for impaired” (62.2%), “oral mucous membrane, impaired” (60.0%), “infection, risk for” (35.6%), “anxiety” (33.3%), “ineffective breathing pattern” (28.9%) diagnoses. The lowest number of nurses identified “death anxiety” (6.7%), “constipation,
risk for” (4.4%), “communication, impaired verbal” (2.2%), “self care deficit syndrome” (2.2%) diagnoses.

Table 1: Distribution of Nursing Diagnosis Determined by Nurses

<table>
<thead>
<tr>
<th>Nursing Diagnoses</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health perception-health management</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall, risk for</td>
<td>6</td>
<td>13.3</td>
</tr>
<tr>
<td><strong>Nutritional-metabolic pattern</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin integrity, risk for impaired</td>
<td>28</td>
<td>62.2</td>
</tr>
<tr>
<td>Oral mucous membrane, impaired</td>
<td>27</td>
<td>60.0</td>
</tr>
<tr>
<td>Infection, risk for</td>
<td>16</td>
<td>35.6</td>
</tr>
<tr>
<td>Nutritional imbalanced</td>
<td>12</td>
<td>26.7</td>
</tr>
<tr>
<td><strong>Elimination pattern</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constipation, risk for</td>
<td>2</td>
<td>4.4</td>
</tr>
<tr>
<td><strong>Activity-exercise pattern</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ineffective breathing pattern</td>
<td>13</td>
<td>28.9</td>
</tr>
<tr>
<td>Ineffective airway clearance</td>
<td>4</td>
<td>8.9</td>
</tr>
<tr>
<td>Self-care deficit syndrome</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>Mobility, impaired physical</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>Sleep-rest pattern</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disturbed sleep pattern</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>Self-perception pattern</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>15</td>
<td>33.3</td>
</tr>
<tr>
<td>Death anxiety</td>
<td>3</td>
<td>6.7</td>
</tr>
<tr>
<td><strong>Role-relationship pattern</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication, impaired verbal</td>
<td>1</td>
<td>2.2</td>
</tr>
</tbody>
</table>

A statistically significant difference was found between the educational level of nurses and their status of determining some of the nursing diagnosis (p<0.05) including “skin integrity, risk for impaired”, “oral mucous membrane, impaired” and “ineffective breathing pattern” diagnoses.

**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 rate of identifying certain diagnosis including “skin integrity, risk for impaired”, “oral mucous membrane, impaired” and “ineffective breathing pattern” is found to increase with higher education levels (p<0.05). In Turkey, there is a variety of nursing schools, providing education at different levels. Graduate degree in nursing is the more comprehensive education of four years. Hence, increase in the number of identified diagnosis at higher levels of education is an expected result.

Findings of our study reflect low levels of identification, with only two diagnosis identified over 50%. The study by Salgado, Machado (2011) on nursing diagnosis in intensive care units determined 28 different diagnosis, 7 of which was identified over 50%. Considering the nursing care needed by intensive care unit patients, the ratio of identification in skin integrity risk for impaired, fall risk for, infection risk for and constipation risk for, communication, impaired verbal and self care deficit syndrome is quite low.

**Conclusions**

Nurses have identified 14 nursing diagnosis in the sample case. However, the determination rates of nursing diagnosis were very low. In Turkey, the nursing care plans are still not performed
electronically in many hospitals and are not used routinely in patient care. Thus, nurses do not have access to this data to fulfill their duties and knowledge unused gets forgotten. Furthermore, care plans are yet to be used in routine practice and no in-service training program was ever held at the hospital this study was conducted.

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Background

This paper presents two new nursing diagnoses which focus on altered feeding dynamics in children leading to obesity or anorexia. Childhood obesity and childhood anorexia are major global health concerns in developed countries. In relation to obesity for example, almost 20% of US children were classed as obese in 2008 (Ogden et al. 2010) and almost 17% of English children classed as obese in 2007 (NHS Information Centre 2009). Obesity refers to an excess of body fat to the extent that may have implications for a person's
health status - a body mass index (BMI) of 30.0 kg/m² or greater with extreme obesity defined as a BMI of 40.0 kg/m² or more (http://www.americanheart.org). Childhood obesity places children at increased risk of a range of diseases particularly associated with Type 2 diabetes, hypertension and coronary heart disease (Ebbeling et al. 2002) and, subsequent emotional, social and financial costs of treatment. Anorexia, which is characterised by a lack of desire/refusal to eat, although less prevalent, also carries risk of diseases related to malnutrition and similarly carries significant emotional, social and financial costs for the child and family unit (Chatoor 2009)

**Aim**
To present two newly developed child/young person-centered nursing diagnoses concerning altered feeding dynamics in childhood, in order to support improved care strategies for Children, Young People and their Families

**Methods**
In Stage 1 of our research, two new diagnoses were developed, applying the Satter Eating Competence Model (Satter 2007) as a conceptual framework. The two new diagnoses apply to NANDA-I’s current diagnoses of ‘Nutrition Less than (or Greater Than) Body Requirements’. The newly proposed diagnoses are: ‘Ineffective Eating during Childhood: Less Than (or More Than) Body Requirements’ and 'Risk for Ineffective Eating during Childhood: Less than (or More Than) Body Requirements'.

In Stage 2 we conducted a survey using the Delphi Survey Technique to test the validity of the two diagnostic concepts. This
type of survey aims for consensus of opinion from a group of experts using a series of questionnaires, to transform individual views into group consensus (Hasson et al. 2000). Participants were drawn from a US clinic which specialises in childhood nutrition.

Findings
The findings indicate that a very high degree of consensus emerged among the Delphi Survey participants, early in the research process (>80%), for all the diagnostic concepts being tested. Consequently only two Delphi rounds were needed to establish consensus of at least 80% for all the components of the nursing diagnoses.

Implications
The findings from this research provide new diagnostic concepts, designed for use by children's nurses, to help manage a global childhood health problem and as such, can contribute to nursing diagnosis knowledge development for the child health setting.


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Background
To keep pace with the practice environment, nurse educators must prepare students to provide safe and effective care within an
increasingly technology-bound environment. Technology use is the subject of competencies and initiatives, both of which include attention to electronic health records (EHR) (Staggers et al., 2002; Hebda & Czar, 2013). Inclusion of standardized nursing languages (SNL) in EHR is essential for visibility and transparency of nursing care, as well as safe, effective care (Fetter, 2009; Jones et al., 2010). Educators use case studies to teach SNL (Hasegawa, Ogaswara, & Katz, 2007; Lunney, 2009). However, little is written about the use of case studies in conjunction with teaching to develop competencies and skills associated with both the EHR and SNL. The aim of this presentation is to discuss the use of case studies, academic EHR, and teaching of SNL from an evidence perspective.

**Evidence Regarding Case Studies, EHR, and SNL**

The evidence-based perspective includes not only research as evidence but theory, guidelines, expert opinions, and the consumer’s perspective (Melynk & Fineout-Overholt, 2005). Experts assert that case studies are both efficient and effective tools to assist students with learning, practice, and application of SNL (Cruz, Pimenta, & Lunney, 2009; Lunney, 2008). Research evidence from single descriptive and quasi-experimental designs suggests that education about SNL is needed (Hasegawa et al., 2007) and that case studies are a good way to learn and measure nurses’ use and accuracy of SNL (Cruz et al., 2009; Mueller-Staub, et al., 2008). Researchers have also found that both nursing students and educators have are satisfied with case study methods of teaching/learning due in part to the interactive nature of the strategy (Kennedy, Pallikkathayil, & Warren, 2009). There is a
variety of evidence to suggest that case studies are useful in education of nurses in relation to critical thinking, content; and SNL.

The evidence-basis of SNL has been previously documented (Anderson, Keenan, & Jones, 2009; Jones et al., 2010). The specific SNL of interest in this paper are the classifications of NANDA-I, NOC, and NIC; together known as NNN. The evidence ranges from experimental and quasi-experimental designs (Muller-Staub, et al., 2008) to guidelines and expert opinion (Lunney, 2009). In addition to research evidence for SNL, different strategies for teaching SNL have also been described (Farren, 2010; Topaz et al., 2012). Lunney (2006) asserts that EHR require the use of SNL (Lunney, 2006). NNN have been identified by the American Nurses Association (ANA) as suitable SNL to represent the aspects of nursing practice in EHR (Anderson et al., 2009; Jones et al., 2010).

For clarity, the definition of EHR as used in this paper is that of the National Alliance for Health Information Technology (cited in Hebda & Czar, 2013, p. 277), “an electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be created, managed, and consulted by authorized clinicians and staff across more than one health care organization.” Authors have suggested that EHR and information technology promises to improve the safety of patients and quality of care (Fetter, 2009; Kushniruk et al., 2009). However, as the definition implies, there are a set of skills that must be developed to access, input, and manage the EHR
and achieve the promise of safety and quality. Both nursing students and practicing nurses at all levels need to have the necessary competencies (American Association of Colleges of Nursing (AACN), 2008; Fetter, 2009; Staggers et al., 2002; Walker, 2010). The literature supports the idea that the demand for EHR and a nursing workforce well-prepared with the concomitant competencies is a global experience (Kowitlawakul, Wang, & Chan, 2012; Kushniruk et al., 2009; Walker, 2010).

Competencies have been adopted from many sources but the foundational work of Staggers and colleagues (2002) is evident and well integrated in the TIGER initiative, AACN, and Quality and Safety in Nursing Education (QSEN) initiative (Hebda & Czar, 2013). Although not stated exactly, the common competencies related to the EHR include the need to use and facilitate electronic EHR and access and perform documentation in computerized patient records. In fact, the AACN (2008) states that baccalaureate prepared students use clinical information systems to document interventions and achievement of nurse sensitive outcomes. The AACN gives further explicit attention to the use of standardized terminology to make visible nurses’ impact on patient outcomes.

The identified competencies provide nurse administrators, informatics nurses, staff and student nurses, and nurse educators with a guide about the knowledge and skills needed. Although there are expert assertions about the importance SNL and necessary informatics competencies, problems remain. In one review of the literature, Gracie (2011) concluded that student nurses do not have the necessary informatics skills and suggests that nursing
education has not kept pace with the calls to include the use of technology and informatics skills in curricula. Despite observations that nursing education has not kept pace, there are research reports about the use and integration of academic EHR in schools of nursing and; the reports address informatics competencies, and examine strategies for nursing education (Jones & Donelle, 2011; Kennedy, Palikkathayil, & Warren, 2009; Kowitlawakul, et al., 2012; Mahon et al., 2010). From an experiential perspective, each of the nursing programs within the large, urban, public university where I teach, has integrated technology, informatics, and EHR in their curriculums or are planning implementation. From the research perspective, there are studies evaluating various academic EHR. One research team qualitatively examined a specific approach (Simulated EHealth Delivery System [SEEDS], which used four-classes, a modified EHR for the academic setting, written case studies, and activities to develop care plans in one technologically experienced seminar group (n = 5 students and 1 educator) (Kennedy et al., 2009). The Mid-Western US researchers found that although the care plans were just satisfactory, the approach was perceived as useful and satisfying (Kennedy et al., 2009). Similarly, an Asian research team qualitatively evaluated the use of an academic EHR (Electronic Health Record for Nursing Education [EHRNE] developed by an information systems developer in Singapore) in a small (n = 9) group of nursing students (Kowitlawakul et al, 2012). The teaching strategies included written resources regarding the application and orientation of students by
a research assistant, after which participants were asked to input documentation based on a prepared exercise that included patient data. Following the exercise, the students participated in focus group interviews to discover their perceptions and experiences with the use of the application; from the data, the research team found four main themes or categories: a) functionality, b) data management, c) time and complexity, and d) accessibility (Kowitlawakul et al., 2012). Kowtlawakul and colleagues (2012) concluded that the EHRNE could be adopted for the curriculum but learned that further orientation regarding the EHR application and its use would enhance the approach and they recommended further research. Both research teams (Kennedy et al., 2009; Kowtlawakul et al., 2012) described positive outcomes and identified enhancements in their respective approaches that could be implemented in the future.

Jones and Donelle (2011) reported on their qualitative work to assess the use of EHR by a group of second degree, accelerated baccalaureate nursing students (n =13) in Canada. They used an open access, modifiable EHR, participants were asked to perform nursing documentation tasks based on a simulated clinical patient; the researchers analyzed transcribed statements and comments. Jones and Donelle found three themes: a) being novice, b) confidentiality and security, and c) repetition and practice. Interestingly, although they were at the equivalent of 3rd year and 93% of the participants self-identified as proficient or expert computer users, all were aware of EHR but had never used an electronic system to document patient care. The researchers
concluded that simulated cases were a useful and important teaching strategy and recommended further research on the educational strategies for teaching documentation of nursing care with electronic records (Jones & Donelle, 2011).

Mahon et al. (2010) conducted a qualitative study of clinical faculty \((n = 25)\) teaching in undergraduate programs about perceptions of students’ skills in documentation (paper or electronic). The research team summarized four major themes: a) teaching strategies, b) learning from experts, c) road from novice to expert, and d) legal/ethical/institutional issues. The themes and their respective categories seemed consistent with the finding of Jones and Donelle (2011), Kennedy et al. (2009), and Kowtlawakul et al., (2012). For example, the interactive and individual instruction or the one-on-one interaction was identified as being helpful and fun, the importance of practicing the skills of documentation and use of a specific system was also a common thread. Likewise, themes related to enhancing skills was present for all (Jones & Donelle, 2011; Kennedy et al., 2012; Kowtlawakul et al., 2012; Mahon et al., 2010). Of note is that all of the studies used different forms of case study and required a nursing documentation activity; However, none reported what, if any, SNL was used.

**Conclusions and Implications** There is a strong, documented evidence base for SNL and for the teaching strategy of case study approaches. Globally informatics competencies for nurses at all levels are required as nations move toward integration of EHR in health care systems. There is also a growing body of evidence regarding the use of academic EHR in nursing curricula. However,
the clear articulation of the nexus of case studies, SNL, and EHR to promote safe and effective nursing care by nursing students needs further attention. The implications for nursing education are the importance of advancing the pace of systematically integrating technology and use of EHR into curricula. This is a priority as more clinical agencies advance to their national mandates to implement EHR, they also make it difficult or impossible for students to document in their systems. While it is understandable that agencies take precautions due to concerns about security issues, these precautions and subsequent lack of access to the system for documentation by students reduce the opportunity for learning and practice. Therefore, it is incumbent upon schools of nursing to provide these opportunities through the use academic EHR so that students are adequately prepared and competent to meet the informatics and documentation expectations of clinical practice. Furthermore, the selected EHR must include SNL. SNL need to be taught and practiced in the nursing school. Case studies are useful in teaching SNL and efficient use of EHR for safe and effective patient care. Nurse educators must be prepared to teach SNL and EHR using well-prepared case studies. Further educational research is also needed to test the effectiveness of the resources and strategies used. Ongoing research is needed as technology changes rapidly and new issues and circumstances emerge.
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Chapter 12 – Data Sets and Terminologies

1. Validation the C-HOBIC mapping to SNOMED CT.

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Background

Canadian Health Outcomes for Better Information and Care (C-HOBIC) is leading the collection in Canada of standardized clinical outcomes reflective of nursing practice. C-HOBIC introduces a systematic structured language for patient assessments across the health care system enabling abstraction of information into jurisdictional EHRs. Information generated through this suite of targeted data elements is available to clinicians across the health care system.

In 2011, a group of international nursing colleagues, led by the Canadian developers of C-HOBIC commenced a mapping to Systematized NOmenclature of MEDicine Clinical Terms (SNOMED CT). The purpose of the mapping is to enable the inclusion of the C-HOBIC in systems that are deploying SNOMED CT in their clinical documentation systems, promoting both interoperability and comparability of clinical data. Secondarily it demonstrates and enhances the nursing content of SNOMED CT.
This oral presentation will provide an overview of the methodology used for the mapping process, the validation meeting with international NI leaders held in Canada in June 2012, a synopsis of outcomes, and the next steps for completion of the mapping and validation.

An initial review of the SNOMED CT structure provided a critical distinction between the concepts of observables and findings. Guiding principles were also reviewed in terms of supporting a methodology of mapping conceptual meaning and identifying gaps in SNOMED CT with respect to appropriate codes for C-HOBIC measures. Initial validation of meaning was completed and is being followed up through the IHTSDO Nursing Special Interest Group and the C-HOBIC team. Future plans include posting the mapped results to C-Space at ICN for broader validation and feedback.

**Research Aim**
To confirm validation of CHOBIC mapping to SNOMED CT

**Methods/Process**
To be discussed in presentation

**Findings/Outcomes**
To be discussed in presentation

**Implications**
In 2011, a group of international nursing colleagues, led by the Canadian developers of C-HOBIC commenced a mapping to Systematized NOmenclature of MEDicine - Clinical Terms (SNOMED CT). This presentation provides an overview of the methodology and validation, synopsis of outcomes, and next steps for completion of the mapping and validation.
2. Nursing care data from patient records for DRG data comparisons between hospitals.

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Introduction
There are country-specific differences in the way nursing care services are integrated in DRG (diagnosis related group) systems [1: 98]. In the SwissDRG system used in Switzerland, all nursing care costs are incorporated within the nursing workload. This is carried out on the basis of case-based nursing workload measurement provided by hospitals using LEP (Leistungserfassung in der Pflege, [2]), PRN (Projet de Recherche en Nursing [3]), or a nursing workload measurement system corresponding to their standards [4: 4]. This means that differing nursing workload for individual cases may be incorporated in the cost weighting process on the basis of services provided [5: 199, 308]. Compression effects on the nursing care component in the DRG cost weights through equivalence figures not based on actual nursing workload, such as treatment days and treatment daily rates, are avoided [6: 113-116].

DRGs provide the basis for measuring the services provided by a hospital. DRGs can be used for flat rates per case, case costings, budgeting, and inter-hospital comparisons [7]. Inter-hospital comparisons with DRG indicators often encounter the problem of a lack of specific nursing care data for answers to questions such as:
What differentiates a high-input case from other cases in the same DRG?

**Methods**

Our project, completed from 2010 to 2012, undertook the development of an indicator-supported instrument, called PCAP-Suisse (patient care analytic platform). The model is based on data from patient records and the nursing workload measurement, which are compared between hospitals and used for the process management of nursing care services in the context of SwissDRG. Development of the model included definition of the indicators, data provision requirements, and analysis on several different aggregation levels. The data used was restricted to information that is already routinely used in hospitals. The final stage in the project was the testing and enhancement of the beta version with data records from two hospitals in terms of usability, meaningfulness, and benefits.

**Results**

For each SwissDRG case group, it was possible to formulate graph-supported comparisons between hospitals of indicators such as the case mix, actual cost weight, total nursing workload, and for each service group (patient movement, consultation, etc.), the length of stay and nursing care component in the length of stay and the typicality status (inlier, outlier) in various combinations. DRG-specific measurements such as the homogeneity coefficient were also determined. In the test between the two hospitals, the comparisons revealed significant discrepancies that were analyzed
in detail and assessed accordingly, e.g. to identify possible influence factors and potential solutions to address the situation.

**Conclusion**

PCAP-Suisse Version 1 was assessed as useful for process management purposes by the two test hospitals. Further hospitals will now take part in the data comparison. To further develop the benchmarking aspect, an enhanced PCAP-Suisse Version 2 is to be created with additional nursing care data from patient records (assessment, diagnoses, outcome) and cost data (specific nursing care cost weight and Case Mix Index) [8, 9].

**References**


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3. The development and validation of nursing related groups based on the Belgian Nursing Minimum Dataset.

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**Background**

Diagnosis Related Groups (DRGs) are the dominant patient classification system to describe patient care in hospitals. It is used for financing and reimbursement and management. There is
however strong evidence that nursing care is not well explained by DRGs. Explained variability of nursing costs by DRGs varies between 15% and 20% (Laport et al., 2010). On the other hand, it has been shown that nursing care and DRGs are complementary in explaining patient length of stay, hospital charges and even mortality or admission ratios (Welton & Halloran, 2005).

Belgium has since 1985 a long tradition in the systematic collection of nursing data in the Belgian hospitals through the Belgian Nursing Minimum Dataset (B-NMDS). In 2008, a second version of the B-NMDS was introduced in all Belgian hospitals (Sermeus et al., 2005) including 79 items. The item list was based on the Nursing Intervention Classification (Van den Heede et al., 2009). In 2009 a study was commissioned by the Belgian Ministry of Public Health to integrate this new B-NMDS into the Belgian hospital reimbursement system.

**Research Aim**

The aim of this study is to develop and validate nursing related groups (NRGs) from the Belgian Nursing Minimum dataset.

**Methods**

The study is using a mixed methods design. Based on the available B-NMDS data from 2008 and 2009 (N=1 378 326) nursing care profiles on the level of care episodes will be grouped into Major Nursing Categories (MNCs) and NRGs. Care episodes were defined as the time that the patient spend on a nursing ward during a 24-time period. The duration can be shorter than 24 hours on the day of admission, discharge or transfer. MNCs are grouped using cluster analysis. NRGs are developed within MNCs using
classification and regression tree (CART) algorithm. Target variable for the decision tree was nursing intensity per care episode. The validity of the grouping into MNCs and NRGs was tested comparing the results of testing and evaluation datasets. The stability was tested by comparing the grouping structure based on the 2008 data and on 2009 data.

