

Scientific Background

European Nursing care Pathways Version 2.9

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Introduction

The nursing classification ENP (European Nursing care Pathways) has been developed to illustrate the nursing care process within the context of the nursing documentation in standardised language. The major targets of adopting the standardised nursing language ENP as an instrument refer to improving the communication of healthcare professionals with one another, supporting process flows such as the transfer from one institution to another, the performance transparency of nursing. The structure of ENP supports nurses in their decision-making within the framework of the nursing care process by presenting up-to-date nursing knowledge. Furthermore, data will be generated through the use of standardised formulations for nursing research and control procedures of nursing management as well as risk management. ENP is available as print version as well as database or implemented in software products. Due to the availability of the taxonomy in different languages (English, German, French, and Italian) within one database ENP can also be used in a multilingual team.

ENP can be be divided into three parts:

- A) ENP... as a nursing classification system for a total of seven concept groups (see chapter 1.1)
- B) ENP... as pre-combination of the elements of this nursing classification system (see chapter 1.2)
- C) ENP ... as the practice guidelines developed from the pre-combination and the nursing classification (see chapter 1.3) which offer nurses professional support to illustrate the nursing care process by using standardised formulations, such as nursing diagnoses, characteristics, etiologies, resources, outcomes, and interventions.

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1. Structure of ENP

The three different parts of ENP are described and its structures illustrated in charts in the following chapters. **Part A** in the figure shows the **nursing classification system** ENP. **Part B** illustrates how **pre-combinations** of elements of the nursing classification system lead, for example, to nursing diagnoses and intervention concepts. In **part C** in the figure it is illustrated how a nursing diagnosis develops to a nursing practice guideline through linkages with characteristics, etiologies, resources, nursing outcomes, and nursing intervention concepts. Currently, in version 2.9 there are 552 nursing practice guidelines defined. In the following text, the categorisation of ENP will be described as nursing classification and nursing practice guidelines. In the overall figure, the connection between the three parts is shown.



Figure 1: Hierarchical structure of the ENP classification system with parts A, B, and C.

1.1 Part A: The nursing classification ENP

At this point, there will be a brief explanation on the principles of organisation theory. Generally, a classification is an organisation system which is based on the principle of class formation. A classification is a list of terms which normally shows a hierarchical structure. The term superordinate to all other terms in the classification is usually called top term and represents the all-comprehensive term. In ENP, the top term is called "Nursing knowledge/terms for the illustration of the nursing care process". The hierarchical term relations illustrate the relations between the super-and subordinate terms. Within the individual classes the classification system is hierarchically organised, as well. It spans the elements: group \rightarrow domain \rightarrow class \rightarrow category \rightarrow subcategory.

The group of nursing problems, for example, subdivides into four domains (nursing problems in the functional/physiological context, nursing problems in the emotional/psychosocial context, nursing problems with multi-dimensional risks, and environment-related nursing diagnoses). The domain "nursing problems in the functional/physiological context", for example, is divided into **11 classes**, which are attributed to **67 categories**. In the following table, the domains, classes, and categories of ENP nursing problems are listed. The subdivision of domains and classes is identical in the three groups of nursing diagnoses, outcomes, and interventions.

