Schweizerischer Verein für Pflegewissenschaft
Association Suisse pour les sciences infirmières (APSI)
Swiss Association for Nursing Science (ANS)

# Expert Report on the Responsibility of Nursing

**Expert Group of the Swiss Association for Nursing Science (ANS)**

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## Preface and Acknowledgements

The board of the Swiss Association for Nursing Science (ANS) would like to thank the authors for their dedication and commitment to compiling this expert report. The authors would like to thank PD Dr. René Schwendimann from the Institute for Nursing Science of Basel University, and member of the Academic Association for Gerontological Nursing of the ANS for his critical review of the manuscript. The authors also thank the ANS board for the multiple reviews, feedbacks and support of the final version: Annie Oulevay-Bachmann (PhD), Gabrielle SantosFontannaz (MNS), Mag. Günter Gantschnig, Luzia Herrmann, Prof. Lorenz Imhof (PhD), Peter Ullmann (MSc), and Nicole Zigan (MNS).

After having been consulted and required changes made, the ANS-board approved the expert report. The board recommends it to circles of nursing professionals for discussion and to be considered for further work under the parliamentary initiative for the recognition of nursing responsibilities.

We would like to express special appreciation to the directorate of the Federal Office of Health, Federal Department of Home Affairs, for their generous subsidy, which has allowed for the compilation, translation and distribution of this expert report. Sincere thanks are addressed to the members of ANS Marianne Wälti and Gabrielle Santos-Fontannaz for their remarkable effort to review the French version.

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Print: Schwabe AG, Muttenz

Citation:

Müller-Staub, M., Abt., J., Brenner, A., & Hofer, B. (2015). Expert Report on the Responsibility of Nursing. Bern: Swiss Association for Nursing Science ANS.

## Summary

This expert report describes the independent responsibilities of nursing against the background of the parliamentary initiative "Legal Recognition of Nursing Responsibilities." According to its focus on the promotion of nursing science, the ANS has based this report on the current state of the international literature. The outcomes of the report can be summarized as follows:

- The core business of professional nursing is to assume responsibility for the nursing process. Currently tertiary level educated registered nurses are trained and are already responsible for the specification, implementation, and evaluation of nursing tasks.

- The aim of the initiative for the legal recognition of nursing responsibilities is to assure that the responsibilities that nurses are already assuming are recognized by the Health Insurance Act. It does not relate to an extension of nursing tasks. Studies reveal that nurses being deployed in accordance with their competencies help to reduce costs.

- Taking responsibility for the implementation of the nursing process is characterized by nurses' professional relationship with patients and critical thinking.

- The nursing process is based on clinical decision-making and comprises five steps: assessment, nursing diagnoses, outcome planning, implementation of nursing interventions and evaluation.

- These steps are scientifically substantiated by the NNN (NANDA-I, NIC and NOC) nursing classification. The NNN comprises clearly defined, validated and internationally recognized nursing diagnoses, nursing interventions and nursing-sensitive patient outcomes, which enable its indicators to provide proof of efficacy required by the Health Insurance Act.

- The NNN nursing classification represents the body of knowledge of nursing in a common technical language and defines the responsibilities as well as the performance of registered nursing staff.

Thus, the profession of nursing is a well-defined, independent field. It can present its performance in defined and scientifically recognized classifications and demonstrate their effectiveness. By legally establishing the autonomy of nursing, legal conditions will be created for nursing professionals to make a contribution to the future development and provision of health care.

## Recommendations for Legislation

- Nurses are legally responsible for the specification and performance of nursing interventions. They have specific competencies for nursing care of sick people and must be able to make full use of these competencies.
- The nursing process with all its steps should be determined by law to be the core task of nursing. This complies with the Swiss training requirements for tertiary level educated nursing professionals and with international regulations (e.g. USA, Austria).
- The NNN nursing classification is used for formulating rules for implementation. This ensures that nursing practice meets the requirements of the Health Insurance Act with regard to efficacy, efficiency and expediency of nursing performance (Article 56, paragraph 1) as well as quality management (Article 58).

The legislator creates the legal framework so that nurses can take responsibility for their own field of activity, independent of medical doctors. In health care, cooperation among professional groups on equal footing is increasingly gaining importance. The burden for the medical profession is eased when the responsibilities for nursing are clarified by law. Consequently, physicians may focus on the essentials of their own responsibilities.

## Introduction

With this expert report, the Swiss Association for Nursing Science (ANS) provides a scientific basis for professional-political discussions regarding the parliamentary initiative "Legal Recognition of Nursing Responsibilities."

This initiative requires an adjustment of the Health Insurance Act. Nursing shall be defined so that nursing care can be provided by nurses following physicians´ orders or, independently within their own specific area of responsibility. Thereby a legal foundation is to be established for the independent practice of nursing. If the initiative achieves its goal, the above-mentioned nursing responsibilities will be defined in more detail.

As the name of the initiative indicates, it is not about an extension of nursing responsibility, but about the recognition of its existing responsibility. The aim of the initiative is to establish the responsibility nurses have under the Health Insurance Act. The Health Insurance Act regulates the financing of health care and determines which services by which service providers, and under what conditions, are to be paid for by the health insurance. However, the Health Insurance Act does not define any competencies. The tasks and responsibilities of nurses are described in cantonal health laws. For instance, the law of the canton of Solothurn specifies that professional nursing practice, comprising the planning and implementation of nursing as well as evaluation of its efficacy, is the sole responsibility of nursing. This includes the identification of the patients´ needs, provision of temporary or permanent support required in conducting activities of living, performance of preventive measures, as well as giving information and advice. However, the delegated sphere of activity also includes the execution of written orders of the responsible physician concerning prevention, medical diagnosis, and treatment[1]. Therefore, the Health Insurance Act contradicts cantonal health laws and does not reflect reality, because nurses are already taking on these responsibilities in their independent sectors. Although nurses carry out these functions they are not paid for them by the health insurances in the absence of a medical prescription. However, this prescription requirement, even for the diagnosis of nursing needs, is asking too much of the medical profession, since they are thereby required to countersign for services that are not part of their training and which belong to the independent sector of a different profession[1].

The Swiss Association for Nursing Professionals (SBK) took on the leadership of the professional-political discussion regarding the initiative and thereby works closely with the ANS. Subsequently the ANS handed a statement to the SBK in the course of an opinion-forming debate in November 2011. However, for an in-depth discussion of the initiative within the ANS, a sound scientific basis has been missing. This expert paper fills this gap and shows how the ANS understands the independent sector of professional nursing in Switzerland. Among other things, it is the purpose of the ANS to support and to promote nursing research. It represents its concerns through statements and works together with political, professional and multi-professional institutions. The aim of this expert report, based on the international state of research, is to provide a scientific basis for the independent responsibilities of nursing, as well as for definition of nursing tasks and responsibilities which will be worked out at a later date if the initiative is successful.

In the first section of this paper, tasks and competencies of nurses are presented as we look at the evolution of nursing to a profession. The second part describes the independent responsibilities of nursing, illustrating how the nursing process gives structure to the core of nursing practice. The nursing process is based on a relationship structure and critical thinking and provides the foundation for clinical decision-making.

The third part describes the scientific foundation of the nursing process. Currently, the Health Insurance Act requires that proof regarding efficacy, efficiency and expediency of any service be provided in order to qualify for the coverage of costs. The efficacy of services is to be periodically

[1)] §§ 2 and 3 of the executive statute on health law of June 28, 1999

reviewed in accordance with scientific methods (Federal Health Insurance Act from 1994 as of March 1, 2014, page 17). The international classifications of nursing diagnoses, -interventions and -outcomes provide the basis for the nursing process required by the Health Insurance Act. The classifications illustrate the body of knowledge of professional nursing and point out how the steps of the nursing process can be implemented and evaluated using evidence-based practice. The report closes with conclusions and recommendations for legislation.

## Historical Aspects and Definitions of Nursing

Since the 1980's, nurses, lecturers and nursing scientists have been dealing with the term "nursing" in Switzerland. In this context, questions like "How can nursing be described best? What do nurses exactly do and what is the aim of nursing practice? When do people need nursing, and what kind of nursing do they need?"[2] were discussed.

In addition to an identity-forming effect for members of the profession, the intense discussion regarding the term "nursing" has meaning for societal discussions with regard to the tasks delegated to professional nursing and the necessary acquisition of knowledge and the associated competencies. For instance, the training of graduate nurses at the university level is frequently the subject of societal discussions. Nurses have been, and still are confronted with the question of where the difference lies between professional and non-professional nursing, e.g. basic care of oneself or a relative in everyday life.

The literature on the history of nursing illustrates the manifold debate about the subject of professional nursing. Bischoff (2009) impressively describes in her book how, in the 19th century, a good education and maternal qualities were considered the basis for the profession of nursing[3]. Definitions of nursing are also relevant for nursing education, as students should be enabled to offer patients and their family members person-centered nursing.

Considered a pioneer of nursing, Florence Nightingale (1820 – 1910) was the first person to have recorded the nature of nursing in writing. Her book *"Notes on Nursing: What it is and what it is not"* is regarded as one of the most frequently cited works in the field of nursing. When describing the character of nursing, Nightingale focused on hygiene measures such as personal hygiene, fresh air, clean linen, a balanced diet and an optimized environment of the sick[4]. Later, Nightingale´s records were used as the foundation for the development of nursing education in many countries. In Switzerland, Sister Liliane Juchli (born in 1933) established a long, and still persistent framework for nursing education with her nursing textbooks[2]. In the middle of the 20th century especially American nursing theorists developed definitions of nursing[5], e.g. Hildegard Peplau, Virginia Henderson, Ida Jean Orlando, Madeleine Leininger, Callista Roy, Imogene King and Dorothea Orem. The definitions of nursing in the respective nursing models are based on different theories such as need orientation, outcome, adaption, interaction or system models. Each of these authors developed a nursing model with specific nursing theories representing the subject of nursing as a specialist field. Nursing models illustrate an abstract theory of general measures and a reference framework of nursing. They describe nurses' own body of knowledge and the tasks of the profession, in contrast to the field of medicine and to lay care. Nursing theories serve to develop and concretize the models of nursing[5].

What are the tasks of nursing? Nurses support patients that are dealing with health limitations in daily activities and promote independence by helping patients shape the roles that are important to them as much as possible. Nurses accompany persons at the end of their lives in the process of dying[6, 7].

The "International Council of Nurses" (ICN) defines nursing as follows:
*„Nursing encompasses autonomous and collaborative nursing of individuals of all ages, families, groups and communities, sick or well and in all settings. Nursing includes the promotion of health, prevention of illness, and the nursing of ill, disabled and dying people. Advocacy, promotion of a*

*safe environment, research, participation in shaping health policy and in patient and health systems management, and education are also key nursing roles"*[8].