Next to the statistical analysis, three committees have been installed: a clinical committee to clinically validate the MNCs and NRGs, an organisation committee to validate the cost-weights assigned to each NRG. These cost-weights were based on nurse staffing levels and skill mix. Two Delphi-studies supported group work. The first Delphi-study aimed to allocate a nursing intensity weight and competence level to all items in the B-NMDS. The Delphi study ran by e-mail. In total 678 nurses and midwives participated in the panel. A second Delphi-study aimed to allocate nurse staffing and skill-mix level to each NRG. In this Delphi-panel 140 nurses and midwives participated.

**Findings**

Eight MNCs and 92 NRGs have been identified. Examples of MNCs and NRGs will be shown. The results of the validity tests will be presented.

**Implications**

NRGs result in a valid grouping technique that can be used for hospital reimbursement purposes.
4. Relations between terminologies: literature review

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Summary
The aim of this review was to examine relations between different standardized terminologies used in nursing. 10 articles were found. In five articles different terminologies were mapped to SNOMED CT, two articles mapped terminologies to ICNP and three articles compared different terminologies in specific situations.

Background and Aim
In the last decades several nursing terminologies have been developed. American Nursing Association (2012) has recognized five interface terminology sets which capture nursing diagnosis, interventions and outcomes:
Clinical Care Classification System (CCC); International Classification for Nursing Practice (ICNP); the Omaha system (OS); Perioperative Nursing Data Set, (PNDS) and NNN which includes NANDA International (NANDA-I), Nursing Interventions Classification System (NIC) and Nursing Outcomes Classification (NOC). American Nursing Association (2012) has also recognized a reference terminology, Systematized Nomenclature of Medicine Clinical Terms, (SNOMED CT). The International Classification of Functioning, Disability and Health (ICF), is a classification of health and health-related domains that is used by nurses, in spite
of that it not fully functional for nursing practice (Florin et al., 2012). All these terminologies are used to some extent in electronic health records (EHR) round the world, and SNOMED CT is the largest reference terminology, with approximately 310 000 active concepts (IHTSDO, 2012). There is little information available to support decisions about which terminology that shall be included in the EHR. Are the terminologies for nursing similar, or do they include different information? Which terminologies shall we choose? The aim of this review was to examine relations between different standardized terminologies used in nursing.

**Method**

A literature review was performed searching for peer-reviewed articles published 2007-2012 reporting relations between the standardized terminologies CCC, ICF, ICNP, NANDA-I, NIC, NOC, OS, PNDS and SNOMED CT.

Inclusions criteria were: empirical studies or reviews, peer-reviewed journal articles, written in English, abstract available, published 2007-2012 Exclusion criteria were: articles not relevant for nursing as dealing with dental care or medical language as terms for cytology, drugs or diagnosis and discussion paper

From 60 abstract read, 38 were selected and read entirely. Ten articles meet the inclusion criteria, and were selected to the result.

**Data Analysis**

Every article was read several times and design and main outcome were summarized. However, we did not evaluate their methodological quality nor exclude any because of quality. This was to derive a thorough description of the state of art of the evaluation
of nursing documentation. Instead, we choose to describe the different methodologies used in the articles. Thereafter a thematic analysis of the selected articles was undertaken. The two researchers were both involved in the search and analysis process.

Results
10 articles were found. In five articles different terminologies were mapped to SNOMED-CT, which showed that 92.5% of the ICNP nursing diagnosis and intervention catalogue concepts can be mapped to SNOMED CT (Park et al., 2009). Of NIC concepts 97.3% (Park et al., 2007) and of NOC concepts 95.2% (Ly et al., 2007) can be mapped to SNOMED CT. PNDS concepts have also comparable meanings with SNOMED CT (Westra et al., 2008).

Of CCC: s nursing diagnosis 97% had a match to ICNP (Matney et al., 2008) while 46% of the ICF concepts were able to be mapped to ICNP concepts (Kim & Coenen, 2011).

Three articles discussed the relationship between terminologies in different ways: Comparison between NANDA and PNDS reveals that it is possible to keep using NANDA in perioperative evaluation of patients (Viegas et al., 2010). Of 853 unique statements from a medical record, 100% were mapped to SNOMED CT and 85.6% to ICNP (So & Park, 2011). Key concepts from evidence-based guideline for adults with depression were extracted and 92% mapped to ICNP and OS (Dontje et al., 2011).

Conclusion
The nursing specific terminologies mapped highly in a comparison between each other. The concepts are also highly presented in SNOMED CT, which represent all professions as a reference
terminology. The relation between ICF and nursing specific terminologies is not found especially high, which is relevant as this terminology was developed for other professions. As all nursing specific terminologies presented above are in use, the question arises for the user: which one shall we choose? And why can we not together develop a common nursing language?

References


Chapter 13 – Nursing Diagnostics and the Electronic Patient Record

1. The relationship between nurse staffing and patients’ length of stay in hospital: data-based indicators analysed with a Bayesian approach.

Kuopio/FINLAND

Abstract

Hospitals’ information systems contain large amounts of high quality data on nursing for evidence-based nursing management and leadership. The aim of this study was to analyze relationships between nurse staffing and patients’ length of stay (LOS) in hospital by utilizing data-based staffing indicators on unit level. The data were collected from 20 somatic inpatient units of one Finnish university hospital as monthly time series during a period of one year (2008). The data consisted of 35 306 inpatient and outpatient visits and administrative information on 381 nurses. The relationship between nurse staffing and patients’ length of stay was examined by using Naive Bayesian Classification. The
relationship appeared to be both non-linear and linear. In conclusion, due to the non-linear aspect, nurse staffing should be flexible rather than fixed in the complex health care environment.

Key words: nurse staffing, outcome assessment, hospital information systems, time series, Bayes Theorem

Introduction

The increasing development and implementation of information technology in health care offers an opportunity for developing evidence-based support for managerial decision-making (Hyun et al. 2008) to ensure positive nursing outcomes. Nurse staffing has an important role in health care functions and in contributing to outcomes. Adequate nurse staffing with a sufficient proportion of registered nurses (RN) is associated with lower hospital-related mortality, failures to rescue (FTR), and shorter hospital stays (Kane et al. 2007, Duffield et al. 2007).

Inferences on the association between nurse staffing and outcomes have been made mostly of results that based on linear analyses of cross-sectional data (Mark 2006, Duffield et al. 2007, Aiken et al. 2008). As health care environments are multiprofessional, constantly changing and complex, one can assume that linear methods ignore some associations between variables (Davidian 2009, Jordon et al. 2010), and also between nurse staffing and outcomes. These hidden associations can be revealed through time series data analyzed with the Bayesian approach (Davidian 2009, Pitkäaho et al. 2011). The Bayesian approach combines the Bayesian probability theory with statistical data analysis
techniques, making inferences about the matter in focus, based on observed research information. (Lee et al. 2005).

The aim of this nursing outcome study was to analyze relationships between nurse staffing and LOS in hospital by utilizing data-based indicators on unit level. The study design is a correlational, using retrospective time series analyzed with Naive Bayesian Classification (NBC). The study is a part of the At Safe research project carried out in collaboration between University of Eastern Finland and Kuopio University Hospital in 2006–2011. The ethical permission for the study was acquired according to the national requirements for register-based data without identifying information. The application was addressed to the hospital’s ethics committee and the permission was granted in May 2007 (decision No 46/2007).

**Background**

Identification of nurse staffing indicators from existing data registers and information systems should have theoretical support (Magee et al. 2006), since the register data have been produced for other purposes than research. In this study, we applied Donabedian’s (Donabedian 1988) structure-process-outcome (SPO) -model and, particularly, the most used indirect version of it, the structure-process form (Kramer, et al. 2010), to select suitable variables from the vast material of hospital information systems. The indirect model is commonly used in nursing outcome research, since the availability of process variables is poor (Savitz et al. 2005). Nonetheless, it is assumed that structure has effects to the process and further to the outcome. The structure includes nurse
staffing elements measured as parameters in a hospital data system. Outcomes consist of the results of care activities such as LOS, which has been internationally recognized as a nursing-sensitive outcome (Van den Heede et al. 2007). Identifying the structure variables, we conducted a literature review of nurse staffing research and used a preliminary Nurse staffing model presented by Partanen (Partanen 2002) to group the structure variables into three sets: nursing intensity, work environment intensity, and nursing resources (Figure 1).

**Figure 1.** Study framework structure-(process)-outcome: structure variables sets: nursing intensity, work environment intensity, and nursing resources, process (no variables, but it is assumed that structure has effects to the process and, furthermore, to the outcome) and outcome. 1) Percentage value of the two highest groups, III and IV determined in four groups: the need for care was the lowest in group I and the highest in group IV, 2) Utilization rate of beds per month, 3) Patient turnover per bed as percentage 4) Number of
cleaners or secretaries as a percentage of the number of nurses, 5) Number of working hours of all nursing hours, 6) As a percentage of nurse staff.

The LOS is the time that a patient spends in an inpatient unit of a hospital, and varies depending on factors concerning the patient, environment and nursing. Nurses’ observations on the patient are vital for correctly timed discharging. A discharge that takes place too early, exposes patients to readmission, while a discharge that occurs too late exposes patients to hospital-related complications (Kane et al. 2007). Medical patients were 4–12 % less likely to develop hospital-related complications when the average proportion of RNs in nurse staffing was 75 % (Stanton & Rutherford 2004). According to a meta-analysis, an increase by one RN per patient per day decreased LOS at 24–31 % depending on the unit type (Kane et al. 2007). When LOS becomes shorter, there will be resources to take care of more patients.

**Material and methods**
Retrospective data were collected from 20 somatic inpatient units of a university hospital as a monthly time series in a one-year period (2008). The data consisted of 35 306 inpatient and outpatient visits and administrative information on 381 nurses. Inferences and predictions with data-based time series about the likelihood of an outcome (LOS) require a method that can utilize quantitative data with fewer assumptions than the traditional multivariate methods, such as the regression method (Lucas et al. 2004). Bayesian approach enables probabilistic inference and prediction from diverse sample data. In this study we used Naive
Bayesian Classification (NBC) belonging to Bayesian Networks (NB) group. This is a method for modelling complex relationships of probabilistic dependencies between a categorical dependent variable and several independent categorical variables (Soini et al. 2009). Nurse staffing indicators were categorized into three classes: low, average, and high. The categorization was made by adapting distributions of variables and by ensuring the volume of observations per class that were sufficient to the analysis. The mean value of LOS was the splitting point at splitting it into two classes.

We used a licensed web-based NBC tool called P-course for examining the model of nurse staffing and LOS. It is an advanced version of an earlier model called B-course that is freely available at http://bcourse.cs.helsinki.fi/obc/. P-course has an algorithm which added nurse staffing indicator one by one to the model until the log score of the model reached the lowest possible value (Soini et al. 2009).

**Results**

Out of twelve indicators, six nurse staffing indicators explained and predicted patient’s short LOS. Nurse staffing indicators from every subgroup came into the model. The linear relationship between the unit’s census and short LOS was positive, while the relationship was negative with patient turnover and secretary services. Non-linear associations between short LOS and three nurse staffing indicators were indicated. The unit’s skill mix, with an average level of RNs (65–80 %) was favorable concerning short LOS, and predicted at 75 % probability for short hospital stays for patients.
The higher and lower RN % both predicted a lower probability for short LOS than the average RN %. The low case mix index (range 2.5–4.5) predicted at 61 % probability for a short LOS. The average index (range 4.51–7) predicted at 41 % probability for short LOS, but the high case mix (range 7.01–16.2) gave a slightly higher probability (46 %) for LOS than the average case mix (Figure 2).

Figure 2. The probability distributions of case mix, RN % and cleaning & kitchen services class by class (low, average and high) in predicting patient’s length of stay of with Naive Bayesian Classification

Discussion
The analyzed material was produced for purposes other than research, and, therefore, the theoretical frame (SPO) was imperative to ensure the validity of indicator identification. Although the hospital information systems were developed for financial and operational proposes, they provide usable nurse staffing indicators. In this study, the skill mix of average level of RNs (65–80 %) was favorable concerning short LOS in hospital.
The average 75% RN proportion that reduced hospital-related complications (Stanton & Rutherford 2004) settled also in that range, effecting the length of stay.

The reliability and validity of the method were reflected by the performance rates of the model. The performance indicators of the prediction model on nurse staffing and LOS produced by NBC were acceptable. The prediction accuracy was 79.5% and the model’s log score (0.47) was smaller than the default model’s log score (0.69); the closer to zero the model variables were and the bigger the difference between these models, the better log score reflected the goodness of the test, considering the complexity of the data (Soini et al. 2009).

In conclusion, the NBC that contained empirical data on nurse staffing and LOS yielded new non-linear information. The exposure of non-linear relationship between nurse staffing and short LOS in hospital indicates rather flexible than rigid limits to nurse staffing, since every component in complex health care should adapt to micro and macro changes.

References


2. Validation of the quality of diagnoses, interventions and outcomes (Q-DIO) for use in Brazil and the United States.

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Background

In clinical practice, nurses must systematize their practice based in certain aspects intended to ensure the safety and quality of the patient care¹, ². Among such aspects, should be noted that the nursing records must be fully completed, understood, and valued. Taking this into consideration, the use of terminology and electronic systems along with the nursing processes favor the quality of nursing records³. In Brazil, regarding nursing records, it is observed that, sometimes, they are not registered with the standardized language based on terminology⁴. It is in such scenario that the knowledge and usage of a standardized language and the development of electronic records allow for the improvement and possibility of assessment of effectiveness of what is being proposed in the actual clinical environment⁵.

In the United States, all manual records must be converted into electronic records until 2014, according to the recommendation from the United States Department of Health and Human Services⁶. Nowadays, 64% of the nursing documentation is manually registered. Data from an integrative North-American research, conducted with the objective of identify the relationship
between electronic records and care quality, indicates that the records lack reliability and clarity. The authors project for the next years the full conversion of manual record systems into electronic record systems; also, they highlight that, although the premise that electronic records may improve nursing documentation – and, therefore, the quality of the care provided –, this is a hypotheses that still demands testing and assessment. This way, the authors propose that more studies must be carried out, taking into consideration the changes in the United States scenario(7).

The assessment of the quality of such records may be obtained through an instrument called Quality of Diagnoses, Interventions and Outcomes (Q-DIO), published in English and validated in Switzerland. To develop new instruments specific for each culture is costly, time-consuming, and may restrain the possibility of comparing studies developed in different countries (2). The choice for Q-DIO is based on the inexistency of instruments with the same objective; it also has practicality in the application. Studies using Q-DIO since its development have been demonstrating its efficiency and validity(8, 9). This way, it is believed that an instrument culturally adapted and validated means equivalency regarding the original one.

The Q-DIO's main objective is to assess the quality of the nursing records. It has also been used as an indicator to compare the quality of records with and without standardized language, to set goals, to evaluate the impact of implementing educational programs, and to give some help in audit systems. There is a lack of
instruments capable of assessing issues related to the quality of the nursing records in Brazil and in the United States.

**Research Aim/Question/Purpose**

There is a lack of instruments capable of assessing issues related to the quality of nursing records in Brazil and in the United States (U.S.). It was because of it that this study was developed: to validate the Q-DIO instrument in Brazil and in the U.S.

**Methods/Process**

Methodological study developed to validate Q-DIO in two hospitals located in Brazil and one located in the United States. The collection in these three scenarios is justified because the difference among the records found in the institutions is important for the process of instrument validation, since it must be valid in different scenarios of clinical practice. Three distinct groups were formed: 1) with electronic records and standardized language for nursing diagnosis and intervention; 2) with electronic records without standardized language; 3) with paper records without standardized language.

Since 29 items compose the instrument, the minimal necessary sample for this study was set as a total of 145 observations. Thereby, the data was collected from nursing records of 60 patients from each institution, resulting in 180 records.

The Q-DIO is composed of 29 items, divided into four domains (nursing diagnoses as process, nursing diagnoses as product, nursing interventions, and nursing outcomes), composed of a three-point Likert scale\(^8\).
To validate the instrument, records from patients in the period after a cardiac surgery, and who had in their historical records trends and nursing prescriptions between a minimum of four days, were selected. Among the psychometric properties, reliability (internal consistency and stability) and divergent construct validity were assessed. For statistical analysis, reliability of Q-DIO and its four domains were assessed by Cronbach’s alpha coefficient, being considered a value superior to 0.70 to attest the reliability of the instrument. For stability analysis, the intraclass correlation coefficient (ICC) was used. ICC is suitable to measure homogeneity of two other measures and it is interpreted as the proportion of the total variability attributed to the measured object. To assess discriminant construct validity among the groups (HCPA, IC/FUC and UIMC), an analysis of variance (ANOVA) with post hoc Tukey was carried out, aiming to identify which pairs of groups differ.

The study was evaluated and approved by ethics’ committees of the three institutions enrolled in the research. The authors signed a Data Use Agreement form reassuring its commitment with usage and preservation of the material.

**Findings/Outcomes**

The sample has a total of 180 records, divided equally between the three study centers. The values of Cronbach’s Alpha for the 29 questions were equal or superior to 0.70 for all centers. These values indicate that 29 of the items present in the instrument have correlation and are homogeneous, regarding the measure of the same attribute. In this study, despite the differences among nursing
records under assessment, it was possible to demonstrate homogeneity. This instrument presents internal consistency regardless the combination of types of records, with standardized language and electronic system, without standardized language and electronic system, or without standardized language and with electronic system.

Regarding stability, the intraclass correlation coefficient ranged between 0.64 to 0.85 for intraobserver, and 0.68 to 0.82 for interobserver, which indicates excellent and satisfactory levels of agreement. Considering the results for intraclass correlation coefficient, Q-DIO has presented stability, which allows its usage by different evaluators with experience with nursing records in patient’s evaluation, regardless the type of the record.

The divergent construct validity was used in this study aimed at assessing the Q-DIO capacity of discriminating different nursing records, such as manual or electronic, with or without standardized language.

In divergent construct validity, statistically significant differences were observed in the average of the sum of the 29 items of the instrument among the three centers. Center 1 (electronic records with standardized language) had an average of 36.8 (± 9.5) [95%CI: 35.63-37.94]; center 2 (manual records without standardized language) had an average of 11.53 (± 6.2) [95%CI: 9.93-13.14]; and center 3 (electronic records without standardized language) presented an average of 31.2 (± 5.3) [95%CI: 29.87-32.63].

While testing the psychometric properties of Q-DIO in nursing records from Brazil and the United States, it was possible to
conclude that the version adapted to Brazilian Portuguese it is reliable considering the original version, specially in relation to internal consistency and stability when applied in different nursing records, manual or electronic, with or without standardized language. In the same way, the results of Q-DIO assessment in the United States allow us to conclude that, when applied in its original version in the North-American scenario, the instrument is reliable regarding the adequate values for internal consistency and stability.

**Implications**

These results indicate that Q-DIO is valid and reliable for assessing the quality of nursing records, being them electronic or not, using standardized language or not, at least in Brazil. In the U.S., this instrument has also proved to be reliable and valid for electronic nursing records without use of standardized language.

**Reference**


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Summary
Standardized nursing language is poorly used in nursing reports. Selections of nursing diagnoses, interventions and outcomes helps implementing this in electronic patient records. Selections are created by different methods. On-going research must confirm the representativeness of the selections and the methods to obtain them.

Introduction
Until today most nursing records in the Netherlands, electronic or on paper, are free text records. They might offer the problem, aetiology and symptom structure but only few offer a standardized language using nursing classification systems for nursing diagnoses, interventions and outcomes. Using a standardized language in the nursing records leads to improvement of communication, coordination and continuity of care because everyone talks about the same health problems. Also, to be able to construct an integral Electronic Patient Record System (EPR) and to be able to re-use data, nursing and medical terms need to be mapped. NANDA, NIC and NOC (NNN) are nursing classification systems which are mapped to SNOMED CT, the medical reference terminology system. NNN together offer over a thousand items.
Implementing standardized languages asks for a structured training program.

**Purpose**
Since wards within the hospital are ordered per medical specialism a reduction of items can be performed to simplify and represent nursing care within a specialty area. To improve communication on specialism level and to implement working with NNN in the EPR we decided to create selections of NNN per specialism.

**Material and methods**
For 4 specialisms selections are created by different methods to search for the least intensive method but with the most precise results. The Medical Oncology/Palliative Care ward was already using handwritten nursing diagnoses. This ward collected all the nursing files for 4 years and extracted the occurring nursing diagnoses. On the Hematology ward a literature study and international Delphi study was performed to develop an list of relevant diagnoses in Hematology nursing. The Surgical Oncology and Radiotherapy ward connected to each other because patients often had combined oncological surgery and radiotherapy treatment. Selections were made per patient group by studying oncology nursing education literature, care pathways and national guidelines.