Domain	Class	Category		
Eurotional/physiological	Personal hygiona/alathing	Self-care deficit washing ¹		
context	Ability to wash body as well as	Self-care deficit oral hygiene		
The domain includes all ENP	choose and dress appropriate	Self-care deficit care of the nails, ears, eyes and the nose		
The domain includes all ENP practice guidelines which lead	clothes	Self-care deficit hair care		
to restrictions and/or loss of		Dressing self-care deficit		
self-care skills to meet the basic physical needs and/or	Breathing	Ineffective self-cleansing function of the respiratory tract		
health risks because of	Includes the respiratory functions	Insufficient respiration		
changes of body functions and	of ventilation (inspiration and expi-	Risk of respiratory insufficiency		
	cles), gas exchange between air	Risk for suffocation		
	and blood as well as the self-	Risk for aspiration		
	cleansing functions of the respira-	Risk of atelectasis/pneumonia		
		Risk of impaired respiration postoperatively		
	Nutrition	Reduced food intake		
	Includes the activities, abilities, re-	Impaired swallowing		
	quirements and functions of hu-	Imbalanced nutrition: less than body requirements		
	purpose of growth, preservation,	Risk of malnutrition		
	regeneration of tissue, and energy	Impaired eating habits		
	production.	Fluid volume deficit/electrolyte imbalance		
		Risk of impaired fluid and electrolyte balance		
		Risk of impaired breast feeding		
		Impaired breast feeding		
		Risk of nutritional related complications		
	Flimination	Self care deficit micturition/defaecation		
	Includes the activities, abilities,	Impaired urination		
	functions which relate to the elimi-	Urinary incontinence		
	tion, and excretion of urine) and	Impaired stool elimination		
	defaecation (elimination of waste	Self care deficit stoma care		
	bowels including the function of	Impaired stoma care		
	the abdominal press.	Risk of paralytic ileus		
		Risk of anuria / renal failure		
		Risk of infection of the organs of elimination		
	Circulation	Impaired cardiovascular function		
	Includes activities, functions which	Risk of impaired cardiovascular function		
	ensure the blood supply of the	Risk of thrombosis		
	volume and pressure This includes	Risk of lung embolism		
	the pumping functions of the heart,	Risk of bleeding		
	the blood vessel functions for the transport of blood through the body as well as functions for the preservation of arterial blood pres- sure.	Risk of allergic reaction/anaphylactic shock		
		Impaired movement		
	Exercise/mobility Includes all activities and abilities	Impaired walking		
	of movement to change body posi-	Impaired sequence of movement/movement pattern		
	tions or transfer from one place to	Risk for falls		
	forms such as walking, running,	Risk of contracture		

¹ Self-care deficit washing is defined as follows: Limited or lacking ability to wash whole body or body parts at the sink or other washing facilities (ICF [d510] washing oneself, ICNP [10020935] washing). Each category is defined and is part of the assigned ENP nursing diagnosis.

		etc. also belongs to this class.	Risk of spasticity		
			Risk of paralysis		
			Risk of impaired mobility		
			Risk of sleep deficit		
	Includes all activities and mental	Impaired sleep			
		functions which are expressed in a	Impaired relaxation		
		periodical, reversible and selective			
		from the immediate environment,			
		in which a body enters a state of rest and bodily functions are re-			
		duced.			
		Ticouo integrity	Risk of pressure points		
		Includes all activities, behaviours	Risk of skin damage		
		and functions, which influence or	Risk of mucous membrane/skin damage		
		body and/or the organs.	Altered oral mucosa		
			Risk of corneal damage		
			Risk of impaired wound healing		
			Impaired healing		
			Risk of dislocation/luxation		
			Risk for trauma		
		Risk of swelling/oedema formation			
		Risk of tissue damage			
		Risk of infection/germ spreading			
	Metabolism	Risk of hypo/hyperglycemia			
		Includes all functions of regulation	Risk of metabolic imbalance		
	of the required food components such as carbohydrates, proteins and fats as well as their conver- sion into energy as well as all oth- er chemical conversion processes of the organism. This includes e.g. the glucose metabolism as well as the functions of hormone balance of the pituitary gland, thyroid, ad- renal gland, etc.	Metabolic imbalance			
			Risk of impairment of health for mother and child		
		Includes all functions and activities	Risk of unwanted pregnancy		
		which relate to fertility, pregnancy, birth, and lactation.	Impaired sex life		
		Body temperature Includes all functions and activities related to the regulation of body temperature.	Risk of hyper/hypothermia		
Emo	tional/newahasaajal	Foolings	Pain		
cont	iext	Includes all neurophysiological	Anxiety		
The	domain includes all ENP	and neuropsychological process-	Impaired feeling		
prac pair	tice guidelines which im- the personal develop-	sor of perception through stimulus	Impaired comfort		
men	t, participation and/or	response. Feelings may relate to	Feeling of boredom		
emotional and social health	pain or emotions such as bore-	Personal suffering			
cal,	cal, environment-related), be-		Exhaustion		
havi	ours or other circumstanc-		Risk of exhaustion		
53.			Shame		
		Percentions	Impaired environmental interpretation syndrome		
		Includes all processes and func-	Impaired body image		
		tions related to the specific mental	Impaired self-concept/image		
	runctions of recognition and inter-	Risk of disorder of consciousness			