Over the past 30 years, other professional and health organizations have developed definitions of nursing. The definition of the "American Nurses Association" (ANA), published for the first time in 1980, is based on the definition of the "North American Nursing Diagnosis Association" (NANDA) and gained wide international influence. In order to describe the nursing focus, NANDA introduced the term "human response", which was translated into German as "Erfahrungen/Reaktionen auf gesundheitliche Probleme" [experiences/reactions to health problems][9]. According to the NANDA, the nursing focus is not on the illness of a patient, but on human experiences and reactions to health problems of individuals, families or communities[10, 11]. The ANA defines nursing as follows:

*"Nursing is 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"*[12].

The ANA definition, shaped by NANDA also provided a basis on the definition of the SBK13. The demographic and epidemiological change in the public health system has encouraged the professional associations of nurses in Austria, Germany and Switzerland to set a common definition of nursing that stresses the important role of nursing in the provision of health care. In their policy paper, professional nursing is defined as follows:

*"Professional nursing encompasses the provision and nursing on one´s own responsibility, alone or in cooperation with other professionals, of people of all ages, of families or civil unions as well as of groups and social communities, no matter if ill or healthy, in all situations of life (settings). Nursing includes the promotion of health, the prevention of diseases and the treatment and nursing of sick, disabled and dying people. Further key tasks of nursing are the perception of interests and needs (advocacy), the promotion of a safe environment, research, the participation in health policy making and education organizing as well as the management of the public health system"* [14].

What all definitions of nursing have in common is the question of how people experience, handle, and cope with health, illness, crises, sorrow, dying and death[15]. Nursing is defined as a societal contribution in order to prevent, resolve, and reduce health problems or to help individuals cope with their illness in a manner that is helpful to them[15].

## Nursing as a Profession

The Latin word "profession" is often used synonymously with occupation, vocation, business, trade, passion[16]. Professions are occupations in which the task is to implement social values (e.g. law, health). Professionals have a high degree of professional autonomy and specific skills to fulfill their functions; and professions are characterized by certain attributes that distinguish them from those occupations where these features are not designated[17].

Three important features characterize professions: the focus on common welfare, an independent body of knowledge and professional autonomy.

***1. The focus on common welfare:*** Professional activity is related to common welfare and serves to maintain significant values of society such as health, consensus, morality, truth, justice[17].

The focus on common welfare is part of the ethical principles of nursing, which were published by the SBK for the first time in 1990. The central message is that the basic professional responsibility of nurses is with the people needing nursing[18]. This is described in the Code of Ethics of the professional associations of nurses in Germany (DBfK), Austria (ÖGKV) and Switzerland (SBK) as follows:

- The nurse *performs her professional task for the benefit of the individual, the family and the social community;* she coordinates her services with the ones of other groups involved.

- While performing her professional task, the nurse guarantees that the use of technology and the application of new scientific findings are compatible with the *safety, dignity and rights of people*[19].

***2. Independent body of knowledge:*** Those who work in a profession apply a specific knowledge, which they use to solve specific problems. The basis of knowledge is established in science as well as in everyday practice. It is this dually established knowledge that allows an in-depth understanding of the specific problems and issues of the respective target group – in the case of nursing these are patients and their relatives[17]. Professions define the body of knowledge in their field in three areas, the so-called triptych[20-22]. The term "triptych" derives from the Greek *triptychos* and means triplicate, consisting of three layers or plies[23]. In the context of nursing this tripartite structure consists of "diagnosis-intervention-outcomes", and are characteristic of the profession[21]. Diagnoses describe specific problems of their clients; interventions define specialized knowledge and actions to solve their client´s problems, and lastly, the results are those outcomes that are achieved by the profession. Thus, in the health sector:

a. The problems to be addressed are described in *diagnostic classifications*,
b. the knowledge-based treatments in *intervention classifications* and
c. the results achieved by the profession in *outcome classifications.*

In the medical context, the "triptych" consists of:

a. The International Classification of Diseases (ICD)
b. The Swiss classification of Operative Procedures (CHOP) for the inpatient sector or the Tarmedlist that comprises all outpatient medical treatments and tariffs.

Unlike nursing, the medical field does not define any specific outcome classifications. While a major portion of the body of medical knowledge is represented in the above classifications, the body of nursing knowledge is presented through the nursing classifications that include:

a. A description of the nursing problems/nursing needs in the *International Nursing Diagnosis Classification*,
b. knowledge-based nursing practice in the *Nursing Interventions Classification* and
c. outcomes being achieved in certain nursing diagnoses through nursing interventions in the *Nursing Outcome Classification.*

The independent body of nursing knowledge is a triptych of internationally recognized classification structures: the *Nursing Diagnosis Classification* (NANDA – International), the *Nursing Interventions Classification* (NIC)[24] and the *Nursing Outcomes Classification* (NOC)[20]. These three classifications have been summarized in a taxonomy (NANDA-I, NIC and NOC) which together are referred to as the NNN. The NNN summarizes empirical and scientific foundations as triptych, and is continuously reviewed in accordance with new scientific evidence and represents the body of professional nursing knowledge[9, 20, 24-26]. Professional nurses base their clinical decisions on this body of knowledge[27-29] (see also the section on the Body of Nursing Knowledge).

According to Chinn & Kramer (2011) the body of nursing knowledge is acquired and implemented by four processes – so-called patterns of knowing: empiricism, ethics, aesthetics/intuition and personal knowledge[30].

These four patterns of knowing are described as follows[31]:

The *empirical knowledge* represents the scientific aspect of nursing. It comprises the descriptions of experiences and observations of nurses in practice. These serve as a basis for forming hypotheses, theories or models, which are made usable for nursing situations in the future. Empiricism takes a central position in the generation of knowledge within the discipline of nursing[30]. The em-

pirical knowledge of nurses is communicated, for instance, by sharing stories of nursing, observation and intervention studies on nursing-relevant phenomena in scientific journals or in training as well as by pooling and processing in the form of case studies and case reviews.

The *ethical knowledge* encompasses the moral component of nursing. It provides the nurses indications for "what should be done and what is good and right and responsible" when managing nursing situations[31] (Chinn & Kramer, page 9). The ethical knowledge is applied for both ad-hoc decisions and planned decision-makings in accordance to defined rules. The representation of values and the clarification of interests and various points of view are used to determine which interventions and/or interactions are morally justifiable. When nurses represent the rights and responsibilities of other people (patients), reflective and personal ethical principles are needed[31].

*Knowledge referred to as intuition/aesthetic* represents the art of nursing. The personal knowledge is knowledge about oneself and in relation to others. This knowledge allows perceiving the totality of all reflected experiences, acquired professional skills, common sense, and the importance of being in the moment, and make them useful for coping in a nursing situation. Intuitive knowledge allows detecting the background and/or the context of a nursing situation. Intuition is expressed when reflected experience and action meet in a certain moment. Intuition is reflected in behavior, posture, in action, in the manner of communication and in the interactions of nurses with persons involved in the situation[30, 32].

P*ersonal knowledge* develops through engaging, reflecting and introspection. Introspection means the consideration, description and analysis of one´s own experience and behavior by inward observation. "Personal knowledge in nursing refers to the inner experiences in the course of development to a holistic, conscious Self. (…) Only by knowing the Self, can you see another individual as a person. Personal knowledge may include spiritual or metaphysical knowledge. A comprehensive and conscious perception of the Self, the moment and the context of an interaction enable significant, interpersonal experience"[31] (Chinn & Kramer, 1996, p. 10).

"The *totality of knowledge* enables recognition of what is feasible and the creation of alternatives that permit a targeted selection of nursing interventions and interactions"[31] (Chinn & Kramer, 1996, page 6). These four patterns of knowing are used in everyday practice when making diagnoses, choosing nursing interventions and when desirable nursing outcomes are being evaluated. In order to conceptualize the application of knowledge in everyday nursing, McCloskey and Bulecheck (1992) developed the 'Nursing knowledge and decision-making model'[33] which has been extended by Moorhead (2013) see figure 2, p. 15.

***3. Professional autonomy:*** The vocational members of a profession control their own actions autonomously. This means that "real" professions are defined by the fact that autonomy is granted to them as a group, both by the clients and the organizations employing them with regard to the specification and execution of their work[17].

The nurse is personally responsible and accountable for her nursing performance, and she maintains her professional competence through continuing education. This applies particularly for the following areas[19]:

- The nurse is responsible for the definition and implementation of standards for nursing practice, nursing management, nursing research and nursing education.
- The nurse is involved in the continual development of professional knowledge based on research results and fosters, through her professional association, the establishment and maintenance of safe, economical, and socially equitable working conditions.
- The nurse promotes the patients´ health, safety and rights. She is responsible and accountable for individual nursing.
- In accordance with the ICN-Code of Ethics for Nurses[19] the nurse is responsible for an appropriate delegation of tasks for optimal patient care.

## Tasks, Competencies and Responsibilities of Nursing

The autonomous control of one's own activities assumes knowledge of the competencies and responsibilities of the own discipline. The next section describes the tasks and responsibilities of nursing relating to the direct care of patients, the collaboration within an inter- and intra-professional team and the continuous development of nursing. Krohwinkel (2008) describes three tasks and responsibilities of nursing, distinguishing among independent nursing tasks, nursing tasks prescribed by physicians and interdisciplinary nursing tasks[34].

### *Independent Nursing Tasks*

Currently, the nurse in the clinical setting is responsible for the specification, implementation and evaluation of nursing interventions. The responsibility for the nursing process in Switzerland is with the registered nurses trained at tertiary level. This means the nurse determines the need for nursing interventions, states nursing diagnoses and is responsible for the nursing interventions as well as for the documentation of the nursing process[35, 36]. The competencies expected for independent professional practice are presented[38] in the certification requirements for health professions at Universities of Applied Sciences and in the core curriculum of the Institutes of Higher Vocational Education for Nursing by the rectors´ conference of the Universities of Applied Sciences in Switzerland[37]. The core curriculum defines four main processes in which the graduate nurse is involved: The *nursing process* encompasses the assessment (gathering of information and collecting of patient data), the nursing diagnoses, the outcome planning, the implementation of nursing interventions and the evaluation[39]. Graduate nurses from Institutes of Higher Vocational Education for Nursing estimate patients' nursing care need, evaluate the health problems and plan the nursing care together with the patients and their relatives. They carry out nursing interventions and monitor them using evidence-based criteria. The efficacy of nursing is evaluated in the sense of quality assurance on the basis of the nursing outcomes. The *communication process* contains the confidence-boosting nurse-patient relationship as well as the intra- and inter-professional communication. The continuous education of nurses and the practice of teaching and guiding functions (patient education) are part of the knowledge process. Finally, nurses are responsible for expert leadership in their sector and for the development of supportive structural conditions[38].

Graduates of a University of Applied Sciences degree program in the health sector are – based on the role model CanMEDS 2005 – involved in seven roles[40]. Nurses take on professional leadership in their chosen field of work and make their job-specific skills available to patients, their relatives, and other people involved in the health nursing system. They build up trusting relationships with patients and their relatives and make common decision-making possible through appropriate communication. Nurses implement treatment plans within the institutional and legal framework in an effective and efficient way. They participate in the implementation and evaluation of evidence-based quality standards of nursing and recognize the need for innovation. They contribute to health promotion by reflecting their professional practice continuously. Due to their reflected professional practice, they also discover issues of practical relevance for research and development projects and pass these on to the corresponding bodies. They participate in projects and research in the nursing sector as well as promote the transfer of research outcomes into education and practice[35] (conference of the Swiss Universities of Applied Sciences, 2009, p. 37-43).