**Results**
For medical oncology/ palliative care a selection of 60 diagnoses was composed. This selection contained 57 nursing diagnoses and collaborative problems and 3 topics in palliative care for which no nursing diagnoses exist yet. A retrospective file study was
performed to compare medical and nursing diagnoses and to determine interventions within this specialism. Twenty-two comparative symptoms and 35 core interventions were identified. Standardized nursing care plans were created for use in everyday care. Within Hematology The Delphi study identified 64 relevant nursing diagnoses, 11 by all experts (Speksnijder et al. 2011). Standardized nursing care plans were created including NIC and NOC. In Surgical Oncology and Radiotherapy different patient groups are being treated. Selections per patient group are determined. A total of 39 nursing diagnoses were selected for head and neck, urological, and gynaecological oncological surgery and radiotherapy. Eighteen nursing diagnoses were applicable to all patient groups.

**Discussion**
The selections of these specialisms are now imported in the EPR to perform a pilot study to evaluate the feasibility. Since every patient is an individual with his or her personal responses, a selection of nursing diagnoses can never be exhaustive. Therefore, the overall collection of nursing diagnoses formulated by NANDA-I is always available in the EPR. Although working with selections in the EPR simplifies the implementation of working with NNN on these wards, future file studies must confirm whether these selections accurately represent the nursing care in the several specialisms.

**References**

Getafe/SPAIN

Background
The development of electronic health records (EHR) has been essential in improving health records quality and in the implementation of standardized nursing languages in our environment. Institutions, especially in primary care, have been committed to develop clinical record applications that allow nurses to document and assess their care. This provides regular feedback from different types of indicators about quantity and quality of care, that are essential for improving patient safety and quality of care.

Research Aim/Question/Purpose
- Improve health records' quality.
- Promote the use of standardized nursing languages.
- Carry out regular monitoring and evaluation of clinical and care indicators.
Methods/Process
Madrid Health Service (Spain) has an EHR with access by web which is unique to each patient and common for all health professionals who provide healthcare in the Primary Care setting. Within the HCE there is a specific record to document independent role of nursing care that integrates all phases of the nursing process using standardized languages NANDA-NOC-NIC and to assist nurses in clinical decision-making. It also has records to document the collaborative role of nursing in healthcare that enables systematic recording of all relevant processes in primary care. The patient data 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 and is negotiated with the management team of the Health Center. Throughout the year we monitor all the indicators that are in the CPC, with a final evaluation of the achieved results.
This target tracking is performed through an application (e-soap) that can be accessed by all health professionals, technicians and administrators of the organization with different levels of granularity. The results evaluation allows identifying critical areas where work is needed to improve patient safety and quality of care.
Findings/Outcomes
The recorded data are transformed into indicators that are routinely measured. Some of these indicators are:
- Activity indicators (number of patients/nurse/day, % population attended)
- Process Indicators (care plans): % population with nursing diagnoses, % patients with terminal disease that have nursing diagnoses, % patients with cardiovascular disease that have nursing diagnoses.
- Patient Safety Indicators: polymedicated patients with treatment reviewed, pressure ulcers prevention in immobilized patients.
- Effectiveness Indicators: Arterial Hypertension Control, Diabetes Mellitus Control.

In the final presentation will provide data on these indicators in primary care in Madrid in 2011 and 2012.

**Implications**

EHR allows the systematic documentation of information and periodic evaluation of the indicators. Having this information at all levels of the organization (professional, primary care health centre, and administrators) makes possible the identification of improvement areas of healthcare. In our field is an essential tool that enables us to keep working to improve the care quality.
Chapter 14 – Nursing Language, Terminologies and Documentation

1. Status of nursing students to determine nursing diagnoses.

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Nursing diagnosis ensures that nurses use a professional language in determination of standards in the sharing and organizing of information, decision making, nursing practice and designating appropriate patient outcomes. They are the basis for nursing care planning, implementation and assessment, used for focusing on patient’s individual response to health-related problems (Gordon 1994; NANDA 2007). Students who graduate before they have been able to learn to work with the nursing process and before they have been able to understand the importance of working with the process (Guner & Terakye 2000).

Determination stage in nursing diagnosis is based on the synthesis of all data that have been collected to guide the nursing care process including interventions. 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. One of the most difficult tasks nursing students are
required to achieve is the determination of appropriate nursing diagnostic statements based on the data collected. Making an accurate diagnosis facilitates the healing of patients and ensures that appropriate care is given in a systematic manner (Carpenito 2004; Kaya, Babadag, Kaya, & Esen 2003). Students become experienced in the various phases of nursing and acquire the skills required for determining nursing diagnosis through their clinical practices. The educational process is important for the development of these skills. To spread the use of standardized nursing language in Turkey, where there is room for research on the use of nursing diagnosis and intervention in both theoretical education and practice.

**Purpose**
This study was planned as a descriptive study for the purpose of determining the nursing diagnosis used by nursing students.

**Design and sample**
The research population consisted of the first year students (32 students) in fundamentals of nursing at nursing departments of health sciences in Turkey.

**Instrument**
At the end of the semester, students were given a sample case prepared by their instructors along with clinical practice related to the course. The case was an actual patient history under treatment in the clinic. The three instructors preparing the case determined 18 nursing diagnosis: Health maintenance, Ineffective; Nutritional imbalanced, less than body requirements; Infection, risk for; Skin integrity, impaired; Constipation; Trauma, risk for; Self-care deficit
syndrome; Mobility, impaired physical; Activity intolerance; Disturbed sleep pattern; Chronic pain; Anxiety; Disturbed body image; Powerlessness; Fatigue; Social interaction, impaired; Coping, ineffective; Spiritual distress.

**Data collection and analysis**

Study data were collected at the end of the 14-week clinical practice, by means of a data collection form. Students were gathered in a silent room and given the data collection form. The case was verbally read to students by the instructor once, an explanation was made regarding how to assess it and they were required to determine the nursing diagnosis of the case. Students’ answers were compared to the predetermined diagnosis of the instructors in terms of number and correctness. Nursing diagnoses were assessed in accordance with the functional health patterns. Numbers and percentages were calculated in the data analysis.

**Findings**

Students, all female, were at the age of 18-21, their mean age being 18.8±0.88. Students were able to determine 15 out of the 18 nursing diagnoses.
Table 1: Distribution of Nursing Diagnosis Determined by Students

<table>
<thead>
<tr>
<th>Nursing Diagnoses</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health perception-health management</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trauma, risk for</td>
<td>2</td>
<td>6.2</td>
</tr>
<tr>
<td><strong>Nutritional-metabolic pattern</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutritional imbalanced, less than body requirements</td>
<td>26</td>
<td>81.2</td>
</tr>
<tr>
<td>Skin integrity, impaired</td>
<td>16</td>
<td>50.0</td>
</tr>
<tr>
<td>Infection, risk for</td>
<td>9</td>
<td>28.1</td>
</tr>
<tr>
<td><strong>Elimination pattern</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constipation</td>
<td>25</td>
<td>78.1</td>
</tr>
<tr>
<td><strong>Activity-exercise pattern</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activity intolerance</td>
<td>13</td>
<td>40.6</td>
</tr>
<tr>
<td>Self-care deficit syndrome</td>
<td>11</td>
<td>34.4</td>
</tr>
<tr>
<td>Mobility, impaired physical</td>
<td>6</td>
<td>18.8</td>
</tr>
<tr>
<td><strong>Sleep-rest pattern</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disturbed sleep pattern</td>
<td>26</td>
<td>81.2</td>
</tr>
<tr>
<td><strong>Cognitive-perceptual pattern</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic pain</td>
<td>19</td>
<td>59.4</td>
</tr>
<tr>
<td><strong>Self-perception pattern</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>17</td>
<td>53.1</td>
</tr>
<tr>
<td>Disturbed body image</td>
<td>11</td>
<td>34.4</td>
</tr>
<tr>
<td>Fatigue</td>
<td>5</td>
<td>15.6</td>
</tr>
<tr>
<td>Powerlessness</td>
<td>2</td>
<td>6.2</td>
</tr>
<tr>
<td><strong>Role-relationship</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social interaction, impaired</td>
<td>2</td>
<td>6.2</td>
</tr>
</tbody>
</table>

Highest ratio of diagnosis identified by the students: “disturbed sleep pattern” (81.2%) “nutrition imbalanced” (81.2%), “constipation” (78.1%), “chronic pain” (59.4%), “anxiety” (53.1%).

Lowest ratio of diagnosis identified by the students: “trauma, risk for”, “powerlessness” and “social interaction, impaired” (6.2%).

Health maintenance, ineffective, coping, ineffective, spiritual distress were diagnosis that none of the students identified. On the other hand, students also identified medical diagnosis, considered them a nursing diagnosis: 28.1% hypertension and 15.6% tachycardia.
Discussion

All diagnosis determined by the instructors, except for the three mentioned above, have also been determined by the students. Nevertheless, the ratio of determination was quite low for the majority of them. In a study by Yönt et al. (2009), the most commonly used nursing diagnosis by students during the clinical practices included pain (39%), knowledge deficit (31.5%), constipation (26.6%), anxiety (25.7%), and nutrition, imbalanced: less than body requirements (20.8%). In a study by Erdemir (2003), nursing diagnosis most commonly used by students were knowledge deficit, nutrition, imbalanced: less than body requirements, anxiety, and pain.

In a study by Abbasoğlu et al. (2003) regarding the use of nursing diagnosis and intervention in clinical practice, it was determined that the nursing diagnosis used most often by students were anxiety (59.3%), pain (46%), risk of infection (45.2%), and knowledge deficit (40.5%). The results of these studies also reveal low percentages of nursing diagnosis identification, indicating the need to focus more on the subject in the undergraduate program. Furthermore, underestimating nursing diagnosis in clinical practice may be the reason that nursing process is not part of patient care program in hospitals in Turkey.

A high ratio of students has identified some medical diagnosis like hypertension and tachycardia as nursing diagnosis. This indicates a confusion in the minds of the students in terms of medical and nursing diagnosis. Findings of a study in Turkey have revealed that % 24.2 of students identify data and %21.9 identify medical
diagnosis as nursing diagnosis (Güner & Terakye 2000), indicating that students are having difficulty in differentiating between medical and nursing diagnosis, focusing unnecessarily on medical diagnosis which cannot be dealt with nursing interventions.

**Conclusions**

Despite the fact that students were first class nursing students and it was their first experience of clinical practice, they were successful at identifying nursing diagnosis except for the few determined by their instructors. The fact that they have identified some medical diagnosis as nursing diagnoses and they failed at identifying some of the predetermined diagnosis could be due to their lack of knowledge in the NANDA classification system and adequate experience as this their first clinical practice.

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Background/Need
Academic nurse leaders (ANL) must support and facilitate the integration of trends and innovations in the education of nurses
and their faculties. The advent of the electronic health record (EHR) is one such trend requiring innovation in nursing education. Research has indicated that the use of the EHR in patient care promotes patient safety, better patient outcomes and cost efficiency (Kutney-Lee & Kelly, 2011). The Institute of Medicine Report (IOM) (2003) recommended the use of the EHR, and, in response the United States (US) government issued a mandate requiring all clinical facilities to implement the EHR by 2014 in order to improve quality of care and patient safety. In advance of these mandates, many clinical facilities have instituted the use of the EHR in the care of their patients. In addition, in 2009 the Technology Informatics Guiding Educational Reform Initiative (TIGER) recommended competencies on informatics for all practicing nurses and nursing students (Johnson & Bushey, 2011). Informatics competencies, such as the basic skills needed to access information and perform documentation activities in an EHR, are integrated into other US educational documents such as the American Association of Colleges of Nursing (AACN) Essentials of Baccalaureate Nursing Education (2008).

Due to the above mandates and recommended competencies, it is imperative that schools of nursing prepare students at all educational levels to be competent in the use of the EHR and to prepare them for practice in the current day health care arena. The aim of this presentation is to discuss the roles and responsibilities of the ANL to support integration of the EHR in nursing curricula.
Role and Responsibilities of Academic Nurse Leaders

The ANL is usually a dean, chairperson, head or director of a school of nursing who is responsible to guide the school in developing and maintaining excellence in nursing education. This involves attention to complex components all of which fall into the realm of the roles and responsibilities of ANL.

The Excellence in Nursing Education Model developed by the National League for Nursing (NLN) (2006) will provide a framework for discussion of the ANL role and responsibilities in supporting EHR in nursing education. The Excellence in Nursing Education Model focuses on five main areas of responsibility in the role of ANL:

1. creating academic environment savvy
2. budgeting and resource management skills
3. establishment of collaborative initiative both inside and outside the School of Nursing.
4. Co-creating healthful work environments with faculty and develop and maintain a positive work organizational culture
5. personnel management skills

Creating an Academic Environment Savvy

The ANL must be academically savvy, in other words must have insight, awareness and practical understanding concerning the environment of the school of nursing. According to Rustin (2006), complex dynamic changes in research, education, practice and technology can create a divide between ANL and faculty, necessitating the ANL to create a climate to bridge this divide. By creating an academic environment savvy, the ANL can pave the
way for implementation of important innovations like the EHR. This may be difficult in view of today’s constrained fiscal climate and limited human resources of faculty and staff. Various leadership styles and theories can assist the academic nurse leader in creating an environment that fosters faculty willingness to explore innovations, such as the use of and teaching of the EHR, develop professional creative teaching strategies, and engage in educational nursing research. ANLs can use the Transformational Theory of Leadership to foster academic environment savvy (Chen & Baron, 2006). This theory guides the leaders who “value the members if their team and work diligently to develop the strength and independence of the followers [faculty]. There is a true sense of shared governance in the group, where each member has a personal stake in the success of the organization”. (Rusin 2009, p. 80-81) The Transformational Theory focuses on the development of faculty and requires the use of strong communication skills of the ANL, not only to tell or inform faculty but to be silent and listen to faculty’s thoughts and suggestions. Individual faculty goals, knowledge and perceptions need to be pondered and considered, as well as the group dynamics, in order to create a “savvy academic environment”.

**Budgeting and Resource Management**

Another important factor to consider in the implementation of the academic EHR is budgeting and resource management. Acquisition of the EHR for academic purposes is expensive. The biggest challenge in choosing an EHR is funding the software and licenses. Costs vary from vendor to vendor and may vary widely in
functionality. Gloe (2010) reports that costs could range from $37,000 to $95,000 (USD) based upon a 3 year contract. Cost per student may also vary widely based upon the number of students and the number of semesters they are in attendance. It is the responsibility of the ANL to manage the allocated nursing budget and to research areas to supplement the budget for specific educational resources that support the strategic goals of the School. At the Department of Nursing at the College of Staten Island (CSI)/City University of New York (CUNY), we prepare students at all levels to practice competently in the current nursing environment. This is consistent with our mission statement and strategic plan, which was developed by the faculty who have voiced their strong support of integration of basic informatics competencies and specifically the use of the EHR for teaching. However, this presents a challenge, shared by many faculties, in actually obtaining an academic EHR. One option is to obtain an EHR from a vendor or affiliated hospital or clinic, but this is not possible at CSI/CUNY. Even if this option was available it would be costly to obtain required licenses, and the resources to install and maintain the application. Fortunately, our high- and mid-fidelity simulation laboratories are already in place and provide realistic simulated experiences. Our faculty agreed that all we needed to complete the “realism” was access to EHR to instruct our students in the documentation during the simulations. Due to limitations of our current system and recent advances in technology, this ANL and faculty have been interviewing textbook publishers to review their EHR offerings. Textbook publishers’ offerings are advantageous
because students can correlate text, class, simulation and EHR in their learning experience. Students pay approximately $30.00 (USD) in addition to the price of the textbook when they purchase their books and have access during the semesters that they are using the books. Networking between several ANL has been invaluable concerning their experiences with well-executed and user friendly software.

Future plans include facilitating the formulation of grant proposals within the group, attending workshops, webinars and site visits where software is being used successfully in the academic setting. It is within the responsibility of the ANL to obtain and provide funding to support faculty in these endeavors.

**Establishing collaborative initiatives inside and outside School of Nursing**

Collaborative initiatives between disciplines in the academic environment are a helpful strategy that can be facilitated by ANLs. In particular, disciplines within the health care arena may have shared interest in the EHR. This interest can lead to shared cost across academic departments. The ANL can begin conversations with leaders of such disciplines as Physical Therapy, Medical Technology, and Physician Assistant programs to determine interest in collaboration and to assess whether these collaborations will assist in furthering educational research and obtaining grant funds for interdisciplinary projects.

ANLs can facilitate external collaborations through discussions with leaders of clinical facilities, and speaking with leaders encountered at academic nursing conferences. These collaborations
can strengthening of EHR of both institutions and provide funding opportunities through partnership and common goals. We are also fortunate to have a strong advisory board made up of leaders in the health care delivery system. They provide valuable insights into each agency’s use of the EHR. They indicate what their expectations of the graduate of our program with respect to proficiency in use if the EHR in the clinical setting.

**Co-create a Healthful Work Environment with Faculty**

A healthful work environment is a co-creation of both ANL and Faculty. ANLs must develop an environment that encourages and welcomes self expression of faculty by all faculty members. Respect for faculties past experiences, knowledge and perspectives on nursing and nursing education opens the gates for free, meaningful discussions. It was through these discussions that the mission, philosophy and departmental strategic plan at CSI evolved. During this process, the ANL and faculty supported the integration of EHR throughout the nursing curricula. (CSI programs encompass Associate in Applied Science, Baccalaureate in Nursing, Masters of Nursing Science degrees.) Faculty at each level is committed to integration appropriate to the level and experience needed.

**Personnel Management Skills**

The ANL is responsible for management of the faculty, laboratory and secretarial personnel. The ANL must observe the group dynamic to determine if problems exist that may jeopardize the success of the entire project. Often strong opinions of faculty and/or staff necessitate Conflict Resolution. A first step is to “assess the controversy and prevent escalation. Often the
[ANL]...will help the involved parties depersonalize the disagreement and improve communication” (Rustin 2009, p 88).

A major barrier to integrating the EHR into the curriculum has been identified as the faculty (Gardner & Jones 2012) who may be unsure of the process of integrating EHRs and lack of computer skill. Identification of this barrier was also suggested by earlier findings of Fetter (2009) investigating curriculum strategies and IT outcomes. Mahon, Nickitas and Nokes (2010) note that one challenge to integration of EHR may be issues of self efficacy of some faculty members in using and teaching this EHR technology.

In the area of EHR, the involvement Information Technology (IT) offices may provide needed assistance and reduce the stress of introducing this newer teaching strategy. When negotiating a contract with a vendor, the ANL should require provision of education, updates and maintenance. The ANL might also arrange for in-service workshops for faculty and involved ancillary personnel. In addition, the ANL can employ a “partnership” strategy to meet this challenge. After identifying faculty knowledge base and “tech savvy” ANLs can partner the more “tech savvy” with the “less tech savvy” for support throughout the integration process in order to assist and facilitate this change. It is clear that promoting a team effort between the faculty and ancillary personnel is important to the success of the EHR and the department as a whole.

**Political Skills**

ANL need to be politically astute both in the college and in the community. ANL must investigate impending legislative changes
and must assess their findings for potential impact on nursing practice and nursing education. In the case of the mandate of EHR for all patients by 2014, this is particularly important. The ANL must present and discuss the potential impacts of these legislative initiatives on the education of nurses with the college administrators. Imparting this knowledge to the Administrators, Academic Leaders and faculty can “set the stage for strategic planning and accomplish the goals of the School of Nursing” (Rustin 2009, p.89. In the case of the EHR, the ANL may engage in lobbying with administration for reassigned time for EHR decisions, selection and implementation as needed.

In conclusion, the role and responsibilities of the ANL are varied. Support and integration of trends and innovations in the education of nurses and their faculty are primary. In the integration of EHR into the curricula, the ANL must create academic savvy; carefully and thoughtfully use budgeting and resources skills; establish collaborative initiatives; create healthful work environments with faculty; be politically astute and utilize personnel management skills in order to accomplish the educations goals of the School of Nursing.

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3. Evaluation of a nursing clinical information system implementation.

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Summary
This original research paper reports a study that was done in 2011/2012 about the viewpoints of nurses’ users about the Nursing Clinical Information System (NCIS) implementation process: How well end user was involved in system life cycle activities and the satisfaction with a new approach for the use of a NCIS. For this we used a questionnaire, based on the Clinical Information System Implementation Evaluation Scale – CISIES (Gugerty, 2005), to evaluate the user satisfaction with the NCIS implementation. The Portuguese translation process included independent translation and back translation. Two forward and two back-translations were synthesized and compared by an expert committee.

Background
The information has constituted a vital element in Health Care. Thus, it is not surprising to see a growing concern with the development of Information Systems (IS) to enable efficient maximization of management service and to improve quality of care.

With the increase of Clinical Information System Implementation (CISI) in healthcare domains it’s necessary to provide the optimal use of resources and investment.
Successful evaluating of CISI helps decision makers to acquire knowledge about their impact and becomes a key matter for all organizations that aim to implement them.

Assumed the importance of Clinical Information System (CIS), it is essential and necessary to evaluate them, i.e., we need to know if they have met the expectations of those who had implemented and what impacts the professional and the institution that adopted. It’s necessary to know if:
The system met their users too satisfactorily? If the costs and investments in CIS have had return? Are they easy to use? Do they provide information efficiently? Are they instruments that encourage improved quality of care?
These are some of the issues that’s begin to put on and for which a lot of times there are no objective responses.
The evaluation of Information System is a key activity to determine the success of the system and ensure the continuity of its use. For AMMENWERTH et al. (2004; 480) evaluation is “the act of measuring or exploring properties of a health information system (in planning, development, implementation, or operation), the result of which informs a decision to be made concerning that system in a specific context”.
The CISI process is uptight with problems and its findings are often regarded as incompletes. For Jokela et al. (2008; 197) one reason for this “is that systems involving human interaction are inevitably messy and complex. One way to handle this is to divide the system into smaller parts and examine each one at a time”.