	pretation of sensory stimuli (audi-	Perception impairment				
	tactile).	Impaired consciousness				
		Risk of adequate/ineffective communication				
	Interaction Includes any interrelated, mutual	Impaired communication				
	action of two or more persons, for	Risk of impaired interaction				
	which usually any kind of commu-	Impaired interaction				
		Ineffective relationship				
		Risk of unfulfilled needs				
	Debendenden	Impaired adjustment				
	Includes all activities and physical	Impaired behaviour				
	reactions of a human being which	Impaired problem coping strategy				
	can be observed and/or measured All immediately observed actions	Harmful behaviour				
	are behaviours, which are exter-	Risk of self-injury/endangering others				
	nally observable expressions of a	Behaviour endangers self/others				
	ment.	Behaviour is self-injurious				
		Risk of ineffective therapy				
		Risk of unachieved health-related goals				
		Risk for suicide				
		Risk of escape				
		Risk of self-care deficit				
	tine/participation	Impaired self-care				
	Includes all actions/activities of a	Impaired organisation of daily life/organisation of life				
	person's involvement in a life sit- uation which focuses on carrying out tasks of a structured daily rou- tine, such as organise leisure time, carry out household activities, etc. and/or relate to the social integra-	Impaired performance of activities				
		Impaired recreational activities				
		Self-care deficit housekeeping				
		Dependent care				
	tion/participation and the associat- ed perspectives.	Risk of dependent care				
	Personal development	Impaired cognitive capacity				
	Includes all activities, require-	Impaired ability to make decisions				
	ments and functions to get a real-	Impaired development				
	self to act and make decisions in	Risk of impaired development				
	one's own interest.	Impaired future perspectives				
		Disturbed habits				
		Impaired quality of life				
		Impaired dying phase				
		Impaired self-esteem				
	Knowledge	Lack of information/abilities				
	Includes all abilities and activities to gain and use information and knowledge and to apply these for the promotion of health as well as maintenance and restoration.	Impaired ability to process information				
	Crown	Risk of social exclusion				
	Group	Risk of social isolation				
	ideas which relate to social norms	Risk of financial/social ruin				
	such as religion, roles, beliefs,	Risk of occupational exclusion				
	own choices and decisions.	Norm conflict				
		Role conflict				
		Impaired religious practice/beliefs				
		Self-care deficit				
		Risk for sudden infant death syndrome				
Multidimensional risks	Health risks non-specific	Risk of complications: treatment/therapy				

The domain includes all ENP practice guidelines which lead to risks due to thera- py/procedures, limitations (e.g. physical, environment-related) and/or other circumstances which affect the function- al/physiological as well as the emotional/psychosocial area and cannot be clearly as- signed to a class.	Includes all activities, treatments, therapies and (physical) changes which relate to a potential risk for own health.	Risk of complications: Primary disease/injury Risk of complications: postoperative Risk of complications: pathologic changes Risk of complications: altered awareness Risk of complications: dehydration Risk of complications: heat regulation Health risks
Environment-related nursing problems The domain includes all ENP practice guidelines which do not relate to the care receiver, but to risks for his/her social environment.	Risk of damage to health for the environment Includes all physical changes which are a potential threat of the person affected for his/her envi- ronment.	Risk of infection
N = 4	N = 21	N = 136



In 2006 (version 2.3), the pre-combined terms/concepts of the ENP nursing diagnoses were separated into the elements nursing problem and specification and a **monohierarchical structure**² was created through clustering. This reorganisation enables data evaluation on different aggregation levels. The clustering of the nursing problems were realised in several steps by analysis of the inherent nursing concepts. The entire hierarchisation processes were conceptually driven and follow previously set rules based on the fundamental definition work of the domains, classes, etc.