It clearly shows that nurses with a qualification from Institutes of Higher Vocational Education or Universities of Applied Sciences acquire competencies to address problems of patients autonomously, to derive and carry out nursing interventions and to evaluate the efficacy of the implemented interventions. Studies reveal that nurses achieve good patient outcomes that can be cost-reducing at the same time[41].

***Nursing tasks on medical prescription***

In this area the collaboration is classified in medical diagnostics and therapy. Here the nurse has a responsibility for implementation. This means she is responsible for the correct performance of delegated medical performances such as the correct administration of infusion therapies, the delivery of drugs and the monitoring of adverse effects (or side effects), or blood withdrawals for laboratory tests. In addition, nurses may recognize possible, impending complications at an early stage. This includes recognizing signs and symptoms indicating complications or a worsening condition of the patient – such as signs of internal bleeding, shifts in fluid and electrolyte balance, changes in consciousness or symptoms of hyper- and hypoglycemia – and to report nursing observations or assessment results to the medical service. For example, if a patient has signs and symptoms of a myocardial infarction, such as thoracic pain and shortness of breath, the nurse has the responsibility: 1) to suspect that these symptoms are, in fact, a problem, 2) to recognize that this problem has high priority, 3) to do what she can in order to address the problem and 4) to report the problem immediately[42, 43].

***Interdisciplinary nursing tasks***

In this area, the nurse is responsible for the cooperation and care coordination[34]. She contributes to the development of concepts for health maintenance and prevention. Nurses also work within interprofessional teams and participate in complex, interdisciplinary decision-making.

Nurses are committed to concerns relating to health and quality of life and support the interests of patients and their relatives. They integrate health promotion and prevention concepts for individuals and groups in their professional practice and participate actively in their implementation, for instance, the preservation and promotion of the mobility of elderly people at home or in an institutional setting. In order to achieve this, close collaboration between nurses and physio- and/or ergotherapists is often necessary. Physical mobility is a relevant factor in the prevention of many health problems (e.g. decubitus, falls, pneumonia), and good mobility can even promote health in individuals with a disease (e.g. heart failure, diabetes mellitus, Parkinson´s disease, stroke). While working on promoting mobility, nurses also maintain an ethical commitment as well as considering both the individual and institutional economic situation that could promote, or impede, a desired patient outcome.

Collectively, nurses professionally represent the vocation in society and independently campaign for the continued development and practice of the nursing profession[35], such as actively supporting the “Initiative for Legal Recognition of Nursing Responsibilities”.

## Interim Conclusion

Professional nursing has come a long way. While at the end of the penultimate century, maternal qualities were still considered the basis of the profession, the self-understanding of nursing has changed over the last century to that of an independent profession. The focus on common welfare, an independent body of knowledge and professional autonomy are now the characteristic features of the profession. The core elements of the independent tasks and the competencies of nursing in Switzerland are reflected in the final certification requirements of graduate nurses trained at the tertiary level: taking over responsibility for the nursing process, determining the need for nursing interventions, stating nursing diagnoses and implementing nursing interventions and evaluations as well as documenting the nursing process.

## The Nursing Process: Core of Independent Responsibilities

The Swiss education system is in agreement with international customs regarding the orientation of the nursing process as the core of the autonomous sector. The nursing process is recognized as the foundation of nursing practice and has been called a global unifying thread for nurses[39]. In addition, the nursing process is included in all nursing models representing a structure for nursing care and problem solving and describes nursing as a profession based on establishing professional relationships with patients and providing a therapeutic nursing presence[5, 39, 44, 45].

## Working as Relationship-building, Caring, Communication and Moral Sensitivity

The nursing relationship is characterized by caring attention, empathy and concern[44, 45]. Caring, allowing oneself to be involved, compassion, empathetic support and trust are crucial aspects that represent and shape the professional nursing relationship[47,48]. Without these qualities, the foundation for interacting with those who are in a vulnerable situation, due to disease or dependence, would be reliant on perceived functional impairments and their life and humanity would not be taken into consideration.[49-52]. Nursing means human caring where nurses bring their own person to the relationship in order to protect patients in their vulnerability and to preserve humanity and dignity[53]. A recent study describes nursing and interpersonal care as a mutual process of being involved, and dealing with the following issues: "being there as self", "having respect for human vulnerability", "being non-judgmental", "giving a voice to issues that need to be said and heard" and "the ability to accept the gift of devotion to others" [47]. The ability of nurses to perceive the feelings and mental state of patients and to realize them is demonstrated by behaviors, words, cognition, body language, feelings, thoughts, senses and intuition[53].

Empathy promotes the moral sensitivity of nurses and is an important precondition for accurate, patient-centred decision-making[50, 54]. The moral perception of nurses is particularly relevant, when rapidly changing, ambiguous and complex situations need to be assessed. Benner (1997) had already pointed out that excellent clinical performance depends on the ability of nurses to determine in varying situations (transitions) that point of view which ensures best understanding of patients[29, 55, 56]. The receptiveness of nurses to the concerns of persons being cared for and their ability to weigh competing ethical values in a specific situation is a fundamental requirement in the process of clinical decision-making[57]. The morally significant features of a situation can only be recognized when communication with the patient is well established. This requires that nurses use their ethical knowledge, attention and compassion in order to determine what illness and pain mean for an individual and which values and beliefs are most significant for him/her in his situation[49, 50, 54, 58]. Nurses refer to the physical, social, mental, spiritual and cultural needs of a patient in order to initiate nursing interventions that are in harmony for a certain patient in a specific situation[45].

However, nurses cannot limit their ethical commitment to the shaping of relationships. The economic constraints affecting health care results in marginalization of people who are particularly vulnerable due to old age, multi-morbidity, social status etc., and who are increasingly pushed to the lower end of supply chains and receive less nursing services[59-61]. Nursing plays an important role in the distribution of health resources. Thus, nursing is challenged to expand its ethical horizons to include the aspect of social justice and to raise the question of nursing relationships that cannot be created even though they are necessary[62]. Those who are chronically ill and have limited economic and social resources do not access adequate nursing, or medical care because they either cannot afford it or they assume they cannot[62].

## Clinical Decision-Making and Critical Thinking

Since the 1980's the nursing process has been a part of a nurses' basic training[63]. Today, the latest scientific evidence is transferred to a specific patient situation through the nursing relationship and troubleshooting while at the same time taking the experience-based expertise and patient preferences into account[28, 64]. In accordance with the newest scientific knowledge, the nursing process contains five interrelated phases: assessment, nursing diagnoses, outcome planning, implementation and evaluation (see figure 1)[39, 65, 66].

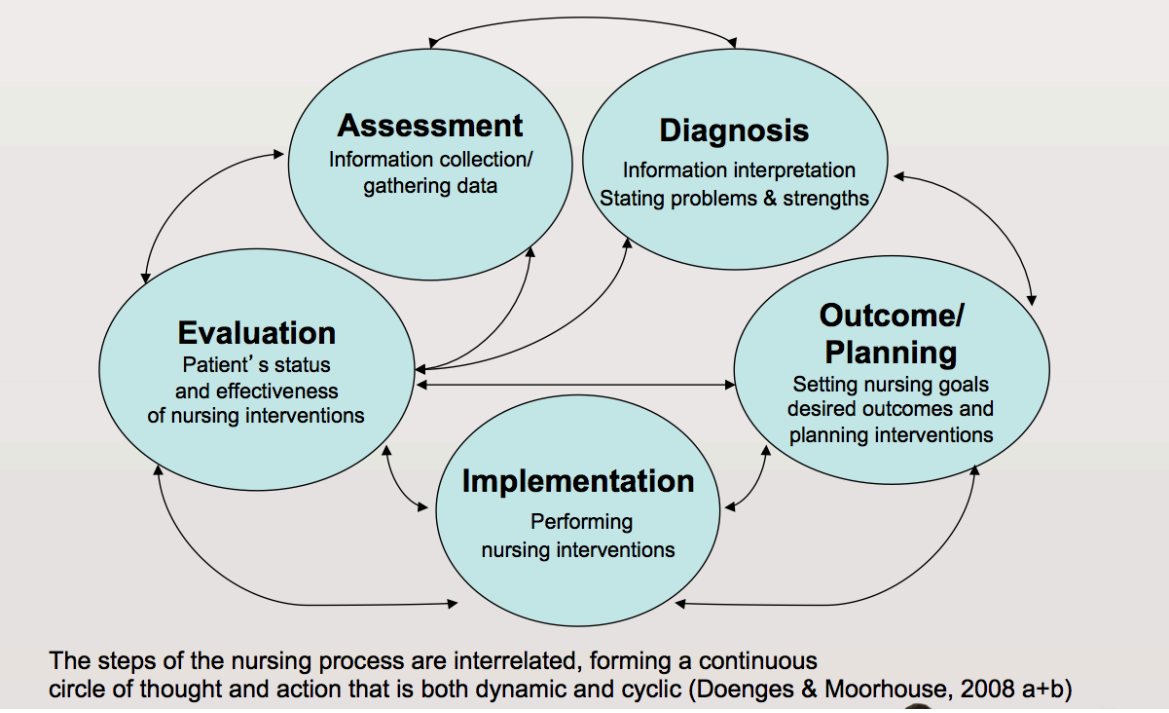


Figure 1: The Nursing Process

The nursing process is not linear, but cyclical and constantly requires clinical decisions and actions: "The steps of the nursing process are interrelated, forming a continuous circle of thought and action that is both − dynamic and cyclic" (Doenges, Moorhouse & Murr, 2005, page. 5).

The nurse makes clinical decisions by thinking critically. Lunney (2007) examined the cognitive skills which nurses use in order to decide and to perform competently in the clinical environment. She describes strategies considered to be necessary by critically thinking nurses as well as the associated attributes. The strategy of obtaining information, for instance, is used in the first phase of the nursing process in order to understand the signs and characteristics of patients and to interpret these adequately. At the same time, the nurse uses several sources of information:

- statements of the patients and their relatives
- data resulting from the clinical physical examination
- personal observations and observations of other nursing staff
- information from nursing documentation
- laboratory and examination results including medical record information

During this process of information collection, the nurse applies the following attributes of her thinking: She uses her *reflection skills* for a targeted search for information. Her *intellectual integrity* − i.e. her ambition to grasp reality as truly as possible − guarantees that she even strives for choosing the best information source when being confronted with a difficult or invidious task. *Creativity, flexibility, and curiosity* enable her to take unusual sources of information into consideration too. Her perseverance ensures that she keeps on performing her task even when the necessary information is difficult to understand, to find or to interpret[56, 68].

## The Steps of the Nursing Process

The independent tasks of the tertiary-level educated, registered nurse are described by means of the nursing process.