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The evaluation of CISI is extremely recent in Portugal. Seen, in many cases, the evaluations are bit systematic which do not allow for sustained answers that determine the success of CIS and ensure their continued use. It is necessary to justify the investments, compare the systems in use, identify potential gaps and prepare changes. It is in this context that we have tried to maintain the justification for the development of this study in this area.

**Research Aim/Question/Purpose**

This Research paper reports a user satisfaction evaluation of a new approach for the use of a Nursing Clinical Information System (NCIS). We have proceeded to some changes in the NCIS in use (an electronic system), namely 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, and records of past patient cases) 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. The NCIS change was focused on using informatics tools, principles and practices to enable nurses to make healthcare safer, more effective, efficient, patient-centered, timely and equitable. So, with this study we wanted: to survey the viewpoints of nurses’ users about the NCIS implementation process.
Methods/Process

The timing to assess any CIS influences the ability to determine your success or failure. After the implementation of the new NCIS, a cross-sectional study was conducted.

Gugerty & Maranda (2007) consider in “CISIES© Guidelines” that “the CISIES is designed for administration in the post-implementation period because it is likely that attitudes and behaviors are still forming in the go-live period; and, thus, it is best to administer attitude scales after this period when attitudes are fully formed”. In the same document, they refer that if the CISIES is administered for summative purposes for a system implementation of average scope, it should be administered between 60 days (after system turn-on) and 90 days or later, if the post-implementation period is judged to last longer than 90 days.

Van der Meijden et al (2003) refer in their literature review in this area, that many evaluation results are presented in IS only after one and a half year of the implementation of the new system. However, it is now possible to make an overall assessment of the process so far developed, and meet potential benefits of the CISI.

Like Delone and McLean (2003; 23) said in their framework its necessary take in attention the interrelation between "use of IS" and "user satisfaction". For them “*Use* must precede *user satisfaction* in a process sense, but positive experience with *use* will lead to greater *user satisfaction* in a causal sense. Similarly, increased *user satisfaction* will lead to increased ‘intention to use’, and thus ‘use’.”. As a result of the IS ‘use’ and ‘user satisfaction’ benefits occur, which may be positive or negative. The
impact of these benefits has a direct influence on usage and user satisfaction with the IS.

The 37 CISIES items are scored on a six point Likert scale that ranges from Strongly Disagree (score 1) to Strongly Agree (score 6). The actual scale is Strongly Disagree; Disagree, Somewhat Disagree; Somewhat Agree; Agree and Strongly Agree. Because there is no neutral point, this is a forced choice format, i.e., the respondent must indicate either some agreement or disagreement with the statement.

Approval from the organization’s institutional review board for the administration of the CISIES was obtained. The CISIES was administered in a confidential manner and assurances were given that subjects’ responses would not result in negative consequences for individuals.

The anonymous survey was administered to the nurses that were involved in the implementation process from different wards of a hospital: Medical, Surgical, Medical-Surgical Specialties; and, Delivery Room and Critical Care (intensive care and emergency).

Findings/Outcomes

A total of 269 individuals returned questionnaires with useable data (that correspond an adherence rate of 76,2%). Most of the nurses were women (82,5%). The average age of the participants in our study was approximately 35 years with a standard deviation of 6,78. The median was 33 years and the value most frequently observed is 31 years. The youngest participant has 23 years and the oldest 53 years. A total of 34 nurses (12,6%) don’t has specific previous training about the use of the NCIS changes.
The nurses are from different wards: Medical (32.7%), Delivery room and Critical Care (intensive care and emergency) (31.2%), Medical-Surgical Specialties (22.3%) and Surgical (13.8%).

Data collected were factor analyzed to ascertain construct validity, while reliability was established by assessing the internal consistency. The instrument found an excellent reliability with Cronbach’s alpha coefficient (α=0.94), the same value of developers report (Gugerty et al., 2006).

Mean score of the CISIES items for this administration ranged from a high of 4.72 to a low of 2.33. The means for majority (28) of the CISIES items were 3.6 or greater, which indicates satisfaction with the implementation. However, eight “negatively” worded items are in this group.

The five items that received the highest scores (presented in order from highest to lowest score) indicate that at the time of administration (post-implementation) the users had a strong belief that:

1. “People who use the system should have had more to say about the design of the system” (\(\bar{x}=4.72\));
2. “Members of other disciplines should receive more training regarding how their entry of information affects the use of the system” (\(\bar{x}=4.69\));
3. “They are committed to the successful use of the system” (\(\bar{x}=4.66\));
4. “It takes too much time to help others who don’t know how to use the system” (\(\bar{x}=4.62\));
5. “The system has added to their workload.” ($\bar{x} = 4.60$); The five items that received the lowest scores and indicate that at the time of administration (post-implementation) the users:

1. had a weakly sense “The system makes they feel like they are no longer functioning as part of a team” ($\bar{x} = 2.33$);
2. had a weakly sense “The system allows them to spend more time on other aspects of patient care” ($\bar{x} = 2.56$);
3. believed that “When the system is unavailable, the backup way of doing things works adequately” ($\bar{x} = 3.15$);
4. believed that “They feel the use of the system has improved patient outcomes” ($\bar{x} = 3.16$);
5. believed that “They feel their colleagues sometimes resent the time it takes them to get things done using the system ($\bar{x} = 3.16$);

The original theoretical sample sub-dimensions of the CISIES are: “impact on practice”, “work/work team” and “general satisfaction”. To reduce the large dataset to a smaller number of underlying explanatory constructs we did an exploratory factor analysis (Costello & Osborne, 2005): principal components analysis with varimax rotation as the method used for data analysis. This factorial validation of an instrument can be used to identify core constructs. Our expectation was that groups of items included in this instrument would define separate factors and that these factors would correspond with the constructs purportedly measured by the CISIES. In our work, five factors were extracted
from the factor analysis that indicate the user satisfaction with: “system quality”, “service quality”, “user impact”, “support and data protection” and “health professional involvement”.

We can associate these sub-dimensions with the original theoretical sub-dimensions of the CISIES: “system quality” and “service quality” with “general satisfaction”, “user impact” with “impact on practice” and “support and data protection” and “health professional involvement” with “work/work team”.

The CISIES scoring scheme allows researchers to compare means, and analyze data in a number of other ways, with less confusion and a more intuitive understanding of the data. Originally, possible scores for CISIES items range from six which suggests extremely satisfied to one which suggests extremely dissatisfied. Most CISIES items are “positively” worded. During data analysis, the ten “negatively” worded items were recoded to facilitate comparison among items.

In order to reduce the likelihood of respondents simply checking one response (e.g., strongly agree) for all the items—while not carefully reading the statements--some items are negatively worded. The ten “negatively” worded items are scored in an opposite manner than the positively word items. Thus, strong agreement on a negative item is scored as -5 and strong disagreement on a negative item is +5 making the negatively word item comparable to the positively worded items.

There are positively and negatively worded items, and items are recoded for the analysis of overall score (also known as a total scale score). Its results in possible scores on each item ranging from −5
to 5. Since the CISIES items express satisfaction or dissatisfaction with a system implementation, a positive score is interpreted as satisfaction with the system implementation and a negative score as dissatisfaction with the system implementation.

The findings show that the overall score (also known as a total scale score) for CISIES was 0.22 (mean score of all items). Scores of -0.5 to 0.49 indicate that in general the nurses are neutral to the implementation of the system. This value can mean several things (satisfied with some aspects and not others or some satisfied overall and some not satisfied overall). This means that it’s best to examine responses to individual items and individual mean scores.

As the CISIES was administered in different care wards (Medical, Surgical, Medical and Surgical Specialties, Delivery room and Critical Care - intensive care and emergency), it’s possible to see in the following table (1) that the overall score is different from specifics wards.

The findings show that the total scale score in Medical ward was 1.1 that indicates low degree of satisfaction with the system implementation. This range suggests that there were at least some problems with the implementation of the system. To Surgical and Medical/Surgical Specialties wards in general the respondents are neutral to the implementation of the system. However, in Medical/Surgical Specialties wards the range is a borderline value to low satisfaction degree. This means that it’s best to examine responses to individual items and individual mean scores.
Table 1 - Overall score for CISIES in different wards

<table>
<thead>
<tr>
<th>ward</th>
<th>Mean</th>
<th>Median</th>
<th>SD</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical ward</td>
<td>1,1</td>
<td>1,1</td>
<td>0,87</td>
<td>-1,32</td>
<td>3,05</td>
</tr>
<tr>
<td>Surgical ward</td>
<td>-0,31</td>
<td>0,19</td>
<td>1,53</td>
<td>-4,06</td>
<td>2,03</td>
</tr>
<tr>
<td>Delivery room &amp; Critical Care (intensive care and emergency) ward</td>
<td>-0,67</td>
<td>-0,62</td>
<td>1,20</td>
<td>-3,59</td>
<td>1,81</td>
</tr>
<tr>
<td>Medical and Surgical Specialties wards</td>
<td>0,49</td>
<td>0,64</td>
<td>1,27</td>
<td>-2,84</td>
<td>3,76</td>
</tr>
<tr>
<td>GLOBAL</td>
<td>0,22</td>
<td>0,41</td>
<td>1,39</td>
<td>-4,06</td>
<td>3,76</td>
</tr>
</tbody>
</table>

For Delivery Room and Critical Care (intensive care and emergency) wards the score is lower than -0.5 which indicates that respondents are clearly dissatisfied with the implementation of the system, with a very high likelihood of problems with implementation or with the experience of interacting with the system.

Conclusion

User satisfaction is a key factor for the success of any information system. The study showed that it is important to include users in the early stages of the development and evaluation process of NCIS. This will ensure the user-friendliness and accuracy of NCIS to be used. The implementation of the system it was perceived less desirable by some nurses from specific wards’ users. The difference in viewpoints suggests that users’ job affect the rate of their satisfaction. It is recommended that system providers pay special
attention to the needs of some nurses’ users, when designing and proceed to the implementation of a NCIS. This means that appropriate design of IT can lead to more productivity, reduce errors, fit within workflow, improve accuracy, be easy to learn, and lead to more satisfied healthcare providers. Health informatics needs further studies identifying the factors affecting successful Clinical Information System Implementation. 

Keywords: evaluation; implementation; clinical information system; satisfaction; evaluation scale; implementation evaluation; nursing.

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Background
Standardized languages have been critiqued for being far-off from reality (Martinsen, 2003). Reality is rich and varies. How can a terminology system capture these variations and richness – and attend to nurses’ and patients’ language? Using terminology standards in nursing care may improve the preciseness of our expressions; improve safety, quality of nursing care, and patient outcomes. International Classification for Nursing Practice (ICNP) is a terminology system that can represent variations, capturing cultural sensitive expressions and terms. After a thorough evaluation in 2009, the Norwegian Nurses Organization recommended that ICNP should be implemented in all electronic health records in Norway.
A major challenge is that terminologies are usually developed in English and must be translated. A translation must capture the meaning of the term, which means that you may not have a direct translation word for word. Culture defines itself through language and it is a starting point for identity in our profession. Encountering other unknown languages and cultures may create distance and uncertainty (Skarland 2011). Therefore when translating and implementing a terminology developed in another language and/or culture, you must ensure the correct meaning, between different areas in clinical practice and in other countries.

Research Aim/Question/Purpose

The aim of this translation was to capture the conceptual meaning that reflects nursing in various contexts and cultures.

Methods/Process

We followed the guidelines of ICNP (ICNP 2008), using the described Delphi method and the Cross Cultural Adaptation Method.

1. Selecting members and establishing an editing group.
2. The translation process (forth-back - forth)
3. Validation

Criteria for selecting members were representation of expertise, culture, practice, knowledge specialties and regions.

We strived for semantic and conceptual equivalence, using work sheets, dictionaries (English-English, English-Norwegian, Norwegian-English, ).

Validation of the translation was conducted in several steps, including a “top-down”- and “bottom up” validation;
- Re-considering the uses of concepts in various contexts
- Search for expressions used scholarly and in written form (Google scholar)
- Consulting expert nurses and physicians in various clinical settings and The Language Council of Norway
- Using an electronic knowledge based procedures for nursing care (PPN- Practical Procedures in Nursing) for back-translation

Findings/Outcomes
In Version 2 of ICNP we translated the concepts “strictly”, word for word. When critically reconsidering this translation, we found many concepts did not reflect nursing in Norway. In version 2011 we re-evaluated the translation to ensure variations that represents nursing in various contexts. First, we had to grasp the meaning of challenging English concepts; descriptors in ICNP were important. When descriptors were lacking we used English – English dictionaries, looked for the concepts in Google, as well as discussing the meaning and use with the ICNP international board. We found it necessary to include synonyms. Cultural equivalence was further improved with back-translation using PPN.

Implications
This work may provide knowledge about cross cultural adaptation to ensure a good translation of nursing terminologies in general. It may be of significance to ensure usefulness for clinical nursing as well as research across contexts and cultures.
Chapter 15 – Posters

1. Nursing documentation in simulation learning

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Background
Evidence based practice and structured documentation should be competences of every nurse. It is important to develop skills and knowledge of clinical decision making and documentation of nursing students. The focus of this poster is to develop learning of student in simulation in co-operation with students. Evidence-based nursing practice is based on the view that nurse decisions should be based on the best available scientific evidence and recognizing patient preferences, the context of healthcare and the judgment of the nurse. In order to implement evidence-based practice every nurse needs the competences to monitor the ways in which new evidence knowledge is disseminated, to be able understand the meaning of best practice and to put that evidence knowledge in to clinical practice. Nurses also need to evaluate the effect of care. The nursing process is the structure for evaluating every patient’s care. Electronic nursing documentation is based on the nursing decision making, nursing process model and Finnish
Nursing Care Classification (FinCC). The FinCC consists of the Finnish classification of nursing diagnoses (FiCND), the Finnish classification of nursing interventions (FiCNI) and the Finnish classification of nursing outcomes (FiCNO). FinCC has been integrated as a part of the national Electronic Health Record (EHR)-solutions. Health care organizations must connect to the national information service system by year 2014 and use electronic health record and the national e-Archive. The National Nursing Documentation Model, which contains the FinCC system, is related to the transition to the National e-Archive of Health Information. This all calls for the new knowledge and skills for nursing students because they need to learn to understand the means and use of best practice in nursing, to use nursing documentation model, FinCC and nursing documentation into the EHR.

Research Aim/Question/Purpose
The aim of this poster presentation is to describe students’ development of learning of evidence based nursing and systematic nursing documentation in simulation. The objective is to develop the skills and knowledge of clinical decision making and systematic nursing documentation of the nursing students in simulation environments.

Methods/Process
In simulation, learning environment students can learn clinical practice in a safe environment. Simulation trainings can be in patient simulation or in virtual simulation environments. Simulation can be defined as a person, device or set of conditions
made to resemble a real life situation. The nursing documentation is part of simulation trainings. Students are learning skills and knowledge of clinical decision making and systematic nursing documentation with the Learning by Developing (LbD) pedagogical approach.

**Findings/Outcomes**

Students are learning in simulation trainings, projects and developing a simulation electronic documentation platform (EDP) together with teachers and professionals. Students are planning patient scenarios with medical and nursing best practice information with EDP.

**Implications**

Nursing students will have a deeper understanding of decision making, best practice guidelines and national model of documentation when they build up patient scenarios with EDP. Simulation learning gives more clinical competences to patient safety and quality of care and provides real world opportunities to learn clinical decision making in nursing care with simulation patients.

*Keywords: evidence based, simulation, nursing documentation*
2. Connecting evidence based knowledge and clinical practice through electronic documentation

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Background

A group of nurses at the hospital in Akureyri are striving to improve clinical instrumentation that reflects in more accurate nursing documentation. By using procedure protocols and work guidelines to clinical practice the group tries to promote nurse’s critical thinking and the quality of nursing documentation.

Research Aim/Question/Purpose

Aim The aim was to connect evidence based knowledge, use of procedure protocols and work guidelines to clinical practice by the nursing care plans. Fast-track of patients is an ideology which aims at faster recovery, potentially fewer complications and shorter length of stay after surgery. The aim of the work was: 1) to develop uniform criteria for each patient group as a whole in the form of procedure protocols (describes interdisciplinary (overall) procedures where a certain process, plan and organisation are described for certain patient groups and the role of each professional group in the care of these patient groups is explained) and work guidelines (describes how a procedure or activity should
be done by a certain group of professional) and ensure continuity in care and documentation based in interdisciplinary collaboration; 2) to activate the patient and significant others to participate in the care. Encouragement, counselling and support were considered important through the whole process.

**Methods/Process**

Methods In 2009 an interdisciplinary team started reviewing the process and treatment of patients undergoing certain surgical procedures at a surgical and orthopaedic ward at the Akureyri Hospital in Iceland. Examples of patient groups are those undergoing prosthetic procedures, operations due to hip fractures, cholecystectomies, procedures on the prostate and thyroid, and women undergoing operations on female organs. The interdisciplinary teams included nurses, surgeons, anesthesiologists, physical and occupational therapists. The process of the patient started when a decision on a surgical procedure was made through pre-operative preparation, patient education, admission, post-operative care and was followed through discharge. The emphasis was on patient participation and his/her responsibility for own recovery. Work guidelines based on evidence based knowledge were developed by each professional group, which were then utilized for quality documents and made accessible electronically within the hospital. Quality documents for each patient group are based on procedure protocols and each protocol may have several work guidelines. From the quality documents semi-standardised nursing care plans were developed.
and put into the electronic health record which nurses can then apply for the patient groups mentioned before.

**Findings/Outcomes**

Results Nurses working with the electronic health records now use guidelines and evidence based knowledge. The recorders are now writing information about the patients is more accurate, and there is more continuity in nursing registration documentation. The result of all this work has deepened the understanding by of nurses on the foundation nursing program is based on.

**Implications/Conclusions**

The aim was to connect evidence based knowledge, use of procedure protocols and work guidelines to clinical practice by the nursing care plans. By that quality of care, patient safety and coordination of work procedures can be increased as well as nursing documentation.

*Keywords: Electronic documentation, patient safety, Procedure protocols, Evidence based practise, nursing documentation*
3. Clinical experience with the use of standardized nursing diagnoses and interventions terminologies for a child requiring ECMO and nitric oxide under intensive care

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Background

Total anomalous pulmonary venous drainage (TAPVD) is a disease in which all pulmonary veins abnormally drain to the right atrium, accounting for approximately 2% of all individuals with congenital heart diseases (CHD). Early surgical intervention is mandatory, once mortality rate in the first year is around 80 to 90%. Nitric oxide (NO) is a widely accepted standard of care for postoperative pulmonary hypertension and has been studied in the context of cardiac surgery for CHD. Extracorporeal membrane oxygenation (ECMO) provides lifesaving hemodynamic and respiratory support to neonatal and pediatric patients with a variety of congenital or acquired cardiopulmonary defects.
**Research Aim/Question/Purpose**
To identify nursing diagnoses (ND) and interventions (NI) for a child requiring ECMO and NO.

**Methods/Process**
Case report of a child requiring ECMO and NO supports. Data were retrospectively collected from medical records in September 2012. ND and NI were obtained by two Cardiac nurse specialists familiar with NANDA-I and NIC taxonomies and reviewed by two other nurse specialists. These data were then compared with literature on the topic.

**Findings/Outcomes**
A 6-month-old child submitted to surgical correction of TPVAD and interatrial communication in a reference Cardiology hospital in São Paulo, Brazil, in August 2012 required ECMO and ON support installed in the intraoperative period and prolonged into postoperative period. The main ND identified were Decreased cardiac output, Impaired spontaneous ventilation and Risk for bleeding. Among NI proposed were Vital signs monitoring, Airway maintenance and Bleeding control.

**Implications**
Three main ND and 3 NI were identified/proposed. Nursing care organization using standardized terminologies in the context of assistance technologies give priorities visibility, leading to increased resolutivity of the nursing praxis.

*Keywords: Intensive nursing care, nursing diagnosis, Nursing intervention*
Background
Nursing personnel in nursing homes are by law obliged to document planned and preformed care for residents [1]. Nursing documentation is essential for the communication process between the nursing personnel, and regularly reviewing nursing documentation with use of measurements instruments may give valuable information about the completeness and comprehensiveness of nursing documentation. Valid and reliable measurement instruments for reviewing nursing documentation may help in identifying areas for quality improvement.

Research Aim/Question/Purpose
The objectives of this study were to describe completeness and comprehensiveness in the documentation in nursing homes and measure the test-retest reliability and the inter-rater reliability of the instrument N-Catch.

Methods/Process
The study had across-sectional retrospective design. The D-Catch instrument, developed by Paans et al. [2] based on Cat-ch-Ing [3],
for assessing the content and comprehensiveness in nursing documentation was translated from English to Norwegian by a team from Oslo University Hospital and named N-Catch. N-Catch was used for the record review of a convenience sample of 200 electronic patient records from four nursing homes in southern Norway. Test-retest and inter-rater reliability tests were conducted, and data were analyzed with descriptive statistics and non-parametric statistical methods.