Between 2007-2008 the segmentation and cluster formation of ENP nursing outcomes and interventions was carried out. This, as well, refers to monohierarchical structure. The nursing outcomes and interventions are hierarchically structured on the level of domains and classes as well as the matically structured according to the same structure as the nursing problems. On the level of categories there are abstractly formulated nursing outcomes and nursing intervention concepts.

The structure of domains and classes in the three groups of nursing diagnoses, outcomes, and interventions has been harmonised. Example of the category of nursing problems: "*self-care deficit personal hygiene*", attributed category of nursing outcomes is "*existing self-care ability personal hygiene*", on the level of nursing interventions the category is "*interventions of personal hygiene*". Characteristics and etiologies have their own hierarchical structure. The terms/concepts are structured **monohierarchically** in ENP. Hierarchisation of ENP started in 2006 (version 2.3) with nursing problems. Since then ENP has been termed as nursing classification. An example from the current ENP version 2.9:

> Nursing diagnoses (n=552) Domain: Functional/physiological context Class: Personal hygiene/clothing Category: Self-care deficit personal hygiene Nursing diagnosis ... Category: Self-care deficit oral hygiene Nursing diagnosis ... Nursing outcomes (n=1852) Domain: Functional/physiological context Class: Personal hygiene/clothing Category: Existing self-care ability personal hygiene

² Monohierarchical classification systems are "strictly" hierarchical, ie terms are subordinate to only one top term. A subject area is structured from general to specific, by adding a further distinguishing feature to each hierarchy level.

Nursing outcome Category: Existing self-care ability oral hygiene Nursing outcome Nursing interventions (n=2615) Domain: Functional/physiological context Class: Personal hygiene/clothing Category: Nursing interventions for personal hygiene Nursing interventions Category: Nursing interventions for oral hygiene Nursing interventions for oral hygiene Nursing interventions

Characteristics (n=3984) Domain: Functional/physiological context Class: Personal hygiene/clothing Category: Related to dental care Characteristics

Etiologies (n=3526) Domain: Functional/physiological context Class: Personal hygiene/clothing Category: Hygiene behaviour Etiologies

Ressources (n=648) Domain: Functional/physiological context Category: Physical abilities Ressources

The hierarchies developed are relevant for further development of ENP and for data evaluation and are invisible to the end user as well as of ENP book publications as the use of ENP for nursing practice lies in the horizontal structure (figure 1 part C).

The following table 2 shows the current number of items from each group of ENP. Each item exists only once in the system, but can be linked several times with the exception of the nursing diagnoses. Within the domains, classes and categories each element of a group has only one linkage to the next level. Each item has a definite ID number which doesn't change with a new version. In ENP, items are not deleted, but deactivated. This ensures that older nursing care plans with now invalid terms can still be viewed.

Terms/concepts of the group	Number 2.5	Number 2.6	Number 2.7	Current 2.9
Nursing	521	542	548	552
Characteristics	2230	2719	2905	3984
Etiologies	1799	2282	2426	3526
Resources	379	457	473	648
Nursing outcomes	1435	1683	1724	1852

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Nursing intervention	2494	2511	2558	2615
Intervention specifications	3652	4285	4461	4797

Table 2: Number of items of the ENP groups

Domain		Class			Category				Precombined ENP nursing diagno-			
	2.5	2.6	2.7	2.9	2.5	2.6	2.7	2.9	ses 2.5	2.6	2.7	2.9
Nursing problems in the function- al/physiological context	11	11	11	11	66	67	67	67	259	275	279	278
Nursing problems in the emotion- al/psychosocial context	8	8	8	8	55	58	59	59	202	210	212	221
Nursing problems with multi- dimensional risks	1	1	1	1	2	8	9	9	59	54	54	50
Environment-related nursing prob- lems	1	1	1	1	1	1	1	1	1	3	3	3
Total: 4	21	21	21	21	124	134	136	136	521	542	547	552

Table 3: Number of elements from the group of ENP nursing problems, version 2.5 (April 2009) to version 2.6 (May 2011), version 2.7 (May 2012) and version 2.9 (May 2014)

1.2 Part B: Pre-combinations of terms from the ENP nursing classification

In ENP, elements of the nursing classification are pre-combined, ie the combination of individual terms and elements is considered in their whole form as a descriptor. The nursing diagnoses, for example, consist of a nursing problem (term from the level of categories from the group nursing problems) and a specification (terms from the group of characteristics, etiologies, or nursing interventions). Besides the nursing diagnoses, the nursing interventions are precombined in ENP, as well. The following chapters illustrate the procedure and structure of the pre-combination by means of examples.