### *Assessment*

The first stage of the nursing process is the comprehensive evaluation of the patient´s condition, the *assessment*. Health-related behavior patterns and areas, where problems resulting in a nursing care need are specifically assessed. The nursing assessment is carried out by means of a targeted evaluation of human health patterns of the patient. For this, the NNN-assessment, based on the NANDA-NIC-NOC taxonomy of nursing practice, can be used as systematic approach.

The NNN-assessment and the nursing diagnoses are recognized as an instrument to justify the need for nursing by Swiss health insurers. The NNN-assessment collects current and potential responses to health problems while simultaneously structuring relationships and dealing with existential patient experiences[70.72]. The objective of the assessment is to get an image of the patient´s nursing-relevant situation by taking into consideration the physical, mental, and cognitive constitution of the patient, as well as the socio-cultural, spiritual economic background, and relevant biographical factors[43, 69, 70]. For this, the nurse collects subjective data during a conversation by documenting the experiences of the patient on one hand and objective data on the other hand by conducting physical examinations and including the results of diagnostic tests in the assessment[66, 70, 71].

The collection of subjective data places high demands on the communicative competence and the professional knowledge of the nurse. In order to understand how the patient´s understanding of health and disease influences the current nursing situation, the nurses approach them empathically and impartially. Active listening means not being restricted to isolated facts, but paying close attention to the nonverbal communication and understanding the thoughts and ideas of the patient. In order to avoid any distortions by prejudice, nurses are aware of their own moral concepts and assumptions beforehand. Their professional knowledge and willingness to engage with the views of the patient enable them to collect and weigh all relevant information in their context[65, 71].

The collection of objective data during the physical assessment requires competencies of the nurse with regard to examination techniques, such as auscultation (e.g. heart- and lung functions), palpation (e.g. palpation of the thyroid gland or the carotid pulse), inspection (e.g. of the mouth), assessment of skin condition (e.g. sensory stimuli or decubiti/wounds) or the assessment of the neurovascular and neurological status.

### *Nursing Diagnoses*

In order to determine patients' care nursing need, the data collected in the nursing assessment are subjected to clinical judgment and appropriate *nursing diagnoses* are stated. Nursing diagnoses describe patients' nursing care needs in a theory-based, international taxonomy[9, 45].

In the diagnostic process, the nurse processes the information collected in the assessment phase: First, relevant patient characteristics (signs/symptoms) of the current situation are compiled and their meanings determined. Based on the knowledge acquired in nursing education, and advanced through experience, the nurse interprets clinical signs while taking the experiences of the patient and the context into consideration. Her clinical judgment results in making nursing diagnoses. Nursing diagnoses may be formulated and validated by means of standardized nursing diagnoses classifications (e.g. NANDA International). In order to validate the nursing diagnoses she checks if, and which of, the defining characteristics (signs/symptoms) of the nursing diagnoses according to NANDA International match best with the relevant signs of the patient[45, 64].

In order to ensure accuracy and verifiability, the nursing diagnosis as a product of the diagnostic process is exactly formulated and documented. Therefore, NANDA International has developed the PES-format that describes evidence-based diagnostic concepts[10, 72]:

- The diagnosis is designated and defined with **P** (problem statement/definition).
- The **E** (etiology) is listed as it relates to the nursing diagnosis, i.e. the causative, influencing or related factors. If the influencing factors are those that the nurse can address by herself, the nursing diagnosis is called an independent nursing diagnosis. Consequently, it is not a medical diagnosis in itself, which results in a nursing diagnosis, but rather the impact of a medical diagnosis (or disease) on the patient, which may result in nursing diagnoses as human responses/experiences.
- The **S** (signs/symptoms) stands for the determining signs or defining characteristics of each specific nursing diagnosis. The defining characteristics are the information collected from observations and statements of the patient during the assessment as well as from the physical examination. In the classification, they are allocated by evidence to each diagnosis to confirm the nursing diagnosis[64].

In most cases, several nursing diagnoses are stated for a patient and are addressed based on their urgency.

***Outcome Planning***

The planning phase following the nursing diagnoses includes the determination of *patient-oriented objectives/goals* and *evidence-based nursing interventions*. The objectives, or nursing-sensitive outcomes, which shall be achieved by the patient, are – wherever possible – determined together with him or his relatives/significant others[45, 64]. Patient-oriented objectives can be formulated by means of standardized outcome classifications, e.g. the Nursing-Outcomes-Classification (NOC), which includes several literature-based patient outcomes for each nursing diagnosis[20]. The nursing-sensitive patient outcomes described in the NOC are measurable patients´ conditions following one or several nursing interventions. If individual objectives need to be determined, nurses apply the RUMBA-rule: objectives shall be relevant (R) to the problem, understandable (U), measurable (M), behavioral oriented (B) and achievable (A)[45, 64].

Nurses are responsible for achieving the objectives/patient outcomes and for planning effective *nursing interventions* that correspond with the current standards and guidelines. At the same time they weigh which problems can be addressed through existing clinical care pathways or expert standards, and where an individual nursing plan needs to be developed[28, 45].

***Implementation of Nursing Interventions***

In order to ensure that patients receive the best nursing care, nurses *implement* evidence-based interventions. Intervention is defined as an act and a process that includes positive actions to improve a situation or disease[73]. When realizing nursing interventions, nurses draw on the latest research results and adapt them to the individual situation of the patient[74]. They check evidence-based guidelines for their suitability for the specific patient situation by critically thinking. At the same time, they factor in their expertise, which has been well founded in practice, and the concerns of the patients as equal parameters[27, 64].

In order to ensure nursing care continuity, nursing diagnoses, nursing objectives/desired patient outcomes, interventions and their effect on patients are documented[65, 71]. The formulation of nursing interventions points out what has to be done, how it has to be conducted, how much has to be done, how often it has to be done and by whom the nursing intervention should be performed.

The Nursing Interventions Classification (NIC) defines literature-based nursing interventions in a standardized international classification by which nursing diagnoses are addressed and nursing-sensitive patient outcomes are achieved (cp. Page 17ff). The nursing interventions defined in NIC also assign proficiency levels to provide justification as to why certain nursing interventions should be performed by graduate nurses exclusively, which provides information on nursing grade- and skill-mix[24].

***Evaluation***

The nursing process is evaluated and documented in each of its phases. The focus is on the question, whether the pursued objectives and nursing-sensitive patient outcomes have been achieved. Therefore, the nurse estimates the level of achievement of the nursing-sensitive patient outcomes. Nursing-sensitive patient outcomes mean those that have been achieved by the responsible nurses[21, 22, 75]. For the evaluation, nurses use valid measuring indicators by which they assess the correctness and precision of the nursing diagnoses, the effectiveness of the nursing interventions and the achievement of the achieved patient outcomes[27,45]. If it the evaluation reveals that the nursing objectives or the nursing-sensitive patient outcomes have not been achieved, each step of the nursing process is critically scrutinized and adapted accordingly.

## Interim Conclusion

The nursing process includes the nursing relationship and structures nursing practice in accordance with the phases of the problem-solving process. By implementing the nursing process, current scientific knowledge is connected with the specific patient situation. In order to achieve this, nurses have to understand their patients and must be able to make clinical decisions. That is why the nursing process is based on a professional relationship that is characterized by nursing attention and sympathy. Moreover, nurses need to have cognitive strategies in the sense of critical thinking. These enable them to decide competently in accordance with the clinical patient needs of the respective situation. The steps of the nursing process encompass the assessment, stating nursing diagnoses, determining objectives/nursing-sensitive patient outcomes, planning and implementing of nursing interventions and finally, the evaluation of the care given.

# The Body of Nursing Knowledge

The previous sections of this paper have repeatedly referred to the body of nursing knowledge and the classifications of nursing diagnoses, nursing interventions and nursing outcomes that represent the body of nursing knowledge. This section points out how the body of nursing knowledge has, and continues to develop, and how it is applied in direct patient care. Thus, the nursing process provides a structure for nursing practice. However, this structure remains empty of content, if it is not filled with literature-supported -"standardized"- content[76,-78].Therefore, the question arises: What content knowledge is taught and applied in the nursing process? The development of nursing classifications has closed this gap, and today the "Advanced Nursing Process" - the extended, advanced nursing process - is taught and implemented by means of standardized nursing classifications[43, 64, 65, 74, 79, 80].

The growing literature on the "Advanced Nursing Process" supports its implementation in theory and practice. The authors define the Advanced Nursing Process as follows: The Advanced Nursing Process consists of defined, validated concepts. It includes assessment, nursing diagnoses, nursing interventions, and nursing outcomes that are rooted in scientifically based nursing classifications.

Only on this basis does the Advanced Nursing Process serve its purpose: an application of scientific knowledge being appropriate to the clinical patient situation, defined, and validated as concepts.

According to Brobst, the development of classifications of nursing diagnoses, interventions and outcomes contributes to the establishment of nursing as an independent profession with its own professional body of knowledge[81]. The nursing classifications point out what nurses do, why they do it, which objectives they pursue by doing it and what the difference is between their performance and the ones of other health professions. McCloskey and Bulechek (1992) presented the triptych of the three bodies of knowledge in the nursing knowledge and decision-making model (see figure 2, p. 14). Similar to the evidence-based nursing practice model[82], the nursing knowledge

and decision-making model combines the knowledge of nursing research, nursing expertise and patient preferences with individual nursing data of patients. The crucial factor is that nurses make choices/selections by making their clinical decisions based on these knowledge resources[20].

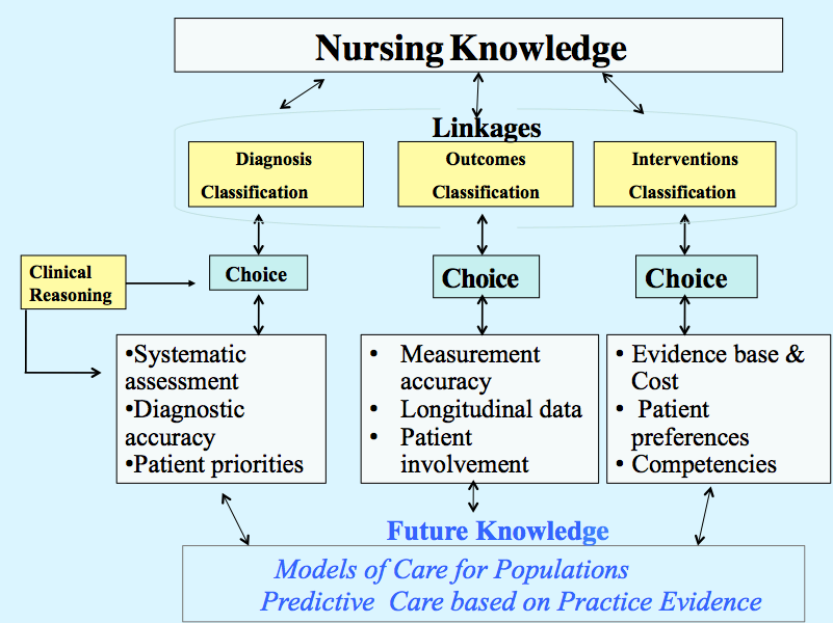


Figure 2: The nursing knowledge and decision-making model (McCloskey and Bulechek, 1992; adapted by Moorhead, 2013; pasted with the permission of the author Sue Moorhead)

The aim of these three classifications is to describe the body of nursing knowledge. Nursing knowledge is defined and scientifically designated by means of validated concepts that are logically organized in the classifications. In addition, the classifications make theory-based and common nursing language possible. With regard to clinical decision-making, the nurse determines nursing diagnoses and chooses nursing interventions that are appropriate to the patient´s situation and the desired nursing-sensitive patient outcomes[83, 84].