Findings/Outcomes
The results showed that 98 percent of the resident’s records included standard care plans and 95 percent of these standard care plans were individualized. Only 25 percent of the nursing care plans were regularly updated, and there was a lack of nursing diagnoses, goals and nursing interventions. The percentage agreement in the test-retest assessment of the items varied from 50 percent to 100 percent. The inter-rater reliability was rated between two independent raters varied from 60 percent to 100 percent.

Implications
The nursing care plans were mostly individualized, but not regularly updated and showed a lack of documentation of the elements of the nursing process. Overall, nursing diagnoses, goals, nursing intervention and progress notes were present, but showed flaws in quality. The N-Catch instrument may provide nursing home managers and nursing personnel with information about completeness and comprehensiveness in nursing documentation. The results from the test-retest and the inter-rater reliability test
showed a systematic inconsistency between the raters on four of the items. N-Catch needs further development to be regarded as a reliable instrument for reviewing nursing documentation in nursing homes.

*Keywords: N-Catch, nursing documentation, nursing homes, record audit*

**References**


**5. Identification of the psychospiritual needs of patients in anamnesis**

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**Background**

The psychospiritual needs represent the search for transcendence, they are linked to the understanding of the meaning of life and the path chosen for this can be given from the religious practices or self
knowledge. Thus, due to the increasing complexity in the health demands of the populations served, it is necessary to integrate the physiological needs, psychosocial and psychospiritual care of nursing. The patient's anamnesis should cover the items needed to identify some of the defining characteristics, that lead to nursing diagnoses (ND) related to the psychospiritual needs. We emphasize the importance of deepening the theme in order to better understand the beliefs and values of individuals, as these influence the lifestyle and the way they face the processes related to health and disease. Besides helping in understanding the human dimension and thus increase the quality of nursing care rendered.

**Research Aim/Question/Purpose**
Describe one of the instruments in addressing the psychospiritual needs in the nursing anamnesis that allows the determination of the defining characteristics (DC) with a view of selecting the ND in the domain Principles of life.

**Methods/Process**
The identification of DC requires a permanent listening of the individual/family, with attention to both verbal and non-verbal language, so that they can validate the ND listed. The identification of psychospiritual needs, although it is essential in human care, not always is done, among the main reasons are the lack of ways to approach this subject and the difficulty of health professionals to connect with their own spirituality. One of the ways for nursing to develop this "way of caring" is the active listening that can indicate the different manifestations of psychospiritual needs such as: anxiety, denial, request for family support and religious expression.
of the latest decisions, plans for the future, reflection and discussion about beliefs among others.

**Findings/Outcomes**

One of the instruments proposed to identify the psychospiritual needs, is the model FICA (Faith - beliefs and/or values of the individual; Importance - importance of these beliefs and/or values in life; Community – belong to spiritual and/or religious groups; Adress - ways in which health professionals can assist in the meeting of the spiritual needs), signaling issues to be addressed during the collection of the history of the individual/family, with the finality of plan the care.

**Implications**

The inclusion of these aspects in the anamnesis qualifies the nursing care, to deepen the knowledge about the beliefs and values of patients and enables the identification of the defining characteristics suitable for the accurate application of ND.

*Keywords: nursing diagnosis, anamnesis, spiritual needs*

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6. **Impaired sleep pattern and insomnia: are both necessary?**

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Background
The Nursing Process (NP) favors patient safety and quality of records, and it also gives visibility and autonomy to nurses, since it consists in an evidence-based practice. The use of NP in clinical scenario is a goal of health institutions and a reality in a university hospital in the south of Brazil. This university hospital has been using the Nursing Process since the 1970s, and in 2000 it was introduced in the patient’s electronic record. The nursing records contemplate Anamnesis and Physical Exam, Nursing Cares Prescription and Evolution. In this occasion the Nursing Diagnoses (NDx) were implanted using NANDA terminology Wanda Horta’s Basic Human Needs theoretical reference. The Nursing Process Commission (COPE) has been active since the 1990s, and it is responsible for the NP used in the hospital, having, among its main attributions, the task of improving the computerized system. So as to fulfill its responsibilities, this commission has been working on updating or including new NANDA-I’s NDx.

Research Aim/Question/Purpose
To report the diagnoses revision process of Domain 4: Activity/Rest, Class 1: Sleep/rest from NANDA-I previously to informatized system update.

Methods/Process
Descriptive study of experience report, carried out in a university hospital from the South of Brazil, in 2012. Participants are professors and nurses integrating the Nursing Process Commission.
Findings/Outcomes
A historical revision has been performed to identify nursing diagnoses from NANDA-I’s Domain 4: Activity/Rest, Class 1: Sleep/Rest, which in the studied hospital is located under psychobiological need, Sleep and Rest subgroup. The NDx “Sleep Pattern Disturbance”, introduced in NANDA’s Taxonomy I in 1980 and reviewed by the Diagnosis Development Committee (DDC) in 1998 (Heather, 2012), awarding a new review in 2006, when it changed its denomination from Disturbed Sleep Pattern to Insomnia. This NDx is defined as “disturbance in quantity and quality of sleep which impairs a person’s normal functioning.” However, the diagnostic title Impaired Sleep Pattern remained in NANDA-I with the definition “Interruption of quality and quantity of sleep, limited by time, due to external factors”. This change created confusion since the NDx Insomnia contemplates both internal and external factors. Thus, we question the need for a Impaired Sleep Pattern NDx, since it is contained within the Insomnia NDx.

Implications
The study carried out by the Nursing Process Commission in order to update the informatized system has made possible to analyze several NDx and to identify how two of them superpose to each other while belonging to NANDA-I’s Sleep/Rest Domain. In order to aid development of this classification, these questionings will be forwarded to the DDC for analysis.

Keywords: Sleep, nursing process, nursing diagnosis, classification
7. Cues for nursing diagnosis of impaired skin integrity impaired skin integrity in dialysis therapy in Japan

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Background
In Japan, the number of chronic kidney disease patients has increased with the aging population and lifestyle related diseases. On the other hand, the survived rate has also been improved due to advances in dialysis therapy. Therefore, patients with complications have increased, it is said, and pruritus of the skin is the biggest problem among chronic complications.

Research Aim/Question/Purpose
We aimed to identify the cues of expert nurses and validate the cue information on the defining characteristics for a nursing diagnosis of impaired skin integrity in dialysis therapy in Japan.

Methods/Process
We used qualitative interviews and two-round Delphi studies.

Findings/Outcomes
The expert nurses regarded one sign of impaired skin integrity as major defining characteristics and six other cues as minor defining characteristics.
Implications
DLNs considered these symptoms as important for the diagnosis of impaired skin integrity. Regarding the risk factors, they focused on the pathophysiological conditions; chronic pruritus appeared to be one of the most uncomfortable symptoms. Verification of the clinical validity and development of a specific, clinically useful database on nursing diagnoses are required.

Keywords: IMPAIRED SKIN INTEGRITY, nursing diagnosis, dialysis

8. Opportunities with integrated cancer blog - a Swedish pilot project on cancer rehabilitation process

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Background
Today, the main cause of death in the Sweden is cancer. There are approximately fifty thousand of cancer incidents according to the Swedish Cancer Registry. Cancer is complicated, both medically and psychosocially, and the process of the disease affects the whole human being, psychological strain, but even their relatives, workmates and close friends are affected. In order to enable and facilitate cancer research, the health care community is striving towards structured information of questions related to cancer. The purpose of this abstract is to explain the development and
integrating of a cancer rehabilitation process where a blog is the central part of the rehab process.

**Research Aim/Question/Purpose**
In order to investigate the structure and process of rehabilitation of cancer, the blog has improved the knowledge and also increased the interaction between the patients.

**Methods/Process**
The interviews that took place with professional doctors and patients hosted at two different times in two years. The most important question that was answered during the interview was the importance of strength and weaknesses during the rehabilitation of cancer. The interview questions has also improved by a questionnaire that was available on the blog.

**Findings/Outcomes**
The blog is an essential part of communication between the two parties of professionals and patients. The blog improves the dialogue between relatives and also people outside regarding any questions related to cancer. The purpose of the blog made it possible for different social aspects in the department of to communicate during one platform.

**Implications**
The purpose of the blog made it possible for different social aspects in the department of to communicate during one platform.

*Keywords: internet, blog, cancer, patient, integrated communication, cancer blog, health care professionals, patient, integrated communication, cancer blog, health care professionals, patient, integrated communication, cancer blog, patient, relatives,*
9. Nursing results according to the Nursing Outcomes Classification (NOC) in palliative care of cancer patients with acute and chronic pain: research project

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Background
Introduction: Cancer pain is a major cause of suffering for patients under palliative care, what motivates the nursing staff to improve the care and evaluation of such patients. The Nursing Process (NP) has among its aims the identification of human responses, allowing the promotion of necessary conditions for the care, the implementation of actions, and systematic evaluation. The Nursing Outcomes Classification (NOC) is a standardized classification that describes the results obtained by patients as a result of nursing interventions. However, it is still undergoing refinement and requires further studies about its applicability.

Research Aim/Question/Purpose
To verify the clinical applicability of the results and indicators of the Nursing Outcomes Classification (NOC) in patients with diagnoses of Acute and Chronic Pain in palliative care.
Methods/Process

Prospective cohort study to be conducted in a palliative care unit of a university hospital in the south of Brazil. The population of the study will be comprised of nurses with expertise in palliative care and patients of both sexes with Nursing Diagnosis (ND) of Acute Pain and/or Chronic Pain in their medical history. Patients included in the study must have established NDs and also must have their initial evaluation performed on admission or within six hours thereafter. Individuals who are not assessed in this mentioned period will be excluded of the study. Data collection will be carried out in two stages. In the first one, the results and NOC indicators to be applied in the study will be selected, which will be subjected to consensus among nurses who are specialists in patient undergoing cancer palliative therapy in oncology units of two large hospitals in the south of the country. For the selection of results and NOC indicators an instrument prepared by the researcher will be delivered to the specialists. In the instrument there are the results and nursing indicators related to NDs of Acute and Chronic Pain to be marked by the specialists with the options "select" or "not select". The second stage of the study concerns data collection of patients’ evaluation by the use of an instrument that will contain the results and NOC indicators previously selected and validated by consensus. Verification of the applicability of nursing results and indicators for ND of Acute and Chronic Pain will be done through three daily evaluations to be performed at the time of admission, and then at least once per shift, during a maximum period of seven days or until hospital discharge. The project will be assessed by the
Committee of Research and Ethics in Health, taking into account the Guidelines and Standards for Research Involving Human Beings.

**Findings/Outcomes**

Study on the development stage.

**Implications**

Final Considerations: Aims to subsidize the assessment qualification of oncologic patient with pain in palliative care through the application of results and NOC indicators.

*Keywords: Acute Pain, Chronic Pain, Palliative Care, Result Assessment (Health Care)*

10. Developing documentation to meet a quality agenda

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**Background**

This poster details a project to improve the quality of nursing documentation through the introduction of standardised language into the paper record. While standardised languages such as NANDA-I, NIC, and NOC are commonly associated with electronic records which have inbuilt language capabilities, the problem posed by introducing standardised language into the paper record require a different approach. This project arose in response to a
need to address the shortcomings in a paper record in a small acute
city hospital and to meet the needs of standardised care pathways
within the acute setting. The work is considered to be first step in
clarifying nursing knowledge and its relevance to patient care

Research Aim/Question/Purpose
The project was managed by Practice Development with
involvement of the third level partner and managed by a working
group. This body took the project through from the initial
exploration stage to the implementation of the new documentation.

Methods/Process
Experts from the broad nursing community contributed to the
initial meeting and acted as advisors on an on-going basis. Initially
outside experts were consulted to present as wide a field of
possibilities as would allow for innovative thinking. At the early
stage the project team concentrated on education around
standardised languages and the potential benefits. NANDA-I, NIC
and NOC based on Marjory Gordon’s Functional Patterns of Health
were the languages of choice

Findings/Outcomes
A Nursing Documentation format has been developed that meets
quality standards and is clinically accepted. Results demonstrate
that the nursing record is focused, complete and relevant to the
patients’ needs. Nursing staff have integrated standardised
terminology into their practice are areas of care psychosocial care
and communication have been integrated into the nursing record.
The record is now capable of plotting the nursing input or nurse
sensitive outcomes of patient care. The next phase will be to incorporate meaningful nursing data into clinical care pathways.

Implications
This project has implication for portraying nursing work beyond the physical care and into psychosocial care and nurse-patient communication which hitherto has been invisible within the current hospital documentation process.

Keywords: documentation, Quality Improvement, Standardised Language

11. Validation transcultural of scale of spirituality in Brazil: to identify the nursing diagnosis spiritual distress

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Background
Whereas spirituality is an integral part of nursing care to the patient, this study sought to understand this need in order to accurately identify the nursing diagnosis spiritual distress. Whereas spirituality is an integral part of nursing care to the patient, this study sought to understand this need in order to accurately identify the nursing diagnosis spiritual distress.

Research Aim/Question/Purpose
To perform a transcultural validation of the instrument of spirituality "Spiritual Assessment Scale" proposed by Mary Elizabeth O'Brien to Brazil.

**Methods/Process**

We developed a specific tool for the validation transcultural statement based on studies of Lynn, which contained four response categories (Likert scale). The first step had consisted in the application of the tool developed with 6 "experts" in the area of Spirituality and Nursing to assess the scale of spirituality ("Spiritual Assessment Scale" - SAS-Spiritual Assessment Scale) with 21 questions. After validation with the "expert" was applied the same procedure with 11 patients with chronic degenerative disease, the Unit of Clinical Medicine at a private hospital to validate the scale of spirituality. Statistical analysis: The method of descriptive analysis was done by the frequency of categorical variables and measures of dispersion and position of the continuous variables. To validate the instrument, were performed to analyze the internal consistency, comparing responses with binomial test, range test and Mann-Whitney. The measure of reliability and internal consistency were obtained by Test Statistics Cronbach's Alpha.

**Findings/Outcomes**

The characterization of the variables of socio-educational experts (n = 6), which showed that 83.3% were female, with the level of education 50% had post graduation courses (specializations) and 50% had post-graduate studies (Masters). Regarding the time of experts formed in years, ranged from 5 to 42 years, with a median
of 11.5 and a mean of 15.3 ± 13 years. The characterization of socio-
demographic variables of patients who participated in the study (n = 11), it was noted that 54.5% were female and the mean age was
49.6 ± 18 years. About education 18.2% had grade 1º complete and
54.5% had grade 2 complete. In the analysis in general there is a
low percentage of responses "not understandable," evidence that
the questions are appropriate for use in research, the percentage of
patients in clinical medicine, behavior distribution for each
question was similar to the experts. Binomial test was applied to
the participants (n = 17), to check the understanding of each issue
is significant when compared to other options, range test was
applied, which examined the degree of concordance between the
answers to all the questions individuals, the answers mostly agree.
Was performed and Cronbach's coefficient alpha was obtained
value equal to 0.788, indicating an acceptable reliability (between
0.7 and 0.8).

Implications
It can be said that in both groups (patients and expert) the internal
consistency was high, which ensured the validation idiomatic and
semantics of the original scale, which demonstrates the
effectiveness of the scale after validation for Brazil, which will allow
nurses use this scale to assess the presence d Nursing Diagnosis
spiritual distress through this tool.

Keywords: Spirituality, nursing diagnosis, spiritual distress, nursing
12. How to elaborate a book about nursing care plans: the ADELANTE project

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Background

Knowledge management about nursing languages should be a critical issue for future nurses. In order to deep in the use of nursing diagnosis, outcomes and interventions, nursing students should develop critical thinking abilities and resources to assess/evaluate reality with accurately.

Research Aim/Question/Purpose

One of the ADELANTE project main outcomes was the elaboration of a Hand-book that compiles different care plans using that use nursing taxonomies. This book will be very useful for nurses and nursing students.

Methods/Process

All 2nd Degree Nursing Students chose in their clinical ward a specific case, and made a 3 weeks follow-up. Eight nursing experts nurses (clinical nurses, health care workers, researchers and professors) chose only seven of them in order to be published in the book. Both, students and experts worked along several months to refine each case study the clinical case and configure it as a book chapter. Finally, a peer-review process was implemented.
Findings/Outcomes

“ADELANTE: How to learn nursing language and taxonomies” is now a reality. Each chapter has a case study with an exhaustive assessment of a clinical case, and proposes a limited number of nursing diagnosis, outcomes, indicators, interventions and activities for different clinical situations. Each part of the care plan has been deeply argued discussed and detailed in the chapters. Nevertheless, this book should not be understood as a guide, but as a proposal for the development of nursing care plans following a clinical reasoning process reasoned methodology.

Implications

It must be discussed how this book has used of some concepts such as collaborative problems or nursing indicators in order to understand better nursing taxonomies better.

Keywords: Students, Nursing Taxonomies, nursing
13. Development and psychometric testing of a short version of the position on nursing diagnosis scale

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Background

People’s attitudes about concepts have an important role in the implementation of behaviours associated with them. Therefore, nurses’ attitudes toward nursing diagnosis are an important consideration in its use. The Position on Nursing Diagnosis (PND) is a 20-item scale that uses the semantic differential technique to measure nurses’ attitudes towards the nursing diagnosis concept. This instrument has demonstrated evidence of reliability and validity in the original English (Lunney & Krenz, 1992), Brazilian-Portuguese (Cruz et al., 2006) and Spanish (Romero-Sánchez et al., 2012) versions. Nevertheless, extremely high values of alpha found in all validation studies suggest that some items are redundant. In this case, it may be convenient to eliminate redundancy by deleting
items that would result in a shortened version of the scale that would also reduce the time needed for its completion.

**Research Aim/Question/Purpose**
The aim of this study was to develop a shortened form of the Spanish version of the PND and evaluate its psychometric properties.

**Methods/Process**
A double theoretical-empirical approach was used to obtain a short form of the PND, the Position on Nursing Diagnosis-7-Spanish Version (PND-7-SV). Using a cross-sectional survey design, the reliability (internal consistency and test-retest reliability), construct (exploratory factor analysis and known-groups technique) and criterion-related validity (concurrent validity) and sensitivity to change of the PND-7-SV were assessed in a sample of 476 Spanish nursing students.

**Findings/Outcomes**
1. The shortened scale. 7 items were selected on the basis of their psychometric performance in a previous study. Retrieved items were reviewed to ensure reasonable content, coverage and equivalence.
2. Reliability. 2.1. Internal consistency: The scale showed satisfactory levels of internal consistency, obtaining a Cronbach’s alpha coefficient of 0.88 and corrected item-total correlation coefficients ranged from 0.37-0.78. 2.2. Test-retest reliability: Adequate temporal stability was found in a two week period (Intraclass correlation coefficient=0.92; CI 95%=0.88-0.95; n=101).
3. Validity. 3.1. Construct validity. 3.1.a. Exploratory factor analysis: In the principal component analysis, all items loaded strongly on a single-factor (0.47-0.87) which accounted for 61.1% of the variance.

3.1.b. Known-groups technique: A statistically significant difference (U=2792.50; p<0.001) was found comparing the scores of participants who reported having a positive attitude toward nursing diagnosis (X=37.96; SD=6.42; n₁=417) and those who manifested a negative or neutral attitude (X=25.63; SD=7.89; n₂=59).

3.2. Criterion-related validity. 3.2.a. Concurrent validity: The full and short versions of the scale were significantly and strongly correlated (rₛ=0.93; p<0.001).

4. Sensitivity to change. 25 students who participated in a training program on nursing methodology completed the short form of the scale at baseline and 2 weeks after the program end date. PND-7-SV scores significantly increased between baseline and follow-up (t=5.71; p<0.001). The standardized response mean was above 0.8, also indicating very good sensibility to change (SRM=1.14; CI 95%=0.694-1.589).

Implications
The findings of this study supported for reliability, validity and sensitivity to change of the PND-SV-7 for its use among Spanish nursing students and endorsed its utility to measure attitudes toward nursing diagnosis in a manner equivalent to the complete form of the scale and in a shorter time.
14. Using ISDA (Intan's screening diagnoses assessment) in the process of diagnostic reasoning in nursing

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Background  
Identification of possible diagnostics is an important step to confirm or rule out nursing diagnoses or collaborative problems in the diagnostic reasoning process. Understanding what cues (signs and symptoms) belong to which nursing diagnoses and collaborative problems, is a key to identifying possible nursing diagnoses and collaborative problems.

Research Aim/Question/Purpose  
The purpose of this study was to determine whether using ISDA in the process of diagnostic reasoning can identify more possible nursing diagnoses and collaborative problems than without ISDA.

Methods/Process  
There were 34 respondents consisting of 22 nurse lecturers, seven nurse clinicians and five student nurses. Data were collected on 28 July 2011 through pre- and post-tests. Respondents were asked to identify possible nursing diagnoses and collaborative problems with and without using ISDA, based on the scenario provided. An
analysis was conducted to compare the possible nursing diagnoses and collaborative problems identified by participants against the standard possible nursing diagnoses and collaborative problems determined by the researcher.