1.2.1 Pre-combined ENP nursing diagnoses

An ENP nursing diagnosis is created by the combination of a nursing problem from the monohierarchical structure of part A and a specification of the nursing problem by means of an etiology or characteristic.

Example 1 – group nursing problem: Domain: Nursing problems in the functional/physiological context Class: Personal hygiene/clothing Category: Self-care deficit dressing Nursing problem: impaired dressing/undressing:

For example, the pre-combined ENP nursing diagnosis "The patient is restricted in dressing and undressing due to a disturbed planning of action/movement and performance" is composed of the nursing problem "impaired dressing/undressing" and the etiology "disturbed planning of action/movement". The exemplary nursing diagnosis is assigned to self-care deficit dressing.

Example 2: "The patient is at risk of atelectasis/pneumonia due to reduced lung ventilation (dystelectasis)"



Figure 2: Precombination of an ENP nursing diagnosis

These two examples show how the ENP nursing diagnosis is composed out of the terms of the classification by precombination.

Each current ENP nursing diagnosis of version 2.9 received also a definition for an unambiguous application. This has been developed both for educational purposes as well as for nurses who do not know the nursing diagnostic concepts and to support and promote a common understanding. In general, the definitions are not required in daily use by trained nurses due to the granulation of the ENP nursing diagnoses, ie the level of detail, accuracy, and expressiveness, and the clear formulations which offer little room for interpretation. Below is an example to show the structure of an ENP nursing diagnosis definition.

00022 The resident-- is unable to organise **personal hygiene independently** due to being **disorientated**

Definition:

Restricted or lacking ability to wash whole body or body parts at the washbasin or other washing facilities due to impaired mental function of self-perception (which is required to be able to orient to time, place, situation and/or person).

(ICF [d510] washing oneself, ICNP [10020935] washing, ICF b114 Orientation functions, ICNP Orientation [10013810] und Disorientation [10001235])

It becomes clear that in the definition the two concepts "unable to organise personal hygiene independently" and "disoriented" are addressed. It is attempted to describe and/or to explain the key elements of an ENP nursing diagnosis by the precise definition of terms used. During the development of definitions reference is made to already existing classification systems and other key nursing-relevant sources such as concept analyses. The literature used is indicated in each case.

If there is already a specification in the nursing diagnosis in the form of an etiology or a characteristic, the offered etiologies or related factors as well as the characteristics refer to the two components of the nursing diagnosis. Example:



ENP nursing diagnosis

Der Patient unable to carry out personal hygiene independently due to a hemiplegia/hemiparesis

Individual
Specification: E
Nursing problem

Characteristics

- Is unable to wash him/herself
- Is unable to dry him/herself
- Flaccid paralysis of the affected side
- Spastic paralysis of the affected side
- •

Etiologies

(Etiology in the title hemiplegia/-paresis)

- Cerebral vascular accident
- Neurological disease
- Brain tumour
- ---

Figure 3: Reference points of the characteristics and etiologies of ENP

Nursing diagnoses for which it is helpful to state the impairment grade on the level of characteristics will be added with a Likert scale for impairment and dependency grades.

Example:

The resident-- is **impaired in transfer skills** Characteristics:

- Impaired transfer ability from bed to the (wheel-/arm-) chair
- Impaired transfer ability from (wheel-/arm-) chair to the bed
- Impaired transfer ability from wheelchair to the toilet

٠

And:

Impairment level of the transfer

Level 1: Independent transfer using aids Level 2: Low impairment of transfer Level 3: Significant impairment of transfer Level 4: Severe impairment of transfer Level 5: Loss of transfer ability

By adding scaled severity grades for ENP nursing diagnoses regarding self-care deficits, it will be possible in the future to export the newly developed system for the classification of nursing care dependency from the nursing process documentation (Wingenfeld, Büscher, Gansweid, IPW Institut für Pflegewissenschaft an der Universität Bielefeld, & MDK WL Medizinischer Dienst der Krankenversicherung Westfalen-Lippe, 2008).