Other nursing classifications are not triptych-based. The International Classification for Nursing Practice (ICNP) chose nursing phenomena and nursing activities as the focus, however, an outcome classification is missing. This means that the contribution of the nurses to the patients´ health is not identified by the INCP, nor are linkages between diagnoses and interventions provided. Another classification, the "Clinical Nursing Classification" from Saba was adapted from NANDA International and only classifies nursing diagnoses and actions, but it does not offer any outcome classification[85, 86].

In this report, the model according to McCloskey and Bulechek is used, as it is the most often applied and best established model[25, 87]. In the following section, the three classifications are presented, their meaning for the independent responsibilities of nursing described and research on their application cited.

## International Classification of Nursing Diagnoses

### *Origins*

The origins of NANDA International (NANDA-I) are more than 40 years ago. The designation 'NANDA International' stands for the name of the International Classification of Nursing Diagnoses as well as for the international association, to which currently nursing researchers and nurses from all continents and more than 35 countries belong. Each nurse may submit suggestions for nursing diagnoses to NANDA-I. Nursing diagnoses of NANDA-I go through a strict review process before being added to the taxonomy. Submitted nursing diagnoses are processed in a multistage review process and designated with evidence levels by the diagnoses development committee[88]. This process is described in detail in the original literature[89], while here only the most important aspects are outlined. A significant step for the recognition of nursing diagnoses was made in 1992, when the "Joint Commission on Accreditation of Healthcare Organizations" (JCAHCO) took up the concept of nursing diagnoses in their guidelines for nursing standards. These standards specify that the nursing of each patient must be based on nursing diagnoses that have been determined by a graduate nurse. At the same time, the "American Nurses Association" (ANA) published standards for nursing practice including nursing diagnoses as follows: "The nurse analyses the assessment data to determine the diagnosis" (ANA standard II). Afterwards, federal laws in 33 states in the US established that it was the task of the graduate nurse to state nursing diagnoses[90]. Nursing diagnoses are continuously included in the newest the ANA-standards[12, 39, 91].

### *Definition of Nursing Diagnoses*

In order to meet the requirement that a classification reflects the contents and independent field of competence of the respective profession, the definition of nursing diagnoses has been developed on the basis of nursing models. The conceptual definition is: "A nursing diagnosis is a clinical judgment about individual, family, or community responses to actual or potential health problems/life processes. Nursing diagnoses provide the basis for selection of nursing interventions to achieve outcomes for which the nurse is accountable"[49].

This definition shows that the nursing diagnostic concepts added to the international classification of nursing diagnoses represent experiences and responses to health problems or life processes, and can be determined by nurses based on clinical judgment. The term "life processes" includes human responses to health problems in the continuum of life and of influences at different life stages. Thereby, the difference between nursing and medical diagnoses is highlighted. Medical diagnoses describe pathological states. Nursing diagnoses describe experiences and responses to health problems/life processes (e.g. pain, nausea, death, birth). The clinical judgment is part of the definition and expresses that nursing diagnoses are based on nurses' clinical assessments and diagnostic decision-making. The definition also shows that the nurse is accountable for nursing diagnoses. It states that nurses select interventions and implement them for individuals, families, and communities[49]. At the same time, it is stated that nursing diagnoses are relieved or changed by nursing interventions and that nurses attain outcomes for which they are responsible.

The nursing diagnoses classification NANDA-I includes current nursing diagnoses, risk diagnoses, health promotion diagnoses and syndrome diagnoses (cp. Annex 1). Each nursing diagnosis is designated by its own, non-modifiable numeric code. This internally recognized coding allows for the use of nursing diagnoses in databases and serves for scientific evaluations.

### *Structure of the Classification*

The NANDA-I classification is structured in accordance with its focus on clinical judgments with regard to human experiences/responses. It contains corresponding sub-definitions of domains (e.g. health promotion, nutrition) and assigned categories (e.g. health management, hydration). In turn, corresponding diagnostic concepts – nursing diagnoses – are assigned to each category. The con-

ceptual definition cited above is the highest and most abstract level of the classification. It determines what the classification includes as domains, categories and diagnoses corresponding with this definition. The PES-structure of each single nursing diagnosis is the lowest and most concrete level of the classification[9, 45] (see figure 3).

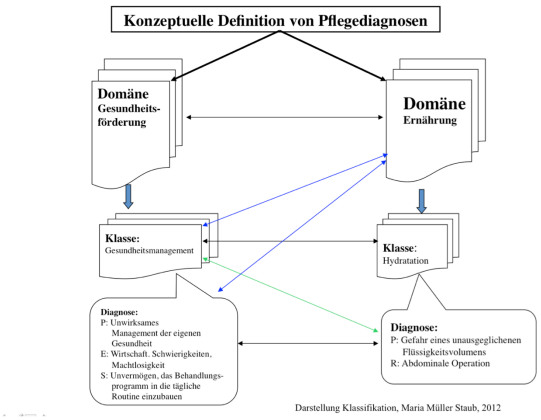


Figure 3: Illustration of Classification, Maria Müller Staub 2012

**Conceptual Definition of Nursing Diagnoses**

**Domain**
**Health Promotion**

**Category:**
Health Management

**Diagnosis:**
P: ineffective management of own health
E: economic difficulties, powerlessness
S: inability to incorporate the treatment program in the daily routine

**Domain**
**Nutrition**

**Category:**
Hydration

**Diagnosis:**
P: risk for imbalanced fluid volume
R: abdominal surgery

The horizontal arrows in figure 3 show that domains or categories and diagnoses are formulated on the same level of abstraction, but have to distinguish from each other conceptually. The vertical arrows state that categories and diagnoses differ and cannot include the same information. Through the assignments or subordinations, a classification represents relationships and contexts[21] and thus the expert knowledge of a respective discipline[92, 93].

***Illustration***

The following example illustrates a nursing diagnosis in the PES-format[9,192]:

**P = Title of nursing diagnosis: Impaired swallowing**

- Definition: Abnormal functioning of the swallowing mechanism associated with deficits in oral, pharyngeal, or esophageal structure or function.

**E = Related factors (e.g.)**

- Neuromuscular impairment (e.g. reduced or absent gag reflex, decreased strength or mobility of the mastication muscles, sensory disturbance in the oral cavity, facial nerve paresis)
- Achalasia (obstruction of esophagus)
- Laryngeal abnormality
- Cerebral palsy
- Mechanical obstruction
- Tracheal defect (etc.)

**S = defining characteristics (e.g.)**

- Delayed swallowing
- Abnormal oral phase of swallow study
- Difficulty swallowing (e.g. food remains in the mouth, coughing, absorbing)

- Choking
- Repetitive swallowing
- Recurrent pulmonary infection[9,71,192]

***Studies on the International Classification of Nursing Diagnoses***

The benefits of nursing diagnosis classification with respect to improvements in the quality of nursing have been widely documented. There are many studies available on the validity of nursing diagnoses and their characteristics/related factors. Additionally, the nursing diagnosis classification is applied for prevalence studies[26].

Nursing diagnoses predict the overall need for patient treatment more accurately than Diagnosis Related Groups (DRGs); they increase the explanatory power of DRGs by 30 to 146%[94]. Training nurses in diagnostics improves the accuracy of diagnoses and clinical judgments[95-100]. Moreover, the application of the NANDA-classification improves the quality of nursing documentation[100-108]. Finally, patient outcomes were scientifically evaluated by means of the nursing diagnosis classification together with the effect of performed nursing interventions; and the results demonstrated better patient outcomes based on more accurate nursing diagnoses[101, 106, 108-110].

Examples of studies on nursing diagnoses can be found in annex 2.

## Classification of Nursing Interventions

***Origins***

The development of the Nursing Interventions Classification (NIC) began in 1987. At this time, diverse descriptions or lists of nursing tasks could be found in textbooks or clinical guidelines. However, there was a lack of theoretical conceptualization and standardized language, which would have been appropriate for the direct collaboration with patients, research and management. The two nursing scholars Joanna McCloskey and Gloria M. Bulechek developed – analogous to the diagnostic classification of NANDA-I, a classification for nursing interventions. A research team was formed and grew over time to more than 50 people, whereby most of the group had been working with the team for years. Since 2002, the NIC project has been integrated into the "Center for Nursing Classification and Clinical Effectiveness" at the University of Iowa. This center houses the NIC research team as well as the team that develops the "Nursing Outcomes Classification" (NOC).

The conception and development of the NIC is guided by eight basic intentions:

1. To conceptualize and standardize the interventions performed in the daily business of nursing.
2. To develop and distribute the knowledge on the effect of nursing interventions in patient situations which have been defined by nursing diagnoses.
3. To develop nursing and health systems that document nursing performance in detail.
4. To enable students and professionals to make decisions.
5. To reflect the costs of nursing services.
6. To guarantee the most effective nursing by sensible nursing resource planning.
7. To standardize nursing language.
8. To connect the nursing classification with classification systems of other disciplines.

***Definition of Nursing Intervention***

The current definition of a nursing intervention according to Bulecheck et al. (2013, p. XV of the introduction chapter) is:

> *"A nursing intervention is any treatment based upon clinical judgment and knowledge, that a nurse performs to enhance patient/client outcomes."*

This quote highlights the objective of the classification to make the impact of nursing on patient outcomes transparent. According to Bulecheck et al. (2013), p. 13 the following six factors have to be considered for selecting a nursing intervention:

1. The desired patient outcome
2. Characteristics of the nursing diagnosis
3. Research base of the intervention
4. Feasibility for doing the intervention
5. Acceptability to the patient
6. Capability of the nurse

***Structure of the Classification***

The NIC defines nursing by a standardized, literature-based expert language. The taxonomy organizes the different nursing interventions due to similarities and offers a conceptual frame. The structure of the NIC taxonomy includes three levels:

**7 domains**
30 classes
*554 nursing interventions*

The **nursing interventions** are the central part of the classification. Currently, the NIC includes 554 nursing interventions that define both direct and indirect interventions in all nursing settings. Each nursing intervention consists of a label, a binding definition and a list of 10 – 30 concrete nursing activities. The label consists of a super-ordinate collective term; the definition summarizes the content and the intention of the activities relating to the nursing intervention. The chronological list of activities corresponds to the logical process of the entire nursing intervention. From this listing, the nurse selects those activities that comply best with the individual patient situation. The nurse may also adapt the form and content of activities or add new ones – if they are congruent with the content and intent of the definition of the respective nursing intervention. However, the label and definition of the nursing intervention shall not be changed. These standardized components ensure that the key features when applying a classification of nursing interventions, such as a standardized technical language, the recording of nursing services or the comparability of nursing interventions for scientific purposes (e.g. evidence-based nursing), are preserved[24].