Findings/Outcomes
Results showed that by using ISDA, 92% of possible nursing diagnoses and 57% of collaborative problems were identified as compared to 48% and 0% without ISDA. Nurse lecturers identified more possible nursing diagnoses and collaborative problems than clinicians and student nurses. It was also found that more incorrect nursing diagnosis statements were made if ISDA was not used.

Implications
It can be concluded that ISDA can help to identify more possible nursing diagnoses and collaborative problems. Further research in clinical practice could be useful to discover whether ISDA is also applicable to be used in clinical settings.

Keywords: diagnostic, assessment, diagnostic reasoning, nursing, screening

15. Computer-assisted nursing care process: a retrospective study

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Background
Nursing charts allow tracking patients’ care process from the initial assessment to the evaluation of results. The quality of the documentation can be measured by means of validated questionnaires. The international literature recommends the use of a ‘standardized’ language, especially if the nursing documentation has to be kept into computerized records.

**Research Aim/Question/Purpose**
To establish if routine use of a standardized computerized language can improve the quality of nursing documentation

**Methods/Process**
The experimental computerized nursing charts utilized in the present study is based on Carpenito’s bifocal model on Gordon’s functional health care models of investigations and on the taxonomy of NANDA -1’s nursing diagnosis. Quantitative study was conducted on a sample of 211 nursing charts. In this regard, the documentation deriving from ordinary admissions of patients to both the department of general surgery and the department of general medicine of our hospital from June 1st to July 31st 2011, has been analysed in a retrospective fashion. Two expert nurses have conducted an audit. For both the quantitative and qualitative study, an internationally validated questionnaire called “Q-DIO” has been utilized. This particular questionnaire measures the quality of the diagnostic process by identifying and investigating four different areas: ‘nursing diagnosis as process’, ‘nursing diagnosis as product’, ‘nursing interventions’ and ‘nursing results’. In order to monitor nurses’ capability of changing planning, the actual diagnosis of “acute pain” has also been analysed by means of
a qualitative assessment. Thirty-five charts have been analysed (5 charts for each month from March to September 2011). Another qualitative assessment has been conducted one year later, after a dedicated training session, by analysing another sample of 35 charts (5 charts for each month from March to September 2012).

**Findings/Outcomes**

Nurses found some difficulties in the phase of clinical assessment (average score: 7/22) and in identification of outcome (average score: 4/28). Regarding the area of ‘diagnosis as product’, the average score was 16/32. Finally, the average score in the area of interventions was 7/12. The average score of Q-DIO questionnaire significantly increased from 6/40 in the month of March 2011 to 38/40 in the month of September 2011. The average score was 31/40 in March 2012 and 35/40 in September 2012.

**Implications**

The results of our study confirmed the data of international literature concerning the difficulties in the documentation of results. It also confirms a positive evolving trend of improvement in establishing accurate nursing diagnosis. The area of nursing interventions showed, since the beginning, a satisfactory correlation with the requested items. This means that, in clinical practice, nurses found no difficulty in improving the value of their own activities. The qualitative investigation on the actual diagnosis of “acute pain” confirmed that the computer-assisted system, by supporting nurses’ decisions, allowed a progressive improvement and a higher quality standard in the definition of nursing diagnosis.
This improvement was confirmed also at a second assessment one year later

Keywords: nursing documentation, computerized charts, quality of nursing diagnoses

16. Developing an eHealth intervention to support children and young people’s (with chronic illnesses) transition to adult healthcare services.

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Background
Advances in medical care over the last 20 years have meant that more than 85% of children with chronic medical conditions today will survive into adulthood with many transferring to adult care (4). Transition is the ‘purposeful, planned movement of adolescents and young adults with chronic physical and medical conditions from child-centred to adult-orientated health care systems’ (8). Effective transitional care can prevent deterioration in young people’s health and their disengagement from healthcare (19, 20). Rationale for creating a website Data from our TRYCIS project indicates that young people are unprepared, receive inadequate information, lack opportunities for discussion or development of self-management skills and receive limited
information about adult services echoing other research (2, 22, 23). They experience difficulty finding information with web sites being looked at for health information despite their lack of consistency and quality. One patient reported using Google maps to locate the adult clinic. Providing young people with clear information and anticipatory guidance are simple changes in practice that may lead to dramatic improvements in transition experiences (3, 13, 24). Increasingly ICT is seen as an integral component of promoting self-care as it appears to improve the synthesis of information, delivery of knowledge, and efficiency of communication (25). Websites developed for young people with diabetes have reported improvements in knowledge (26), problem-solving and self-management (27, 28) and HbA1c levels (29).

**Research Aim/Question/Purpose**
To develop information materials and a websites to improve young people’s access to information and preparation for transition.

**Methods/Process**
Using the data from our transition project (TRYCIS) we identified young people’s needs and preferences for information regarding transition. We then conducted further focus group interviews with young people to develop the information materials and inform the co-design of the website. Thus involving young people directly involved in the design and planning of the intervention so that it is age and developmentally appropriate and resonates with the needs and lives of the young people rather than being professionally dictated (31). The materials were co-designed with young people (14-18 years) pre-transfer and young adults (18-25 years) post-
transfer using participatory research methods and an iterative process. Participatory research (PR) involves co-learning and reciprocal transfer of expertise, shared decision-making and mutual ownership of process and products of the enterprise (48). Four principles underpinned the user-designed participatory approach; consultation and cooperation (with relevant stakeholders), experimentation (with alternative designs), contextualisation (testing with users & providers) and iterative development (modification in response to evaluation) (29).

**Findings/Outcomes**

This paper will present the data from the participatory workshops with participants. Young people's views of websites design and preferences for information-sharing will be outlined and discussed. We will conclude with a discussion of the challenges with developing materials and designing a website for young people.

**Implications**

We need to find ways of disseminating findings beyond traditional academic formats so that we can reach young people and improve their transition experiences. An educational intervention using ehealth technology has an increased chance of engaging young people because it is socially acceptable and embraced by users and peers (30).

*Keywords: information-sharing, co-designed intervention, transition, ehealth technology, empowerment*
17. Case conference to improve accuracy of nursing diagnosis

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Background
The University of Fukui Hospital is a teaching hospital in southwest of Japan. The hospital has 615 beds for inpatients, and about 1000 patients come to outpatient clinics every day. The hospital introduced nursing diagnoses in 1996. Since then, nurses have tried to improve accuracy of their patients’ nursing diagnoses. One of the educational activities is case study conference to discuss about each case’s nursing diagnoses to improve diagnoses accuracies. The regular case conference is held every 2 months. Any nurses can join the conference. Usually one case is introduced form a nurse to all attendees, then discuss about possible diagnoses, goals, and interventions. At the end of each conference, all attendees decide final nursing diagnoses for the case as appropriate diagnoses.

Research Aim/Question/Purpose
The purpose of this paper is to evaluate the case conference activity.

Methods/Process
A survey was conducted to the 50 nurses who attended regular case conferences in 2011.

Findings/Outcomes
46 (92%) subjects responded to the survey. The average year of the subjects' clinical experiences was 16±11 years. 22 (47%) nurses didn’t learn nursing diagnosis in basic nursing education program. 11% of the subjects stated that they didn’t have self-confidence to make nursing diagnoses by themselves. 89% of the subjects stated that the case conferences could help to make better documentations, 70% stated the conferences improve to understand patients’ and their families’ problems. Some of the subjects stated the conferences were useful to exchange their opinions and questions about patients.

**Implications**

The case conference activities helped nurses to understand patients’ situations; thus the conferences could contribute to improve accuracy of nursing diagnoses.

*Keywords: nursing diagnosis, accuracy, case conference*

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**18. Shift work as a related factor of NANDA-I nursing diagnosis insomnia: a clinical validation using the case-control method.**


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Background
Productivity demand has led many companies to work 24 hours, requesting employees to adapt themselves to shift rotation. Alterations in sleep patterns are one of the commonest consequences of this circumstance. The nursing diagnosis (ND) "Insomnia" includes the Related Factor (RF) the impairment of normal sleep pattern due to shift work (NANDA-I, 2009). The evidence of this ND reaches level 2.1, therefore further clinical research should be undertaken to increase this level of evidence.

Research Aim/Question/Purpose
The study aimed to clinically validate the exposure to shift work as a RF of ND Insomnia determining the empirical relationship between the condition and the diagnosis.

Methods/Process
A case-control design was used to compare workers who were diagnosed with Insomnia ND (cases group) with those who did not (controls group) concerning shift work. 10 diagnosed workers in an aeronautical manufacturing plant were included in an opportunistic manner in the cases group. The control group was formed by 20 workers in whom the diagnosis was excluded. The presence of other possible etiological factors of insomnia (sleep disorders, pain, drugs, etc.) was considered as an exclusion criterion. A targeted assessment was performed to evaluate the presence of the nursing diagnosis in each participant. The presence of the Defining Characteristics (DC) of the ND Insomnia, exposure
to shift work (rotatory vs. fixed shift) and demographic variables were collected. Differences between both groups for quantitative variables were evaluated through the Mann-Whitney U test, the association between qualitative variables by means of Fisher's exact test and the strength of association through the Odds Ratio (OR). The significance was set at p < 0.05.

**Findings/Outcomes**

93.3% of the sample were men with an average age of 39.40 ± 9.99 years, without intergroup differences (U=99.00, p=0.96). A significant association between the exposure to shift work and the presence of the ND Insomnia was found (p=0.024). Shift workers are 11 times more prone of being diagnosed with Insomnia than those who do not work in shifts (OR=11.00; 95%CI=1.16-103.94). In addition, shift workers presented 13 of the 15 DC of the ND in a greater proportion. A statistically significant association between shift work and the presence of 7 of these DC was found.

**Implications**

The above results correspond to the pilot study of a project that aims to clinically validate the content of the ND Insomnia in subjects exposed to shift work. The clear association found in this study between the exposure to shift work and the presence of the ND Insomnia and most of its DC provides preliminary evidence to support the validity of the condition "shift work" as RF of this ND when applied in a real work setting. More research about ND in workforce samples is clearly needed as well as the development of new diagnoses focus on the human responses to work factors.
Keywords: nursing diagnosis, NANDA-I Taxonomy, Occupational Health Nurses, Shift work, Insomnia

19. Newly graduated nurses’ skill acquisitions under the partnership nursing system

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Background
The Partnership Nursing System: PNS was developed in University of Fukui Hospital in 2011. Under the PNS, each nurse partner with another nurse and practices all nursing cares. A pair nurses share responsibilities to take care their primary patients and implement nursing process to their patients including assessments, nursing diagnoses, nursing interventions, evaluations and documentations. Under PNS, risks for mistakes and work burdens were reduced.

Research Aim/Question/Purpose
In this paper, we discuss about details of PNS for newly graduated nurses and effects of the system.

Methods/Process
40 newly graduated nurses were hired in April 2010 (non-PNS group) and another 48 newly graduated nurses were hired in April
2012 (PNS group). After 4 months training, newly graduated nurses started to practice nursing cares in each year. During training period, the subjects receive Off-the-Job-Training (Off-JT) about nursing documentations. The Off-JT addressed basic documentation roles, an introduction to and application of the EMR and nursing process support system, and the security system. Altogether, 240 hours of lecture-based training were provided by four nurse educators. We assessed subjects in 2 groups for their nursing practice performances and documentations for 12 months. All subjects were agreed to be assessed.

Findings/Outcomes
The majority of the subjects were familiar with using computers and the Internet, and had clinical practicum at hospitals with EMR systems. For this reason, the subjects did not have any difficulties in understanding the hospital EMR systems. However, more nurses in the PNS group stated they could acquire documentations skills faster. In addition, nurses in the PNS group reported that they could do nursing interventions and documentations at the same time; whereas, nurses in the non-PNS group reported they had time gap between an intervention and its documentation. Father more, subjects in the PNS groups could acquire 31 nursing skills faster than those who in the non-PNS group.

Implications
PNS contribute to facilitate new nurses’ documentations and nursing skill acquisitions.

Keywords: Partnership Nursing System, PNS, documentation, nursing skill
20. Determination of nursing diagnoses of agricultural labourer families towards their children

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Background
In countries where the agricultural production is widespread, agricultural labourer families and their children are included in the special risk group, in terms of health. Especially the lack of convenient environmental conditions during the age of 0-2, when the growth is rapid, causes the children to be influenced anatomically and physiologically at a greater rate compared to adults, due to their differences. Examining the children’s health indicators according to the data of the Turkish Population Health Research-2008; the infant mortality rate is indicated to be 17 in a thousand and the mortality rate for the age under five is indicated to be 24 in a thousand. Regarding the agricultural labourer families, while the infant mortality rate was reported to be 59 in a thousand, the mortality rate for the age under five was reported to be 78.4 in a thousand. Agricultural labourer families are divided as seasonal and continuous agricultural labourers. It is indicated in resources that there are approximately eight million agricultural labourers in Turkey and three million of these labourers work seasonally. Seasonal labourer families migrate in approximately 25
different cities between March-October in order to work in the agricultural field. Each family goes to an average of three different cities and lives in the field for approximately 7-8 months within a year. A great majority of agricultural labourers is consisted of women and since they work in the field, their children also get obliged to sustain their lives in the field. Since older children work as agricultural labourers and younger ones stay beside their mothers, they are exposed to negative conditions of the field. Continuous care should be given to this mobile group. Therefore, telenursing applications and the creation of electronic records important requirements defined in a common language.

**Research Aim/Question/Purpose**
The provinces of Şanlıurfa and Adıyaman, which are located in the Southeastern Region of Turkey, are among the cities where agricultural labourers dwell intensely. Thus, this study was planned in an attempt to determine the nursing care needs of families that work as agricultural labourers in both provinces and their children through their health indicators, and to detect the nursing diagnoses.

**Methods/Process**
This is a descriptive study. The study will be conducted in regions of the city center of Adıyaman and Şanlıurfa, where agricultural labourer families dwell intensely. Mothers, who have worked as agricultural labourers for at least two years in the provinces of Adıyaman and Şanlıurfa and who have children in the age group of 0-2, comprise the sample of the study. The study will be conducted between November 2012-March 2013 in order to reach to the
agricultural labourer families. In the study, the questionnaire form will be used as the data collection tool with the face-to-face meeting technique. Nursing diagnoses will be determined in line with the obtained information.

Findings/Outcomes
Findings will be written after the collection of the data.

Implications
The determination of nursing diagnoses of agricultural labourer families towards their children will significantly develop the nursing services to be provided for this grouping agricultural countries like Turkey.

Keywords: child, nursing diagnosis, agricultural labour, nursing


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Background
The documentation of the nursing process is an important but often neglected part of clinical documentation. The usefulness and general need for the application of trainings and workshops has been closely examined in relation to the nursing process and care planning. They both play an important part in gaining deeper insight into the significance of documentation in nursing practice.

Research Aim/Question/Purpose
The aim of this study was to evaluate the educational application of current education models to computer-based nursing documentation systems and nursing diagnoses.

Methods/Process
As the basis of this research project an evaluation study with multicentric, retrospective cross-sectional design was used, and included (n=712) nurses working in hospitals. A questionnaire served to shed light on the nurses’ satisfaction with the current education model as well as their ideas of improvement, and provided in order to assess nurses’ safety with the nursing process documentation.

Findings/Outcomes
The computer training proved to have no effect, however the training about nursing diagnostic shows a significant effect on the satisfaction scale an has improved the handling with the nursing process documentation. The deeper insight into nursing process documentation can also be improved by further trainings, workshops and support through key personality for the nursing
documentation. Case discussions about patients are useful interventions and generally enhance the learning effect.

**Implications**

As regards the conception of future computer training, they rather ought to be built on the basis of nursing concepts. A further support is absolutely necessary, where the focus needs to be on the nursing diagnostic process. Therefore case discussions about patients are certainly the best option.

*Keywords: nursing documentation, nursing process, nursing diagnosis, evaluation study, education model*

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**22. Clinical profile of hospitalized patients with the nursing diagnose risk for falls**

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**Background**

The Nursing Diagnose (ND) Risk for Falls of NANDA-I is defined as an increased susceptibility for falling that may cause physical harm. The falls are frequent adverse events in hospitals, happening in 2% to 17% of the hospitalized patients. These events may cause harm to the patients, which may increase the clinical complications, time of hospital stay and hospital costs. The incidence of fall is a sensitive indicator of care quality, been
considered as an important factor for the development of nursing interventions.

**Research Aim/Question/Purpose**
Characterize patients with the ND Risk for Falls hospitalized in clinical and surgical units of a university hospital in southern Brazil.

**Methods/Process**
Cross-sectional study that had as a sample 174 adult patients hospitalized in clinical and surgical units with the ND Risk for Falls during the year of 2011. Data were collected retrospectively on medical records online and computerized database of the institution, and analyzed using descriptive statistics with the SPSS, version 18.

**Findings/Outcomes**
In the year of 2011 it had been identified a prevalence of 4% of the ND Risk for Falls in clinical and surgical units of the institution. Among the studied patients it was verified the occurrence of 23 falls, which represents an incidence of 0.13 falls among patients with the ND Risk for Falls. The mean age of patients with Risk for Falls was 68±13.7 years, most of them were male 99(56.9%), hospitalized in clinical units 110(63.2%) and with median time of hospital stay of 20 days. The main reasons for hospitalization were the neurological diseases and cancers. The most frequent comorbidities among them were cardiovascular diseases in 202(116.1%) cases, the endocrine in 98(33.3%) and the neurological in 57(32.8%) cases. Some patients had more than one comorbidity.
Implications

It was concluded that patients with the ND Risk for Falls are mostly elderly, hospitalized in clinical units and with neurological and cardiovascular diseases. These findings contributed to a better knowledge of hospitalized patients in the institution with this ND, helping in the planning of the prevention of the event falls.

Keywords: nursing diagnosis, nursing care, accidental falls

23. Validation of nursing diagnosis risk of aspiration in patients with stroke: analysis of concept and validation by experts

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Background

The validation process of nursing diagnosis Risk of aspiration primary purpose is to provide a better understanding of human response, increasing the validity of this diagnosis in the NANDA Taxonomy II-I and providing tools to nurses in the evaluation of patients with stroke in situation risk of aspiration.
Research Aim/Question/Purpose
The study has as objective to validate the nursing diagnosis risk for aspiration in patients with stroke.

Methods/Process
Methodological study carried out in two phases of validation of nursing diagnoses, as recommended by Hoskins (1989): concept analysis and validation by experts. For the concept analysis were used as a reference the concept analysis model proposed by Walker and Avant (2005) and integrative literature review proposed by Whittemore and KnafI (2005). Proceeded to search the literature in five databases: LILACS, CINAHL, PUBMED, SCOPUS and COCHRANE, with the descriptors: respiratory aspiration and stroke, and their synonyms in Portuguese and Spanish. After the application of inclusion and exclusion criteria, 94 studies (amount 659 studies) remained that supported the concept analysis. After the concept analysis phase it was built an instrument with the concepts and empirical references of identified risk factors, this was subjected to the analysis of 26 nurse specialists in the area of the nursing diagnosis in study.

Findings/Outcomes
Concerning the concept of respiratory aspiration, were found three critical attributes essential for understanding this concept: movement (entrance, penetration), object (solids, fluids, oropharyngeal secretions, gastric contents) and location (below the vocal cords and lower respiratory tract). Were identified eleven risk factors for respiratory breathing in patients with stroke with their respective concepts and empirical references: dysphagia, depressed
level of consciousness, impaired or absent cough reflex, neurological disorders (brain trauma, stroke and Alzheimer's disease), presbyphagia, use of gastrointestinal tubes, presence of gastro-esophageal reflux disease, immobilization, absent gag reflex, invasive procedures such as video-fluoroscopy and upper digestive endoscopy and sedation. Some risk factors were identified as inappropriate by experts (agreement proportion below 85%) to predict the risk of respiratory aspiration: presbyphagia, immobilization, absent gag reflex and invasive procedures such as endoscopy and video-fluoroscopy. However, when analyzing the experts' suggestion, it was found that they disagreed with the concept or with the empirical reference proposed to these risk factors, which motivated the change. Most experts suggested the addition of risk factors using endotracheal tubes/tracheostomy and head of the bed down.

**Implications**

Therefore, thirteen risk factors were identified, as examined by the concept analysis and validation by experts, suitable for assessing the nursing diagnosis risk of aspiration in patients with stroke. This research enabled contribute to the improvement of the NANDA-I Taxonomy and therefore the language of the nursing process. The proposition of the refinement of the nursing diagnosis risk of aspiration may allow a better implementation of the phases of history of nursing, nursing diagnosis and planning of nursing interventions, and specifically oriented survey and analysis of the risk of aspiration in patients with stroke.

*Keywords: nursing, nursing diagnosis, risk of aspiration, stroke*
24. Nursing diagnosis sedentary lifestyle: expert validation

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Background

Studies with the nursing diagnosis of Sedentary Lifestyle are still restricted. On the other hand, physical inactivity is a global concern facing the paper assumes that the epidemiology of chronic diseases such as hypertension. Given the scope and complexity of the problem of sedentary lifestyle, particularly in the context of hypertension, understanding the factors favor a comprehensive view from the causes to the effects of this habit of life. Within nursing, validation of nursing diagnoses helps in this process.

Research Aim/Question/Purpose

This study aims to verify the components adequacy (definition, defining characteristics and related factors) of the nursing diagnosis sedentary lifestyle in people with hypertension.

Methods/Process

The validation was performed from February to July 2011. The participants of the validation process were 48 nurses specialists in nursing terminologies and / or sedentary lifestyle and / or hypertension.
Findings/Outcomes
It is recommended changes in the Sedentary Lifestyle definition and in the title of five indicators, as well as to add six more related factors and five defining characteristics in the list of NANDA-I Taxonomy II.

Implications
The process of expert validation will enable improvement and more reliable and accurate identification of clinical indicators, plus more diagnostic accuracy.

Keywords: hypertension, nursing, nursing diagnosis, sedentary lifestyle

25. Electronic nursing discharge summary - a follow-up study at one hospital district

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Background
In Finland the starting point of the electronic nursing discharge summary (ENDS) is that information content is structured and follows up the nursing process model. The ENDS is a compact summary of the Nursing Minimum Data Set (NMDS) of the care period, in other words, a summary of nursing diagnosis, nursing interventions and nursing outcomes (Werley et al. 1991). It is based on the national definition work, which aims at the implementation
of the National Archive of Health Information in Finland (KanTa 2012). Based on specific needs of nursing, in Finland there has been developed the Nationally Standardized Nursing Documentation Model (NSNDM) in international framework (Saba 2012). ENDS is one part of a Finnish NSNDM. It includes summary of the nursing process data exploiting the structured documentation and the patient care intensity grade. (Ministry of Social Affairs and Health, Finland 2007.) Nowadays professionals of many social and health care organizations in western Finland can look at the information of ENDS through the Regional Information System (Fiale). There are 3930 social and health care users at 42 different organization (hospitals, health care centers, social offices and medical offices) at Satakunta Hospital District.

**Research Aim/Question/Purpose**

The aim of the study is to examine the use of the ENDS at the patient discharge from hospital into primary care or homecare. The purpose of this study is to describe what are the benefits of the use of the ENDS into patient safety, patient care continuum and co-operation between social and health care organizations.

**Methods/Process**

The used questionnaire has been tested before. The questionnaire incorporates both structured and open questions about knowledge, the flow of information, inter-organizational co-operation and work practices as well as the results of nursing care. The data will be collected from the social and health care personnel used Regional Information System (Fiale) at Satakunta Hospital Distirct. Different variable methods, such as classifications and statistical
distributions will be used. The study complies with the ethical principles.

**Findings/Outcomes**

The results of the study will be available at the ACENDIO 2013 Conference.

**Implications**

The results of this study can be integrated to the development of the ENDS.

*Keywords: Electronic nursing discharge summary, follow up-study, care continuity, patient safety*

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**26. Validation of a mobility nursing outcome in stroke patients: concept analysis and validation by experts**

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**Background**

In this study is engaged in the analysis of the concept of nursing outcome mobility in patients who survived stroke. The delimitation of the study in people with this disease is supported by the high
incidence and consequences of stroke, a factor of concern for nursing care. Mentioned result was based on the Nursing Outcomes Classification - NOC.

**Research Aim/Question/Purpose**
The study aimed at identifying and validating the constitutive and operational definitions of the mobility outcome and its indicators present in the Nursing Outcomes Classification (2010). The following questions were made: what is the definition of constitutive and operational Mobility and its indicators?

**Methods/Process**
The study was of methodology type and was performed in two stages, as recommended by Hoskins (1989): concept analysis and validation by specialists. For the concept analysis were used as a reference the concept analysis model proposed by Walker and Avant (2005) and integrative literature review proposed by Whittemore and Knafl (2005). For the selection of productions it was used the online access to five databases: Scopus, PubMed, Cinahl, Lilacs and Cochrane, with the descriptors: mobility, stroke, nursing and their synonyms in both Portuguese and Spanish languages. 1521 articles were identified in all the databases searched and a careful selection resulted in 47 articles. After the concept analysis stage, it was brought forward an instrument with the constitutive and operational definitions for the indicators of the Mobility outcome by using the principles of psychometrics and seven of its criteria: behavioral, simplicity, clarity, relevance, accuracy, typicality, and amplitude. This instrument was assessed by 23 specialist nurses who met the criteria adapted from Fehring
The data were compiled into a spreadsheet program Microsoft Office Excel 2007 and analyzed by SPSS version 16.0. The project was submitted to the Ethics Committee at the Federal University of Ceará.

**Findings/Outcomes**

Attributes, antecedents and consequences were identified for both terms Mobility. The attributes identified for Mobility were: walking, standing, sitting, placing the leg side to side, turning around, start and stop walking, climbing stairs, motor function, transfer and motor skill. The antecedents were: postural control and balance and the consequences were: do tasks inside and outside the house, deambulate without difficulty. It was also created a sample case and an opposite case for both mobility and mobility limitation. After, specialist nurses noted that the following indicators: Run, Jump, Crawl and Movements performed with ease showed ratios statistically less than 85% for most of the psychometrics criteria. Moreover, most of the nurses suggested the removal of these indicators by judging they were not representative for patients who had strokes. Thus, these indicators were excluded when defining the instrument to be applied in the clinical validation of the instrument stage.

**Implications**

This study was validated the instrument with the development of constitutive and operational definitions. Expected to get a better understanding of the phenomena involved in the assessment of the mobility in the patient who survived a stroke. This research may contribute to the improvement of the NOC taxonomy.
27. Electronic nursing care transition: an experience

Nursing, SESARAM, Funchal/PORTUGAL

Background
Among the moments of the continuum of health where users are at higher risk, the transition from the site and the context in which such care is provided is more prevalent. The causes are largely due to the incipient available information for continuity of care. In this transition, the groups exposed to a higher risk are the elderly people, those suffering from chronic diseases, and other people of greater vulnerability or dependency, such as children, pregnant women and disabled. Thus, the structure and process of inter-institutional information sharing is of particular relevance, as well as the communication between professionals and/or patients for whom some basic interoperability requirements, technical and semantics, and the use of international classifications become key.

Research Aim/Question/Purpose
To describe a software application to support the transition of nursing care in a Portuguese Health Region.

Methods/Process
This functionality was developed as part of a broader project aimed at the implementation of a regional nursing information system.
with the use of ICNP, integrated and interoperable, within the regional and national health macro-system, which as of now, is in progressive implementation. This application considered, for the purposes of sharing information within and between institutions, two main situations: the transfer of the user among units within the same level of care; and the discharge / transfer to another context or level of care (outpatient or PHC). In the first case we considered the feature called "evaluation for transfer", where the nurse is prompted to perform a re-evaluation of the care plan in order to arrange for this connection and also to provide the colleague of the other unit with the updated information of the patient, which may or may not agree with the proposed plan in full, or require reformulation. In the second case, once this re-evaluation has been made, to allow the nurse to draw the respective nursing discharge note, whose elements and content will be automatically presented for possible editing. Once these procedures are finalized, the information is automatically made available to any other provider authorized to consult it (in the case of a discharge note and, in future, the National / European EHR) or edit it (in the case of an elaboration of a proposal of continued nursing care plan). The special case of making the discharge note: it is now made available on the respective historical record of episode of hospitalization, appointment or consultation, since it can be printed, in the user and professional versions, or be sent by email to the next service or carer.
Findings/Outcomes
From the experience gathered from implementing this system in several hospital units, we emphasize the high degree of acceptability by both patients and their families and professionals.

Implications
Notwithstanding that this is a project in development, we believe that the possibility of sharing this somehow innovative experience may contribute to the development of nursing information systems that effectively guarantee the safety and continuity of care for patients and good practices by professionals, particularly in critical moments as in the case of care transitions.

Keywords: Nursing Discharge Summary, Nursing Information Systems, Nursing Care Continuum, Nursing Care Transition, Electronic Nursing Discharge

28. Definition and risk factors of a new nursing diagnosis: risk for pressure ulcer

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Background
NANDA International¹ is a taxonomy of diagnostic terms that are continually developed and refined. The Diagnosis Development Committee (DDC) of NANDA-I is responsible for analyzing new
nursing diagnoses (NDs) as well as the revision of the existing ones. In the Hospital de Clínicas de Porto Alegre (HCPA), the Nursing Process (NP) is computerized and nursing prescription is based on the NDs of NANDA-I. In this scenario, several studies have been conducted addressing issues of clinical practice related to NP and classification systems. One of these studies showed in the results the lack of specificity of NDs for patients at risk for pressure ulcers (PU). From this, it was also verified the absence in NANDA-I of a ND that denominate that, in a more specific and clear way, the situation of risk for PU, which motivated the proposal of this research.

**Research Aim/Question/Purpose**
Develop the definition of a new ND entitled Risk for pressure ulcer and establish the risk factors of the diagnosis.

**Methods/Process**
It was developed an Integrative Review of literature on "Pressure ulcer" and "Nursing diagnosis" in order to base the definition and risk factors that will compose the ND Risk for Pressure Ulcer. The research was developed from the guiding questions: "What are the main risk factors for the development of UP?". Data collection was performed by the search of scientific articles in English, Portuguese and Spanish published in the last five years in the electronic databases MEDLINE and LILACS. For the search of these journals were used the Descriptors in Health Sciences (DeCs): Pressure ulcer, Nursing diagnosis, Nursing Process. It was included the articles available online fully and freely and that met the study objectives. After, the sampled articles were critically evaluated and
structured in a summary table whose data showed the synthesis and comparison of information collected. The presentation of the summary of results is given through tables, graphs and charts. The research project was approved by the Research Committee of the School of Nursing of UFRGS.

**Findings/Outcomes**

It was identified 130 scientific articles available in fully in MEDLINE. It was identified 13 scientific articles fully in the database LILACS. From the analysis of the articles it was prepared the definition of the ND Risk for UP: Risk skin injury to the skin and/or underlying tissue as a result of pressure or shear and friction, usually over a bony prominence. The main risk factors identified were: immobility, urinary/bowel incontinence, skin moist, neurogenic disease, malnutrition, obesity, dry skin and decreased sensory perception.

**Implications**

The Integrative Review made possible to construct a definition for this new ND, as well as establish the main risk factors for it.

29. The workshop experiences and virtual participation by patients and home care workers in Virtu project

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Background
The aim of this paper is to describe virtual co-operation process among elderly people and home care workers in Virtu project. The focus of the co-operation has been in promoting elderly people's health and well-being by virtual connections in home care. In the project we have addressed the different opportunities for patient participation in virtually. In addition to co-operation we have developed the usability of Virtu channel from nurses' perspective through virtual learning and nursing. Laurea University of Applied Sciences is a multidisciplinary University of Applied Sciences operating in Uusimaa. There are approximately 8000 students and 500 staff members at Laurea. Laurea has created Learning by Developing (LbD) model - an innovative operating model based on authenticity, partnership, experiential learning, creativity and research. Learning is related to development projects that are genuinely rooted in the world of work. LbD-model is based on authenticity, partnership, experiential learning, research and
creativity. Learning is related to development projects that are genuinely rooted in the world of work. Goal for this model is to produce new knowledge for all partners of the collaborative learning process i.e. students, teachers and working life partners – in some cases also the customers. This model has been created in Laurea University of Applied Sciences, Finland. VIRTU – Virtual Elderly Care Services on the Baltic Islands project is a three-year EU-financed project, co-financed by EU’s Central Baltic programme. The project will be carried out during 2010–2013. The VIRTU project aim is to promote the social life of elderly people or care givers in the archipelago or other remote areas. The purpose is to create and maintain social relations and to prevent loneliness. Loneliness can be considered a great risk to the individual’s ability to function and independence at home. The VIRTU project develops preventive working methods and practices. Another key objective is to increase the service availability and safety of the elderly. Preventive services promote well-being and further self-fulfillment and a desire to learn. The third key objective is the networking of different actors in a way that enables concrete benefits for the technology users. Program contents are connected to pharmacy, physiotherapy, church services, library etc.

**Research Aim/Question/Purpose**

The workshop experiences and virtual participation by patients and home care workers in VIRTU project

**Methods/Process**

Poster presentation by introducing the results of workshops
Findings/Outcomes
The challenges of patient participation in Virtu are seen in the abilities of customer. Problems such as patients' memory diseases or difficult technical usability can prevent the virtual activity and nursing. However the workshops with home care workers has shown that the abilities to work in virtually is good. Virtual home visits can save time and by using virtual methods there has been developed more effective day routines and nursing interventions in home care.

Implications
The expected outcomes will show how valid Lbd model of Laurea University of Applied Sciences is in developing the methods in home care by improving highly the quality of life of the patients.

Keywords: virtual learning, patient participation, usability

30. Validated nursing activities for patients in risk of pressure ulcer

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Background
The Nursing Interventions Classification (NIC) describes the interventions Prevention of Pressure Ulcer (PU), Pressure Control and Supervision of Skin as priorities for nursing diagnosis (ND)
Risk of Impaired Skin Integrity. These interventions have activities that can be selected depending on the care necessity of each patient.

**Research Aim/Question/Purpose**
To validate the consisting activities in priority nursing interventions to ND Risk of Impaired Skin Integrity in patient care at risk for PU.

**Methods/Process**
A contents validation based in Fehring (1987), conducted in two Brazilian university hospitals. The sample consisted in 16 experts nurses, who were selected according to the following criteria: have proven clinical experience in caring of patients at risk of PU, be members of a skin care study group, having knowledge of the nursing process and classification systems and diagnostic interventions - NANDA-I and NIC. The instrument for data collection contained the NIC interventions with their definitions, activities and a five-point Likert scale, where nurses have punctuated how each activity was used in the prevention of PU care. Data were statistically analyzed, considering the calculation of weighted average (WA). The study was approved by the Ethics and Research Committee (56/2010).

**Findings/Outcomes**
Among the 62 nursing activities that made up the three priority interventions for ND in the study, 27 (43.6%) were validated as a priority (WA ≥ 0.80), 23 (37.1%) as suggested (WA > 0.50 and <0.80) and 12 (19.3%) discarded (WA ≤ 0.50). The activities with the highest WA were: Using a known instrument for risk
assessment to monitor Individual Risk Factors (eg, Braden Scale), with WA 0.94, from the Intervention Prevention of Pressure Ulcer; Examine the skin and mucous membranes as the redness, excessive heat, swelling and drainage, WA 0.92, from the Intervention Supervision of Skin; Avoid applying pressure to the affected body part with a 0.85 WA, from the Intervention Pressure Control.

**Implications**

This study allow us to validate the activities used in the care of patients at risk for PU, implying positively to the clinical practice of nursing, teaching and researching.

*Keywords: Pressure Ulcer, nursing care, Validation study*

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**31. NANDA-I Diagnoses, NOC Outcomes and NIC Interventions for Patients with Heart Failure: Integrative Review of the Literature**

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**Background**

Nursing language plays is an important role in describing and defining nursing phenomena and nursing actions. The lack of a standardized unified nursing language is considered a problem for further development of the discipline of nursing.
**Research Aim/Question/Purpose**
To identify in the literature NANDA-I nursing diagnoses (NDs), NIC interventions (NIs) and NOC outcomes (NOs) for individuals with heart failure.

**Methods/Process**
An integrative review of the literature directed by the question Which NANDA diagnoses, NIC-interventions and NOC-outcomes are found in/proposed for individuals with heart failure? was conducted on databases Lilacs, Scielo and Medline using as descriptors Heart Failure AND Nursing Process OR Nursing Diagnosis. The search was limited to years 2002 to 2011. Research in English, Portuguese or Spanish was included. Titles and abstracts were read for inclusion and then selected articles were fully read.

**Findings/Outcomes**
A total of 26 works were retrieved, out of which 9 were included in the review. Nursing diagnoses: Activity intolerance, Decreased cardiac output, Fatigue, Excessive fluid volume, Deficient knowledge, Ineffective airway clearance, Impaired gas exchange, Imbalanced nutrition: less than body requirements, Impaired urinary elimination, Impaired physical mobility, Impaired skin integrity, Ineffective role performance, Powerlessness, Risk-prone health behavior, Sexual dysfunction, Ineffective family therapeutic regimen management; Risk for falls, Anxiety; Nursing interventions: Surveillance, Cardiac care, Intravenous therapy, Fluid management, Pain management, Bed rest care, Fall prevention: adult, Diet staging, Oxygen therapy, Teaching:
individual, Infection prevention, Cough enhancement, Vital signs monitoring, Bleeding precautions, Hyperglycemia management, Tube care, Skin surveillance, Discharge planning, Dysrhythmia management, Respiratory monitoring, Anxiety reduction, Coping enhancement, Energy management, Family involvement; Exercise promotion. Nursing Outcomes: Activity tolerance, Cardiac pump effectiveness, Knowledge status: illness care, Fall prevention behavior, Tissue integrity: skin and mucous membranes, Energy conservation, Respiratory status: ventilation, Respiratory status: gas exchange, Anxiety control, Nutritional status, Urinary elimination, Mobility level.

**Implications**

Eighteen NDs, 25 NIs and 13 NOs were found in/proposed for individuals with heart failure. Although a significant number of NDs, NIs and NOs were found, this review mainly presents descriptive research of separate nursing phenomena and only one article assessed psychosocial aspects of individuals with HF. More research with NIs related to NDs and NOs assessment are needed in order to show the effectiveness of nursing actions.

*Keywords: nursing diagnosis, Heart failure, Nursing intervention, nursing outcome*
Impact of telenursing on outcomes in patients with heart failure: integrative review of the literature

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Background
The treatment of chronic diseases demands learning how to live with the symptoms and/or failures, adjustment to the lifestyle and regimens intended to keep symptoms under control and avoid complications. Telehealth-based methods are increasingly being used to improve compliance or adherence to the prescribed regimen of care, as well as for symptom management.

Research Aim/Question/Purpose
To find in the literature the impact of telenursing on outcomes in patients with chronic heart failure (CHF).

Methods/Process
An integrative review of the literature directed by the question "Does telenursing improve outcomes for patients with CHF?" was conducted on databases Virtual Health Library (BVS) and PUBMED in August 2012. No limits were applied to publication date. Research published in English, Portuguese and Spanish and related articles suggested by PUBMED were included. Titles and abstracts were read for inclusion and then selected articles were fully read.
Findings/Outcomes
Six studies carried out in USA (n=4), Italy (n=1) and Colombia (n=1) published from 2003 through 2012 were fully read. Methodological approaches were randomized clinical trial (n=3), prospective cohort study (n=2) and retrospective cohort study (n=1). Study A: Phone sessions as part of an educational nursing program were shown to be effective in improving self-care behaviors. Study B: Daily vital sign monitoring by a nurse using telehealth units set up at patients’ houses decreased hospital admissions by 46%, accident and emergency attendances by 67% and the number of visits to the General Practice surgery by 16%. Study C: The use of remote phone-based monitoring units allowing patients to input vital signs and weight decreased rehospitalization and Emergency Department visits and increased weight documentation fidelity. Study D: Vital sign inputs via phone monitoring units plus two kinds of systems to promote interaction between patients and nurses - video systems (live interaction) and monitoring systems that are initiated by the patient increased patients' confidence level, shown to be a predictor of self-management behavior. Study E: Scheduled phone calls from a nurse or schedule video-based telecare visits appraising general CHF disease process; daily weight monitoring; sodium restriction; smoking cessation; alcohol moderation; weight loss (for obese patients); aerobic exercise; and medication use and adherence decreased hospital admission, and emergency visits but did not influence self-care adherence, medications, health status and satisfaction compared to usual care. Study F: Teleconsultations
with a nurse asking questions about body weight, daily intake of fluids or salt, alcohol and analgesics, smoking habits, knowledge of and adherence to medication and episodes of hipotension plus tele-assistance whenever the patient called the nurse plus EKG data transmission increased distance walked in a 6min walking test, improved quality of life and decreased hospitalizations.

**Implications**
Studies had considerable level of evidence and were mostly concentrated in the USA. Phone-based monitoring units and telecare visits were effective in improving outcomes in patients with CHF mainly by decreasing hospital admission and emergency attendances.

*Keywords: Telenursing, Heart failure*

### 33. Development of indexes of nursing outcomes for the prevention of diabetic foot by expert nurses

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**Background**
The number of Japanese diabetic patients who developed foot gangrene showed increase during the past five years. In Japan, however, no specialists such as podiatrists are available. Thus,
nurses are expected to play a principal role in primary care for diabetic foot disease.

**Research Aim/Question/Purpose**

The purpose of this study was to develop indexes of the outcomes of nursing interventions by the Delphi method by expert nurses for the prevention of foot lesions.

**Methods/Process**

We requested 193 institutions to recommend 2 expert nurses, and included 120 nurses who sent back their consent for the participation in this study as panelists. We attempted to develop indexes of the outcome using the 3 round Delphi method, and planned to develop these indexes in four steps: Step 1 (investigation of parameters used as indicators of outcome of nursing practice for prevention of foot disease), Step 2 (extraction of candidate indexes of outcome), Step 3 (importance and sensitivity of the extracted outcome indexes) and Step 4 (acceptability and clinical usefulness of the list of outcome indexes). For each candidate parameters, the nurses were asked to give their answers using the Lickert scale. The scores for each parameter were calculated using the Fehring’s methodology.