The different nursing interventions are organized in **30 classes**. Each class is designated by a label on an abstract level and described by a definition. In turn, the different classes are summarized in **7 domains**, which are again designated by a label and a definition. The NIC domains are:

1. Physiological: Basic
2. Physiological: Complex
3. Behavioral
4. Safety
5. Family
6. Health System
7. Community

The NIC taxonomy can be mapped in an electronic system because every intervention is provided with its own numeric code. This allows fast and accurate processing of the NIC data, both for the service entry in connection with financing or resource issues and for research purposes. Furthermore, electronic linkages can be made with other classifications or databases, which are, in addition to scientific reasons, of the greatest benefit for the documentation and processing of nursing care plans.

The levels of the domains are designated with the numerals 1 to 7, the categories with the letters A – Z and a, b, c, d and the different nursing interventions are designated numerically. In order to ensure a conceptually correct content assignment, a number is assigned to each intervention, even if it is listed in more than one domain or category. The following example demonstrates the NIC levels:

***Illustration***

**1. Domain: Physiological**

*Definition: Care that supports physical functioning.*

**A → Class: Activity and Exercise Management**

*Definition: Intervention to organize or assist with physical activity and energy conservation and expenditure.*

**1. A. 0140 → Intervention: Body Mechanics Promotion**

*Definition: Facilitating the use of posture and movement in daily activities to prevent fatigue and musculoskeletal strain or injury.*

Activities (examples):

→ *Determine patient's commitment to learning and using correct posture*

→ *Collaborate with physical therapy in developing a body mechanics promotion plan*

→ *Determine patient´s understanding of body mechanics and body exercises (e.g. return demonstration of correct techniques while performing activities/exercises)*

(Bulecheck et al. (2013) p. 42 +140

### *Studies on the Classification of Nursing Interventions*

The NIC has been applied in studies together with NANDA-I nursing diagnoses and NOC outcome indicators in specific patient populations[111-115]. The results show that the interventions described in the NIC are appropriate in order to address specific problems of different patient populations successfully [112]. Additionally, the NIC assigns the individual interventions to the level of nursing training being required for the implementation as well as the necessary time frame for the implementation of the intervention. Thus, the NIC provides hints for the mix of skills and grades in nursing and supports electronic nursing documentation[24, 26, 116]. Shever, Titler, Dochterman, Fei & Picone (2007) point out how the standardized nursing language in NIC may be applied for performance analyses, which in turn are decisive for the calculation of human resources, training requirements and performance evaluations. Shever et. al. (2008) also demonstrated that the NIC can be used as proof for nursing services, which increases the transparency of costs.

Examples of studies on the NIC are attached in annex 3.

## Classification of Nursing Outcomes

### *Genesis*

The Nursing Outcomes Classification (NOC) describes concepts of conditions, behavior or knowledge that an individual, a family or a community shall achieve after being treated with nursing interventions. The NOC also contains literature-supported, validated nursing outcome indicators. Each indicator is based on scales to measure the outcome. In summary, examples for nursing-sensitive patient outcomes are a reduction of symptoms, an improvement of the functional status and/or the level of knowledge, and coping-strategies or self-care[20].

In August 1991, a research team was formed under the direction of the professors Meridean Maas and Marion Johnson at the College of Nursing at the University of Iowa (USA) conceptualizing and classifying nursing-relevant patient outcomes in a scientific way.

The NOC research had three intentions:

1. Identification, validation and classification of nursing-relevant patient outcomes
2. Review and validation of the outcome classification in practice
3. Definition and review of assessment procedures for the outcomes and indicators with the application of clinical data

The first edition of the NOC appeared in book form in 1997 and, since that time, updated versions of the classification have been regularly published. Currently, the fifth edition is available[20].

***Definition of Nursing Outcomes***

The current definition according to Moorhead et al. (2013, page IX, introduction) is:

> *"An individual, family, or community state, behavior, or perception that is measured along a continuum in response to a nursing intervention or interventions. Each outcome has an associated group of indicators that are used to determine patient status in relation to the outcome. In order to be measured, the outcome requires identification of a series of more indicators."*

This means that the condition, the behavior or the perception of a patient, a family or a community is measured in response to one or more nursing interventions along a defined continuum. Each outcome is defined by a set of indicators, which are used to determine the condition of a patient, a family or a community in relation to the desired nursing-sensitive outcome. In order to make an outcome measurable, NOC indicators have to be determined beforehand.

***Structure of the Classification***

Additionally, the NOC is a literature-based, standardized classification available for application in daily nursing practice, research and training. Due to nursing interventions a nursing-sensitive outcome can be changed, which is why these are dynamic concepts. The assessment of the outcomes is based on indicators with corresponding 5-point Likert scales reflecting the mentioned outcome continuum.

The first point on the scale of values always corresponds to the worst conceivable outcome; the fifth and last point is for the best conceivable or desired outcome. The assessment on the level of indicators corresponds to an operationalization of the current condition of a patient, a family or a community, which was originally defined from the perspective of the nursing diagnosis and may now be monitored in the context of the nursing process by the outcomes.

The current edition of the NOC already includes 490 outcomes, organized in 32 classes within the seven domains.

The domains of the NOC are:

I. Functional Health
II. Physiologic Health
III. Psychosocial Health
IV. Health Knowledge and Behavior
V. Perceived Health
VI. Family Health
VII. Community Health

This three-level taxonomy corresponds to the same structure as the one of the Nursing Interventions Classification (NIC). It can be expanded by three fields and up to 52 classes with up to 99 outcomes respectively without changing the coding structure[20].

***Illustration***

The nursing-sensitive patient outcome *pain control* shall serve as an example:

**1. Domain: Health Knowledge and Behavior**

*Definition: Outcomes that describe the attitudes, comprehension, and actions with respect to health and illness.*

**Q → Class: Health Behavior**

*Definition: Outcomes that describe an individual's actions to promote or restore health.*

**4. Q. 1605 → *Outcome: Pain Control***

*Definition: Personal actions to control pain.*

| **Pain Control** | Never demonstrated 1 | Rarely demonstrated 2 | Sometimes demonstrated 3 | Often demonstrated . | Consistently demonstrated 5 |
|---|---|---|---|---|---|
| Indicator | | | | | |
| 160501 Describes causal factors | 1 | 2 | 3 | 4 | 5 |
| 160502 Recognizes pain onset | 1 | 2 | 3 | 4 | 5 |
| 160503 Uses preventive measures | 1 | 2 | 3 | 4 | 5 |
| 160504 Uses non-analgesic relief measures | 1 | 2 | 3 | 4 | 5 |
| 160505 Uses analgesics as recommended | 1 | 2 | 3 | 4 | 5 |
| 160507 Reports uncontrolled symptoms to health professional | 1 | 2 | 3 | 4 | 5 |
| 160508 Uses available resources | 1 | 2 | 3 | 4 | 5 |
| 160509 Recognizes associated symptoms of pain | 1 | 2 | 3 | 4 | 5 |
| 160510 Uses diary to monitor symptoms over time | 1 | 2 | 3 | 4 | 5 |
| 160511 Reports pain controlled | 1 | 2 | 3 | 4 | 5 |
| 160512 Other (specify) | 1 | 2 | 3 | 4 | 5 |

Table 1: Examples of NOC-indicators (approved reprint)

### *Studies on the Classification of Nursing Outcomes*

In order to allow nursing practice to evaluate its interventions systematically, transparently and comprehensively while also being recognized as an equal partner in the interdisciplinary context and in the discussion as part of health policy, the measurement and communication of nursing-sensitive patient outcomes is essential[117-120]. The NOC is successfully used in a variety of nursing settings (see annex 4).

In combination with the nursing classifications NANDA-I and NIC, the NOC was used as an evaluation instrument to monitor the patient´s progress in the nursing process and to examine relevant outcomes[111, 113, 114].

Together NANDA-I nursing diagnoses, NIC and NOC provide a significant contribution to evidence-based nursing. The nursing needs established by nursing diagnoses are addressed with scientifically based nursing interventions. Their effectiveness is scientifically proven when evaluating nursing outcomes by means of NOC indicators in certain nursing diagnoses[121-123].

Examples of studies on the NOC are attached in annex 4.

### *Proof of Efficacy, Nursing Process Quality and Documentation*

The documentation of treatment is required by law in Switzerland, which is why the nursing documentation is considered as evidence of the nursing care actually provided (documentation requirements, Section 26, Health Act (Federal Social Court 811.01). Nursing documentation is designated as top priority for future research and the development of nursing[124]. Nursing records also constitute the basis for ongoing evaluations and research[125]. **If the "nursing core business" is not documented and its benefit not proven, nursing is or will not be paid adequately.**

The requirements on efficient nursing and quality improvements have rapidly increased, and nurses apply computerized patient documentation systems. The patient documentation is an important instrument to ensure safety, continuity and quality[124, 126, 127], and the NOC has been specifically developed for outcome measurements.

A potential of the international nursing classification is its electronic use, because coding and standardization are essential requirements for clinical information systems and facilitate scientific, statistical analyses. Studies on the electronic use of NNN prove its benefit to prevalence and quality measurements, as well as efficiency improvements and increased patient outcomes being reported[25, 121, 128-133].

## Interim Conclusion

Nursing classifications describe the body of nursing knowledge. They identify, define, standardize, classify and validate nursing phenomena in an internationally recognized expert language. Thus, they create a scientific basis for nursing knowledge, its development and stabilization. In accordance with the model of McCloskey and Bulecheck (expanded by Moorhead, 2013) the nursing diagnoses classification NANDA-I, the Nursing Interventions Classification NIC and the Nursing Outcomes Classification NOC form a common taxonomy, which awards the steps of the nursing process their evidence-based content.

The benefit of the application of nursing classification has been scientifically proven. Their application results in an exact determination of the needs for nursing treatment, improves nurses' clinical judgment, promotes the successful implementation of evidence-based interventions in specific patient populations and makes a systematic, transparent evaluation of the nursing outcomes possible.

Consequently, nursing classifications increase the quality of nursing, promote electronic documentation of nursing services and improve the proof of efficacy of nursing practice.

## Conclusions

This expert report describes the independent responsibilities of nursing against the background of the parliamentary initiative "Legal Recognition of Nursing Responsibilities." According to its focus on the promotion of nursing science, the ANS has based this report on the current state of the international literature. The outcomes of the report can be summarized as follows:

- The core business of professional nursing is to assume responsibility for the nursing process. Currently tertiary level-educated registered nurses are trained and already responsible for the specification, implementation, and evaluation of nursing tasks.