**Findings/Outcomes**

From first round of survey, the extracted candidate indexes of nursing outcomes by 66 expert nurses were 59 “body functions/physiology” items, 51 “cognition” items, and 56 “behavior” items. During the second round of the survey, responses were collected from 65 nurses. The 16 physical, 45 cognitive and 25 behavioral parameters were scored over 0.80, and it was estimated that these
parameters were rated as being sensitive and important indexes. During the third round of the survey, responses were collected from 43 nurses. As the indexes of the outcomes of nursing interventions for the prevention of foot lesions, the 14 physical, 38 cognitive and 25 behavioral parameters were scored over 0.80. Thus, 77 parameters were evaluated as acceptability and clinical usefulness of the list of outcome indexes.

**Implications**

The indexes for the evaluation of the outcomes of nursing interventions considered to be appropriate by expert nurses in nursing of diabetes mellitus included not only “body functions/physiology” items but also “cognition” and “behavior” items. The expert nurses considered that changes in the skin state of the foot alone are inadequate as nursing outcomes. In Nursing Outcome Classification (NOC), however, recommended achievement lists for “Risk for Impaired Skin Integrity” include only items associated with the “body functions/physiology” items. Evaluation is necessary to clarify the roles of nursing outcomes in comparison of self-management.

*Keywords: nursing outcome languages, diabetic foot, diabetes nursing, Delphi method*
34. Home-visit improves results of knowledge and behaviour amongst elderly patients with heart failure

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Background

In Brazil, 59% of the hospitalizations related to heart failure (HF) are of elderly patients. The low adhesion to the treatment is amongst the most frequently preventable causes of decompensation, followed by subsequent hospitalization. This overall picture justifies the need for implementation of programs to follow up patients after hospital discharge. Such programs have as objective to follow up clinical procedures to promote more adhesion to the treatment through the education in health, aiming at improving quality of life, decreasing hospitalization and costs for the health system. From this perspective, this study was designed to monitor heart failure patients in the home environment through the use of a system of nursing classifications. The classifications are interconnected to favour the evaluation of the effectiveness of educational interventions, allowing assessing changes in the behaviour of patients caused by better knowledge of the disease and about the treatment.
Research Aim/Question/Purpose
To compare the average score of nursing outcomes in Health Knowledge and Behaviour, described by the Nursing Outcomes Classification (NOC), between elderly and non-elderly patients with HF in the home environment.

Methods/Process
Prospective cohort study. The sample was composed of patients with decompensated HF with systolic dysfunction, coming from two institutions in southern Brazil, from April 2010 to March 2011. The patients were still in hospital when invited to participate of this study. After the acceptance, they were followed up for six months and received four home visits (HV). During clinical evaluation visits, diagnoses described by the NANDA International were established, results assessed (NOC), and nursing interventions implemented described by the Nursing Interventions Classification (NIC). Most nursing interventions used are from the Behavioural Domain: Health Education, Self-Modification Assistance, Behaviour Modification, Telephone Consultation, Nutritional Counselling, Teaching: Prescribed Medication, Teaching: Disease Process, Family Involvement Promotion, Family Mobilization, Fluid Monitoring. The outcomes evaluated were Knowledge: Treatment Regimen, Knowledge: Medication, Symptom Control, Compliance Behaviour. For purposes of analysis, patients were divided into two groups: the elderly were considered with age ≥ 60 and the non-elderly bellow 60.
**Findings/Outcomes**
We included 23 patients, predominantly male (65%), retired (61%), with low education (average of 3 years of education). In the group of non-elderly patients (n = 10) the mean age was of 53.3 ± 4.7; in the group of elderly (n = 13) the mean age was 71 ± 72 years. All measured outcomes demonstrated a significant increase in scores when compared to the averages of HV1 and HV4; Knowledge: Treatment Regimen (2.33 vs. 3.59); Compliance Behaviour (3.05 vs. 3.95); Knowledge: Medication (2.28 vs. 3.55); Symptom Control (1.74 vs. 3.18), p = 0.001; both groups demonstrated significant increase of mean results.

**Implications**
The nursing interventions regarding health education were effective for both elderly and non-elderly patients, in accordance with the nursing outcomes NOC. Supported by FIPE, FAPERGS, HCPA

*Keywords: Outcomes evaluation, Heart failure, Nursing process/Classification, Home visits*

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**35. Nursing outcomes related with self-care in non-acute hospital ward**

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Background

UMC Ljubljana is a large hospital with 2178 beds and 103,564 in-patient admissions and 7759 employees. Nursing interventions are mostly hidden behind medical interventions which are seen as the most important part of the patient health care. We would like to investigate the influence of nursing interventions on nursing outcomes.

Research Aim/Question/Purpose

Objectives: We would like to measure the difference between the status of nursing outcomes at the admission and at the discharge. Research hypothesis: At how many patients did the status of the nursing outcome Self-Care: Activities of daily living improve during the hospital stay in non-acute hospital ward? How much the status of the nursing outcome Self-Care: Activities of daily living has improved during the hospital stay in non-acute hospital ward? Which indicators of the nursing outcome Self-Care: Activities of daily living has improved mostly?

Methods/Process

We will conduct the research in non-acute hospital ward called Nursing unit with 30 beds and with average hospital stay of 30 days. We will observe ten indicators of nursing outcome Self-Care:
Activities of Daily Living in Nursing unit for three months. We will use quantitative research methods.

**Findings/Outcomes**

We expect that results will show the improvement in the nursing outcome Self-Care: Activities of Daily Living at most patients admitted in Nursing unit.

**Implications**

In this research we limited on nursing outcome related with self-care and mobility. For further research there are other areas that can be investigated, such as psychological well-being, social interactions, risk control and safety.

*Keywords: nursing outcomes, Self-care, activities of daily living, nursing outcomes classification*

**36. A description of the implementation project of electronic health record (EHR) in Finland**

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**Background**

The majority of healthcare organizations have been implemented electronic health records (EHR) in Finland. Current EHR systems require updating because of the requirements of implementation of National Archive of Health Information. Also at the Satakunta
Hospital District (SHD) in Finland the implementation project of EHR is ongoing (started spring 2012 lasting at least to 2014). EHR system implementation is a complex and multi-dimensional entity. The same computer application deployment can produce different effects in different units, since the socio-organizational factors (eg, motivation of personnel, management support, work pressure) may be different for different units. Users and tasks should take into account the introduction of EHR. (Ammenwerth et al 2006)

**Research Aim/Question/Purpose**

The aim of this project is to implement the electronic health record at the (SHD) in Finland. SHD is one of the 20 hospital districts in Finland producing specialized medical care services for approximately 226,000 residents of its 20 member municipalities. The hospitals of the SHD locate in three towns in western Finland with approximately 2500 health care professionals. The object is to develop unified care practices and standardize the data contents and documentation practices in connection with the reform of the EHR systems. The ultimate goal is to secure flexible continuity of patient care. The project will be described with FITT ("Fit between Individuals, Task and Technology") framework with the process-oriented character of an EHR introduction.

**Methods/Process**

This presentation describes the implementation process of EHR system prospectively. The FITT model is based on the idea that the adoption of information technology in various clinical environments depends on the user, work processes, and technology compatibility. (Ammenwerth et al. 2006.) We will present an EHR
implementation project where the FITT framework (Ammenwerth et al 2006) will be applied in an ongoing analysis, to show how it can help describe and analyse those socio-organisatorigal-technical thinks, which affected by the adoption of information technology in specialized medical care. In order to influence and improve the fit, management can directly influence those attributes of individual, task and technology.

**Findings/Outcomes**
The EHR implementation process is putting into practice in stages with training and standardizing work practices by means of process descriptions and workshops following the components of FITT model:
Individuals: Project group: Chief physician of Information Management, Project manager and ten EHR -trainers with background in nursing education or the department secretary trainees: nurses, physicians and all other health care professionals.
Task: work processes – beginning by the definition of the target state, coherent of the process, division of labor between professional groups Technology: Implementation of EHR system in stages, beginning with three pilot-units with 150 health care professionals with the medical report, medication, e-prescription adapted to the work processes. The project will be continued until all health care professional at the SHD are educated using EHR.

**Implications**
The evaluation of the project is ongoing.

*Keywords: Electronic Health Records, implementation project, FITT framework*
37. Educational software development for the establishment of nursing diagnoses

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Background

Introduction: the usage of the Nursing Process, as well as the classification systems for professional practice, has favored patient care and the organization of conditions for that care may occur. Furthermore, the development of tools has been a need in institutions that wish to apply the Nursing Process, aiding in nurses’ clinical judgment and decision making, especially when elaborating nursing diagnoses. 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 reasoning. Usage of computerized simulations, interactive cases simulations, and comparisons of diagnostic decisions from a clinical situation are examples of strategies pointed out in the literature for the development of diagnostic ability and its subsequent accuracy. The identified need of decreasing teaching-learning difficulty, both regarding nursing students and nurses, has motivated us to develop
an educational software that favored diagnostic ability development.

**Research Aim/Question/Purpose:**
To report the stages of development of an educational software to establish accurate nursing diagnoses.

**Methods/Process**
Material and methods: Project of development of a technological production based on software engineering, carried out in a public university and university hospital from the south of Brazil. Participants of this project are nursing professors and students, nurses and informatics professionals. Initially, clinical cases from different areas had been elaborated, containing history and physical exam of a patient, listing of signals and symptoms and risk factors in different clusters, related factors and diagnostic hypotheses according to the NANDA-I classification, with more and less accurate options. To finish off the cases, consensus validation was used in the research groups. Software development was based on the Structured Project of Systems, composed of five stages: proposition, preliminary project, development, implementation and assessment. The project is currently on its third phase. In order to develop this system, Rapid Application Development (RAD) was used, which is a methodology that involves techniques like interactive development and software prototyping. Software planning developed using RAD is intercalated with the software’s own writing. In RAD, structured techniques and prototypes are especially used to define user requirements, and to define conception of the final system.
Findings/Outcomes
Preliminary results and Conclusion: The Project started with the development of preliminary data models and structured techniques.

Implications
In the end, a software that facilitates teaching-learning of students and nurses in elaborating accurate nursing diagnoses is expected to be developed, in which adequate interventions are supported and there is consequently improvement on the outcomes obtained by the patient.

Keywords: Education, Nursing Informatics, Information Systems, nursing process, nursing diagnosis

38. The Belgian Nursing Minimum Data Set II (B-NMDS II) and its transfer to German hospitals

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Background
Nurses in German acute care hospitals need a valid nursing workload measurement system which is capable of providing comparable data about the need for nursing interventions including the nursing care required, costs, staff requirements and quality of care. It is therefore necessary to have a multidimensional tool which can be used by multiple actors in the health care system. The establishment of a valid nursing workload measurement
system has become even more important since the implementation of the German-Diagnosis Related Groups (G-DRGs). Nurses need to demonstrate that they play a key role in health care and are able to influence health policy. International studies show that the Nursing Minimum Data Set (NMDS) is capable of meeting the above-mentioned demands. So far, Belgium has been the only country that has consistently gathered NMDS data in every general hospital since 1988. The current version, the B-NMDS II makes it possible to measure the effectiveness of nursing interventions and illustrate the variability of the required nursing care based on DRGs.

**Research Aim/Question/Purpose**

This study therefore examines whether the B-NMDS II can be transferred to German hospitals. In addition, it will examine the questions of whether the adapted tool is capable of identifying and depicting patient- and staff-related differences as well as care-related varieties and specificities between the participating hospitals and wards or patient groups with different G-DRGs.

**Methods/Process**

The study is divided into two parts. The first part explores the translation and adaptation process of the B-NMDS II. The second part focuses on a longitudinal data collection in hospitals and an exploratory descriptive data analysis. Data were collected in 21 general medical wards at three German university hospitals. Convenience sampling was used to collect and statistically analyze data of 2,388 adult in-patients on a total of 13,394 treatment days.
Three G-DRGs were selected to investigate the nursing care required.

**Findings/Outcomes**

The results of both parts of the study show that the transfer of the B-NMDS II to German acute care hospitals is possible, comprehensible and feasible. In spite of standardization and reduction on essential key data, this tool makes it possible to identify the functional, psychosocial, communicative and educational nursing activities. It also allows to show the specific nursing care required in individual hospitals and wards. Additionally, it identifies the commonalities and differences between the various patient groups. The credibility and validity of the results are supported by Ridit data. The studies of the nursing care required for patients of the selected G-DRGs do not only reveal the different nursing activities per DRG, they also provide information about the variability of nursing care required for patients in a DRG.

**Implications**

The findings of this study provide recommendations for further studies of the adapted B-NMDS II and its practical implementation. The tool needs to be tested on general surgical wards, intensive care units, paediatric wards, and in acute care hospitals with different care levels. It is important to explain the benefits of the tool for nursing practice, management, and nursing research.

*Keywords: translation process, Germany, B-NMDS II, nursing acute care, Germany*
39. Factors related to the elderly in fragility hospitalized: contributions to the diagnosis of nursing "risk for elderly in syndrome fragility"

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Background
Frailty is defined as a clinical syndrome in which five criteria were present: unintentional weight loss, self-reported exhaustion, weakness (grip strength), slow walking speed and low physical activity.

Research Aim/Question/Purpose
Main purpose: analyze the factors associated with syndrome of frailty in elderly (SFE), contributing to developing a nursing diagnosis “risk to syndrome of frailty in elderly”. Specific purpose: identify factors associated with SFE, characterize the socio-demographic profile, chronic morbidities, co-morbidities, reasons for hospitalization and levels fragility. Identify factors associated with and consequential risk factors for SFE.

Methods/Process
Transversal descriptive quantitative research; Setting: inpatient units and surgical clinic of a university hospital; Study sample: 395 elder people chosen for convenience. Inclusion criteria: Have sixty ou more years old; ability to walk and maintain consistent dialogue to questions during the application of data collection; Exclusion
criteria: patients after surgery for hip prosthesis. Data collection: analysis from records of the patient and the application of Edmond Fragility Scale (EFS), the period November 2010 to November 2011. DATA ANALYSIS: descriptive statistics by Predictive Analytic Soft Ware version 18.0 and test of $X^2$ (I-squared of Pearson) to verify the association between the variables; significance 5% ($p \leq 0.050$); ETHICAL CONSIDERATION: the project was approved by COMPESQ/EENF n° 005/2010 e CEP/HCPA n°100172.

**Findings/Outcomes**

28.9% (114) of the subjects did not have the SFE, 26.3% (104) were apparently vulnerable to SFI, 20.8% (82) has mild frailty, 13.4% (53) have moderate frailty and 10.6% (42) have the syndrome in severe level. There was a statistically significant association between the variables: female gender and level of fragility moderate ($p = 0.031$); Non-white and "Fragility severe" ($p = 0.008$), unmarried and reside levels "Fragility moderate" and "severe Fragility" ($p = 0.014$); level of education and no year of study and "Fragility moderate" ($p = 0.001$), monthly income 1-2 minimum wages and "Fragility severe" ($p = 0.034$); presence of morbidities with "Fragility severe" ($p = 0.009$). As for preexisting morbidities noticed an association between respiratory diseases and levels "Fragility moderate" and "severe Fragility" ($p = 0.003$), infectious and parasitic diseases with "Apparently vulnerable to SFI" ($p = 0.040$), blood disorders with "Fragility light" ($p = 0.052$). Moreover, the morbidities that reasons for hospitalization were associated with levels of SFI were: respiratory diseases and "Vulnerable to SFI" ($p = 0.001$), genitourinary diseases and
"Absence of SFI" (p = 0.035), blood disorders and "Fragility light" (p = 0.035).

**Implications**

We conclude that the factors associated with SFE and configure the nursing diagnosis "Risk for SFE" are female, non-white, living without a partner, having no religion, low education level, low income (1 to 2 minimum wages), presence of morbidities (illnesses respiratory, blood and certain infectious and parasitic) and reasons for hospitalization morbidities (diseases of the respiratory, genitourinary and blood).

*Keywords*: Frailty Elderly, nursing diagnosis, Geriatric Nursing

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**40. Standardized nursing language in patients with pharmacologic treatment noncompliance: a case study.**

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**Background**

Interventions to improve treatment adherence in people with chronic health problems are essential, because an adequate
adherence is associated with mortality reduction. In the Spanish context, nurses have a fundamental role in promoting patient abilities to manage independently and appropriately the prescribed treatment regimen. This is essential for providing care quality improvement and addressing patient safety.

**Research Aim/Question/Purpose**

This case study shows the approach that Nurses in Primary Care took with a patient with adherence difficulties to the prescribed pharmacology therapy for his chronic health problems.

**Methods/Process**

A general nursing assessment according to Gordon's Functional Health Patterns framework was conducted. Then nursing diagnoses were identified and appropriate nursing outcomes and interventions were selected. Follow-up visits were made and the outcomes achievement was assessed. To develop the care plan, software that allows nurses to work with standardized nursing languages in the Electronic Health Records was used.

**Findings/Outcomes**

The patient assessment showed an alteration in the Health Perception–Health Management Pattern. The assessment data led us to formulate the NANDA-I diagnosis Noncompliance related to credibility of provider, deficient knowledge related to the regimen behaviour and involvement of members in health plan manifested by behaviour indicative of failure to adhere and objective tests provide evidence of failure to adhere.) We decided to use the Nursing Outcome Classification outcome Compliance Behaviour (1601). Patient’s score on the overall outcome is 2 and his goal is 5
in 6 months. For indicator 160104, Accepts health professional's diagnosis, he is at level 2 and his goal is 4. For indicator 160103, Reports following prescribed regimen, he is at level 3 and his goal is 5. For indicator 160109 Seeks external reinforcement for performance of health behaviours, he is at 1 and his goal is 5. To achieve the desired outcome, we chose the Nursing Interventions Classification interventions of Patient contracting (4420), and Teaching: Prescribed Medication (5616). The activities for Patient contracting intervention that were used are: Determine with patient care objectives; Help the patient to develop a plan to meet the objectives; Dispose an open environment for creation of the agreement and facilitate the involvement of significant others in it. Finally, we decided to use the Teaching Prescribed Medication activities: Review the patient knowledge about medications; Assess the patient's ability to administer the medications himself; Instruct the patient about the administration / application of each medication and include the family. Follow-up visits were scheduled to review the care plan. The evaluation of the indicators was made on time and then the final outcome score achieved was 4.

**Implications**

Haynes (2005) suggests that successful interventions for improving adherence may include more frequent provider-patient interactions with a focus on adherence. In the therapeutic relationship context, the professional should encourage the establishment of goals agreed with the individual and with the active involvement of their family in the provision of care.
41. Theoretical model of critical thinking in nursing diagnostic process

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Background
Nursing diagnostic process consists of collecting information, interpreting information, grouping of data, survey of diagnostic hypotheses and identification of the nursing diagnose. Decision making regarding nursing diagnosis involves cognitive skills, interpersonal and professional attitudes. Critical thinking is defined as a deliberate judgment that results in interpretation, analysis, evaluation, inference and explanation of evidence.

Research Aim/Question/Purpose
Propose a theoretical model of critical thinking in nursing diagnostic process whose specific objectives were to identify critical thinking skills in nursing diagnostic process; define these skills; relate them to the nursing diagnostic process and build a theoretical model of critical thinking in nursing diagnostic process.

Methods/Process
It was descriptive exploratory study with qualitative approach held at the Universidad Federal of Paraíba campus João Pessoa. Seven
students were selected that would participate in the study through the signing of the free and informed consent; they were attending the 9th semester of nursing graduate theoretical-practice activities and performing at the Hospital University Lauro Wanderley. Performed a clinical case identification nursing diagnoses priority and critical thinking skills with justifications. Descriptive analysis was held and the content of these data to identify themes that have guided three focus group sessions that were recorded in audio and transcribed to perform content analysis. DATA ANALYSIS: The project was evaluated by the Committee of ethics in research of Hospital Universitário Lauro Wanderley, receiving a favorable opinion (CEP/HULW nº 211/10).

**Findings/Outcomes**

Critical thinking skills identified in nursing diagnostic process were scientific and technical knowledge, analysis, logical reasoning, clinical experience, knowledge on the patient, discernment, applying patterns and contextual perspective. These skills have been defined thus: analysis is research and evaluation of biopsicossociais aspects for understanding of a situation holistically; Scientific-technical knowledge involves specific knowledge of nursing and literature; logical reasoning refers to the immediate perception of a situation, grouping, and the relationship between data; clinical experience is the role of the nurse in similar clinical cases; The knowledge on the patient is the knowledge of physical, emotional, social, and spiritual of the patient; discernment is the judgment of data for decision-making; application of standards is the identification, evaluation and data
grouping based on literature information and contextual perspective is the vision of a clinical situation as a whole. Thus, built a theoretical model of critical thinking in nursing diagnostic process. In this model, the scientific-technical knowledge is associated with clinical experience giving theoretical-practice to sustaining nursing diagnostic process. Data collection requires analysis, application of standards, knowledge on the patient and contextual perspective. The collection is followed by interpretation and grouping data in a continuous process of analysis and application of standards associated with the logical reasoning. Health problems are known, generating diagnostic hypotheses to be judged with logical reasoning and discernment.

**Implications**
The theoretical model showed the complexity of the nursing diagnostic process based on the skills of nursing students critical thinking to take clinical decisions. It is understood that, when using these abilities, there is possibility of taking appropriate decisions and priorities.

*Keywords: nursing, THINKING, NURSING PROCESSES, nursing diagnosis*
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