- The aim of the initiative for the legal recognition of nursing responsibilities is to assure that the responsibilities that nurses are already assuming are recognized by the Health Insurance Act. It does not relate to an extension of nursing tasks. Studies reveal that nurses being deployed in accordance with their competencies help to reduce costs.

- Being responsible for the application of the nursing process is characterized by a professional nurse-patient relationship and critical thinking.

- The nursing process is based on clinical decision-making and comprises five steps: assessment, nursing diagnoses, outcome planning, implementation of nursing interventions and evaluation.

- These steps are scientifically substantiated by the NNN classification. The NNN comprises clearly defined, validated and internationally recognized nursing diagnoses, nursing interventions and nursing-sensitive patient outcomes, including indicators that enable to provide the proof of effectiveness and efficacy required by the Health Insurance Act.

- The NNN classification represents the body of knowledge of nursing in a common language and defines the responsibilities as well as the performance of registered nurses.

Thus, the profession of nursing is a well-defined, independent field. It can present its performance in defined and scientifically recognized classifications and demonstrate their effectiveness. By legally establishing the autonomy of nursing, legal conditions will be created for nursing professionals to make contributions to the future development and provision of health care.

# Recommendations for Legislation

- Nurses are legally responsible for the specification of nursing performance. They have specific competencies to provide nursing care for sick people and must be able to make full use of these competencies.

- The nursing process with all its steps should be determined by law to be the core task of nursing. This complies with the Swiss educational requirements for registered (tertiary level educated) nursing professionals and with international regulations (e.g. USA, Austria).

- The NNN nursing classification is used for formulating rules for implementation. This ensures that nursing practice meets the requirements of the Health Insurance Act with regards to efficacy, efficiency and expediency of nursing performance (Article 56, paragraph 1) as well as quality management (Article 58).

- The legislator creates the legal framework so that nurses can take responsibility for their own field of activity, independent of medical doctors. In health care, cooperation among professional groups on equal footing is increasingly gaining importance. The burden for the medical profession is eased when the responsibilities for nursing are clarified by law. Consequently, physicians may focus on the essentials of their own responsibilities.

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## Annex 1: Definition of Different Types of Nursing Diagnoses and Structure of Classification

The subtypes of the nursing diagnoses are defined as follows[9,192*]:

*Problem-focused nursing diagnosis*
A clinical judgment concerning an undesirable human response to health conditions/life processes that exists in an individual, family, group, or community.

*Health promotion diagnosis*
A clinical judgment concerning motivation and desire to increase wellbeing and to actualize human health potential. These responses are expressed by a readiness to enhance specific health behaviors, and can be used in any heath state. Health promotion responses may exist in an individual, family, group, or community.

*Risk nursing diagnosis*
A clinical judgment concerning the vulnerability of an individual, family, group or community for developing an undesirable human response to health conditions/life processes.

Illustration:

**P = Title of Nursing Diagnosis: Risk for imbalanced fluid volume**
Definition: Vulnerable to a decrease, increase, or rapid shift from one to the other of intravascular, interstitial, and/or intracellular fluid, which may com- promise health. This refers to body fluid loss, gain, or both.

**R = Risk Factors (e.g.)**

- Apheresis
- Ascites
- Burns
- Intestinal obstruction
- Pancreatitis (etc.)[9,71]

*Syndrome Diagnosis*
A syndrome is a clinical judgment concerning a specific cluster of nursing diagnoses that occur together, and are best addressed together and through similar interventions.

## Structure of the Classification

The NANDA-I classification includes 13 domains, 47 classes and 235 nursing diagnoses, which comprehensively reflect the human aspects of life[49]. In accordance with classification requirements, all domains and classes contain their own definition. These definitions are sub-concepts of the main definitions (conceptual, contextual, structural definition and definitions of types of diagnoses) described above.

The 13 domains and the associated classes (in brackets) are:

- Health promotion (health awareness, health management)
- Nutrition (ingestion, digestion, absorption, metabolism, hydration)
- Elimination and exchange (urinary function, gastrointestinal function, integumentary function, respiratory function)
- Activity/rest (sleep/rest, activity/exercise, energy balance, cardiovascular/pulmonary responses, self-care)
- Perception/cognition (attention, orientation, sensation/perception, cognition, communication)
- Self-perception (self-concept, self-esteem, body image)
- Role relationship (caregiving roles, family relationships, role performance)
- Sexuality (sexual identity, sexual function, reproduction)
- Coping/stress tolerance (post trauma responses, coping responses, neuro-behavioral stress)

- Life principles (values, beliefs, value/belief/action congruence)
- Safety/protection (infection, physical injury, violence, environmental hazards, defense processes, thermoregulation)
- Comfort (physical comfort, environmental comfort, social comfort)
- Growth/development (growth, development)

(*Approved print of the NANDA-I domains by the publisher Recom from: Nursing Diagnoses: Definition and Classification 2012-2014. Kassel: Recom for the German Version, and by Wiley-Blackwell for the English Versions[9,192]).

The classification is multi-axial and has seven axes*. Each axis defines a dimension of human responses playing a role for the diagnostic process:

Axis 1: The focus of the diagnosis
Axis 2: Subject of diagnosis (individual, caregiver, family, group, community)
Axis 3: Judgment (impaired, ineffective, etc.)
Axis 4: Location (bladder, auditory, cerebral, etc.)
Axis 5: Age (infant, child, adult, etc.)
Axis 6: Time (chronic, acute, intermittent)
Axis 7: Status of the diagnosis (problem-focused, risk, health promotion)

(*Approved print of the NANDA-I domains by the publisher Recom from: Nursing Diagnoses: Definition and Classification 2012-2014. Kassel: Recom for the German Version, and by Wiley-Blackwell for the English Versions[9,192]).

## Annex 2: Studies on the Classification of Nursing Diagnoses

The benefit of the classification of nursing diagnoses with regard to improvements in the quality of nursing has been widely documented. There are many studies on the validity of nursing diagnoses and their defining characteristics and related factors. Between 1986 and 1994, 27 nursing diagnoses had been validated with the Fehring-model; some of them by several studies (Fehring 1994). Recent examples are content validation studies of the diagnoses *Impaired Memory* and *Impaired Spirituality*[134-136] or *Ineffective Breathing*[137] and *Decreased Cardiac Output*[138] as well as *Delayed Surgical Recovery*[139]. A three-phase study was performed in order to validate 18 determining characteristics of the nursing diagnosis *Ineffective Airway Clearance*[140]. Additionally, concept analyses were used in order to promote the development of the diagnoses *Sexual Dysfunction* and *Ineffective Sexuality Pattern*[141]. The sensitivity, severity and predictive value of the determining characteristics of the nursing diagnosis *Impaired Spirituality* were calculated in 120 adults suffering from a chronic kidney disease and receiving hemodialysis treatment[135].

The classification of nursing diagnoses is widely used for prevalence studies. For instance, the prevalence of the nursing diagnosis sedentary lifestyle and its most common determining characteristics were identified in a cross-sectional study[142]. The prevalence of nursing diagnoses was also investigated in geriatric rehabilitation settings. The highest prevalence was present in the diagnoses *Chronic Confusion, Malnutrition, Risk for Falls, Self-Care Deficits, Impaired Physical Mobility* and *Urinary Incontinence*[143]. In psychiatric nursing homes, the diagnoses *Risk for Falls, Disturbed Thought Processes* and *Disturbed Sleep Pattern* turned out to be the most prevalent[144]. In a systematic literature review, pain was the most common nursing diagnosis. This review included data from studies of 4,051 patients from 12 different nursing settings[145]. Epidemiological studies on the incidence and the prevalence of nursing diagnoses in specific settings and in different populations point out the importance and the simultaneous occurrence of nursing diagnoses. For example, the prevalence of nursing diagnoses in general hospitals was examined by means of a random sample being representative for the Netherlands[146]. The analysis of 123,241 patient files in a University Hospital revealed that nursing diagnoses can be well used for predicting hospital outcomes by adding between 30 and 146% to the explanatory power of Diagnosis Related Groups (DRGs). This

means that nursing diagnoses predict the overall need for treatment and the patient outcomes more accurately – and in some cases more than 100% better – than DRGs[94].
In an experimental pretest-posttest study, the NANDA-I nursing diagnoses were implemented on twelve wards of a Swiss hospital. The results showed significant improvements in the quality of nursing diagnoses, -interventions and -outcomes. The average values for the quality of nursing diagnoses (vs. nursing problems) increased from 0.92 (SD = 0.41) to 3.50 (SD = 0.55), t-test $p < 0.0001$ [105]. Studies for the implementation of the nursing diagnoses classification reveal that significantly more accurate nursing diagnoses – in contrast to previously open formulated nursing problems – have been determined; and after the classification having been implemented, nursing diagnoses with correct defining characteristics (signs/symptoms) and related factors have been determined[104, 107].

After the diagnoses classification was implemented, the nursing outcomes showed clear improvements of the symptoms, the knowledge level, the coping-strategies and self-care activities as well as the functional status of the patients. The outcomes also revealed significantly better coherence/correspondence between nursing diagnoses, performed nursing interventions and patient outcomes[107]. An example explains the significant improvements: Before the implementation of the nursing diagnoses classification, the unspecified nursing problem "Patient has a decubitus" was recorded in the nursing documentation. After the implementation (of nursing diagnostics) the nursing diagnosis "Impaired Tissue Integrity, Decubitus grade II, including the related factors "pressure, nutritional deficit, impaired physical mobility and changes in blood circulation" was stated. Additionally, the nursing diagnosis was described with exact defining characteristics (extent, depth and texture of the skin damage). The accurately formulated diagnosis was followed by more effective nursing interventions (frequency of observation of skin condition, dressing types and -techniques, type and material of positioning, specified mobilization, patient education, interventions to enhance nutrition and fluid balance). These more effective nursing interventions achieved better patient outcomes, such as improved wound healing, increased physical mobility, increased self-care abilities and improved decubitus risk management[107].

Another study addressing the implementation of the nursing diagnoses classification demonstrated similar outcomes: In a cluster-randomized experimental study, nurses were trained with the method of "Guided Clinical Reasoning". The results showed significantly more accurate nursing diagnoses including defining characteristics and correct related factors. The improvements were statistically highly significant and clinically relevant. In addition, an increased correspondence (internal coherence) between the causes/related factors of the nursing diagnoses, the corresponding nursing interventions and the achievement of better patient outcomes was found. These outcomes reveal that the nurses conducted significantly more effective nursing interventions, which was the reason for achieving significantly better patient outcomes of symptoms, knowledge level, coping-strategies and self-care abilities as well as enhanced functional status of the patients[106].

Further studies demonstrated improvements in the accuracy of diagnosing and clinical judgment, which had been achieved by training sessions[95-100].

Some studies focused on nursing documentation and confirmed its quality improvement and increased accuracy. An early research result revealed that nursing care plans, which are based on the NANDA-classification, fulfill the professional standards and make individual nursing possible. These nursing plans included the steps of the nursing process and could be entered into electronic databases. The requirement that nurses' make their work measurable – in an efficient way and specifiable as a cost factor – has been met in previous years. In addition, newer studies and reviews have shown that the implementation of the theory-driven NANDA-I nursing diagnoses increases the accuracy of determining nursing care needs[101-108]. The results of a Swedish longitudinal study reveal a significant qualitative improvement of documented nursing interventions and outcomes following a detailed training for nurses. The average value of quality and quantity of nursing diag-

noses increased as significantly as the number of documented nursing interventions and outcomes[101].

The nursing diagnoses classification promotes scientific evaluations. Proof of efficacy for provided nursing and patient outcomes can be examined by means of the nursing diagnoses classification. Appropriate measuring instruments to assess the quality of nursing diagnoses, interventions and outcomes are available[147-150]. In outcome or efficacy studies forecasts of nursing diagnoses and the corresponding most effective, evidence-based nursing interventions were presented[110].
The classification of nursing diagnoses has been adopted in many hospitals worldwide. Due to rising health-care costs, it is necessary that nurses emphasize and present their contribution to health care in detail[25, 151]. As early as 2004, 1,965 entries for "nursing diagnoses" or "nursing diagnosis" were found in PubMed under the access through the nursing diagnoses database at nlinks.org[152]. NANDA-I is internationally considered to be the pioneer, and most implemented, nursing diagnoses classification[25, 26, 153-155].

In Germany, the professional associations and professional public first discussed nursing diagnoses in the mid 90's. A prominent role in the development and implementation had Jürgen Georg[156], who forced the first publication. Another leading role was taken by the nursing department of the hospital for tumor biology in Freiburg, which realized the implementation in its own institution and also acted as an advisor for many other institutions[157-160]. Later larger projects were implemented in other institutions such, as the Charité in Berlin[161].

The Austrian Federal Law on Health Professions (Health and Nursing Act = *GuKG*) describes the nursing documentation as a general professional duty under §5(2), which has to include the nursing assessment, nursing diagnosis, nursing planning and nursing interventions. As a consequence of GUKG, §14, the Austrian Health and Nursing Association (*ÖGKV*) states the following actions as independent responsibilities of nursing: nursing assessment, nursing diagnosis, nursing planning, implementation of nursing measures and nursing evaluation[162].

## Annex 3: Studies on the Classification of Nursing Interventions

With the help of the NIC connections between the variables of the different classifications were made: The efficacy of nursing interventions of the NIC is scientifically provable when evaluating the nursing outcomes by means of NOC-indicators for specific nursing diagnoses[121-123]. By linking NIC with NANDA-I and NOC it is not only possible to provide proof of efficacy, but the combinations of nursing interventions for respective nursing diagnoses are repeatable and verifiable for future applications. One factor that makes evidence-based nursing possible is: the knowledge gap after having developed scientifically defined nursing diagnoses was closed by adding evidence-based nursing interventions.

In the NIC nursing interventions are assigned to the different nursing disciplines. About 45 nursing specialties (e.g. anesthesia nursing, forensic nursing, gerontological nursing, pediatric- and oncological nursing) were taken into account. This is not a final allocation of interventions, but represents the focus of the specialty areas. Due to this allocation, the diversity and the associated requirements of the different specialties within professional nursing become apparent. These indicators are used for the design of education curricula with regard to the nursing interventions to be taught[163]. Furthermore, requirements relating to professional competence and the structural embedding of nursing within the health system can be defined by means of this assignment.

In another part of the NIC the nursing interventions are assigned to a time frame as well as to nurses' education level that is necessary to perform the respective intervention. This very differentiated analysis makes it possible to use the NIC electronically to document the scope of nursing interventions[24, 26]. At the same time, the NIC supports endeavors to identify the skills- and grade mix within

nursing. Although the present assignment is supported on American standards, the information relating to the required education level for respective NIC interventions can easily be taken into the European context thanks to the differentiated descriptions and – with the required modifications – transferred to the local grade and skill mix[24, 26, 116].

Up to now the classification NIC has been used at most different levels and in nursing relevant fields such as daily collaboration with the patient, education, management and research[25, 26, 164]. For the development of nursing policies as part of standardized procedures and evidence-based nursing, the NIC is becoming increasingly important. The examples range from the care of outpatients with cardiac diseases[165] to long-term nursing of patients with brain injuries[166] and to nursing of patients with respiratory problems[167]. In quite a number of studies, the NIC was used in combination with NANDA-I nursing diagnoses and the NOC. In a study in Pediatrics, the efficacy of nursing interventions in relation to dehydration was determined, and coherent nursing procedures were elicited[115]. Another study determined the number of NANDA-I diagnoses, the NIC interventions and the NOC outcomes in gerontological patients who were hospitalized with pneumonia[111]. The nursing care of patients with diabetes mellitus in hospitals was studied by taking input from the three nursing classifications NANDA-I, NOC and NIC[113]. Also in the context of the three classifications the most common nursing diagnoses, nursing-sensitive outcomes and nursing interventions were determined in geriatric patients with heart failure[114]. De Lima Lopes, de Barros & Michel[112] validated NIC interventions and NOC outcomes in relation to the nursing diagnosis "excess fluid volume" in cardiac patients. The results demonstrated that the NIC interventions are suitable to successfully treat the problems of the respective patient population[112].

In addition, the results of a study on the development of Advanced Practice Nursing (APN) in geriatrics were based on the NIC[168]. The study of Titler et al.[169] is also based on the NIC intervention *Fall Prevention* in order to investigate the factors that play a crucial role in relation to falls of elderly people during a hospitalization[169]. Kautz & van Horn[170] documented, on the basis of the NIC intervention *Family Integrity Promotion,* the evidence of nursing interventions in rehabilitation settings of adults and adolescents[170]. In psychiatric nursing, the effectiveness of the NIC intervention *Sleep Enhancement* was successfully examined by means of a quantitative study[171]. Also with the aim to elicit the effectiveness of nursing a study was conducted by using the standardized nursing languages NANDA-I and NIC in the care of outpatients with diabetes mellitus type II[172]. De Fatima, Gutierrez & Barros[173] determined the most common nursing interventions (NIC), which were carried out to treat NANDA-I nursing diagnoses on an intensive care unit for adults[173]. In an other study the nursing main practice focus in home care was identified by means of a NIC data-entry form[174].

In the field of in-patient psychiatric nursing, the psychiatric nursing interventions described in research articles were compared with the NIC titles, definitions and activities in a systematic literature review. The results revealed that 84% of the psychiatric nursing procedures described in the literature are contained in the NIC[175]. Another study proved that the NIC, compared to other intervention classifications such as Omaha, ICNP®, Clinical Nursing Classification (CCC), met most of the criteria for intervention classifications[26]. As part of a validation study the NIC was examined in nursing care of orthopedic patients, and the use of NIC was judged as positive[176]. In a similar study in an intensive care setting the introduction of a special category of NIC interventions in relation to categorized interventions in life-threatening situations (Critical Incident Nursing Intervention CINI) was proposed[177]. Shever, Titler, Dochterman, Fei & Picone[110] elicited the most common NIC interventions as well as their application patterns in hospitalized, geriatric patients, who either had a heart failure, hip problems or risk for fall[110]. The study demonstrated how the standardized nursing language NIC can be used for performance analyses, which in turn is decisive for the calculation of human resources, training requirements and performance evaluations. Again in the context of proofing nursing services, the costs of monitoring of elderly patients in relation to fall prevention

were evaluated[178], and a difference between close and low-threshold monitoring with regard to the costs could be proven. At the same time, it could be demonstrated that the NIC can be used for cost transparency in nursing. In connection with training, Lee, Park Nam & Whyte[179] elicited NIC interventions in a study that were carried out by students in South Korea, and compared the results with the ones of students in the USA. Both the benefit of NIC as part of the nursing education, as well as a transcultural difference between the two countries, could be shown[179]. Furthermore, the use of the standardized nursing languages NANDA-I, NOC and NIC by Bachelor students could be determined in a study. The results demonstrate that more attention must be given to the linkage between the academic training and the practice relevant aspects when using NIC[180].

## Annex 4: Studies on the Classification of Nursing Outcomes

The NOC claims to provide nursing-sensitive outcomes for all nursing specialties and fields with the corresponding outcome indicators[20]. In order to enable professional nursing to evaluate its work with patients in a systematic, transparent and comprehensive way and to be recognized as an equal partner in the interdisciplinary team as well as in the discussion relating to health policy, the measurement and communication of nursing-sensitive patient outcomes are essential[117-120]. The development of the classification is rooted in a broad research base involving a variety of nursing experts from different clinical settings, but also from education and research[25, 26, 121, 181]. This is the reason why the NOC is used in a wide variety of nursing specialty settings: In Brazil the ineffective breathing pattern in children with congenital heart disease was determined by means of the NOC[137]. Also in pediatrics the NOC was applied in an observational study with regard to dehydration. In this study the course of the disorder was examined by means of different NOC outcomes[115]. Another successful application area of the NOC – in combination with NANDA-I and NIC – is the planning and implementation of nursing care to support adolescent mothers after the birth of their child[182]. In the population of newborns, the NOC was used for nursing services of homeless mothers after the birth of their child. In this case, the classification was not used in the inpatient sector, but in outpatient, professional nursing[183]. In inpatient psychiatry the successful use of the NOC for the care of patients with hallucinations was described[184]. And Lunney[166] demonstrated the successful use and benefit of NOC for the care of patients with brain injuries in an evaluation study[166]. In outpatient settings the NOC was used in a study relating to venous ulcers: In this setting, tissue integrity and perfusion were assessed by means of the classification[185]. In a case study the NOC was used in addition to the nursing classifications NANDA-I and NIC to evaluate the wound healing and the integrity of the affected tissue in a patient with pemphigus vulgaris[186]. The NOC was also used in a follow-up study of elderly people with pneumonia or heart failure in inpatient settings[187], and it was part of similar studies in patients with hepatitis C in dialysis[188] and cardiac rehabilitation[189]. The NOC was also applied as a determining instrument for the establishment of the treatment success in hospitalized patients with heart failure[84, 189]. The use of the NOC in connection with the nursing diagnosis *Acute Pain* was tested in a Brazilian validation study[190]. In a similar study De Lima Lopes, de Barros & Michel[112] validated NOC outcomes in combination with the nursing diagnosis *Excess Fluid Volume* in cardiac patients[112]. In another validation study the NOC was examined with regard to nursing-sensitive outcomes in inpatient surgery settings as well as in intensive care units. The outcomes showed that the NOC detects and represents the corresponding nursing-sensitive situations[191].

In various studies, the NOC was applied in combination with the nursing classification NANDA-I and the NIC. The NOC was used as a determining measure to monitor the course of the nursing process and to record and evaluate the respective patient outcomes. Thus, Head et al.[111] determined nursing-sensitive outcomes with NOC in hospitalized, gerontological patients with pneumonia, and Minthorn & Lunney[113] investigated the course in patients with diabetes mellitus in a clinical setting. In another study the most common nursing diagnoses, nursing-sensitive patient outcomes and nursing interventions in geriatric patients with heart failure were determined[114].