1.2.2 Pre-combined ENP nursing interventions

For the group of nursing interventions pre-combinations are created, as well. In contrast to the ENP nursing diagnoses the pre-combination consists here of different elements from the group of nursing interventions and the group of intervention specifications. The nursing interventions are assigned to intervention specifications. These can contain further information, for example, regarding frequency, grade of care of the person concerned during performance of the nursing intervention, number of required nurses, required aids or products, localisation/location referring to the intervention, and time data, etc.

The levels of pre-combined nursing diagnoses and nursing interventions (see figure) are created from the nursing classification system. These pre-combined nursing diagnoses and nursing intervention formulations are those which are used by nurses for the documentation of the nursing care process. The separation of ENP nursing classification elements from pre-combined elements is indicated by the horizontal grey line in figure 1, and the connections are illustrated by linking lines.

Subsequently, it will be shown how the nursing intervention concepts are assigned to guiding intervention specifications.

Example from the group of nursing interventions: Domain: Nursing diagnoses in the functional/physiological context Class: Personal hygiene/clothing Category: Carry out personal hygiene Subcategory: Wash whole body individually Wash body parts individually Give individual support during shower Give individual support during bath

Carry out basal stimulating body wash according to Bobath

. . . .

The intervention formulation "Wash parts of the body" is not concrete enough for an instruction in the context of the nursing care process planning. Details on issues such as the location, where personal hygiene is carried out and which level of support is needed, remain unanswered. Therefore, the ENP nursing interventions are specified further. Thus, a specific instruction for the individual adequate and sufficient performance of nursing care is established. The nursing intervention "Wash body parts individually", for example, is assigned to the following intervention specifications:

- Body part to wash
 - face/hands
 - arms
 - chest
 - back
 - legs
 - genital area
 - buttocks
- Indicate level of supportIndicate level of support
 - supervise
 - Help by supporting
 - Partially take over
 - Take over completely
 - Activate/guide
- location of partial body wash
 - in bed
 - sitting at edge of the bed
 - at the sink
- Pay attention to peculiarities
 - observe rituals
- Indicate nursing product used
- Frequency/time

Basically, the following intervention specifications can be assigned to the nursing intervention formulations:

- Type of support
- Number of nursing personnel
- Care products used
- Localisation, where the body wash is to be carried out
- Interval information
- Time data
- Localisation of body region
- Aids required
- Professions involved in the treatment process

1.3 Part C: Practice Guidelines in ENP

In part C of the ENP structure (see figure 1), it will be explained how the practice guidelines from the different items of the groups are combined. Each practice guideline consists of items from the group of nursing problems (extended to nursing diagnoses through the intermediate step of precombination), etiologies, characteristics, resources, outcomes, and interventions (extended to guiding interventions through the intermediate step of pre-combination).

The etiologies and characteristics for a nursing diagnosis of an ENP practice guideline refer to the specification. This is a particularity of the structure of the ENP nursing diagnoses. There are also ENP nursing diagnoses which do not have any pre-combination of specification and nursing problem, but consist of the individual and the nursing problem only. By coding of etiologies and characteristics the nursing problems become nursing diagnoses and are generally rest categories for

nursing phenomena which could not have been developed as nursing diagnoses by precombination. Pre-combinations are only developed when there are special intervention concepts for a particular nursing diagnosis. This way it is possible to provide "best practice" or "evidencebased nursing" in the sense of a practice guideline.



Figure 4: Figure 2: Horizontal structure of an ENP practice guideline

By linking the class-spanning items which belong together from a research-based perspective, the horizontal structure of nursing practice guidelines are created. The relations between nursing diagnoses, characteristics, resources, objectives, interventions, and intervention specifications are illustrated in the figure (see part C in figure 1) with the horizontal lines. On the emerging micro level the ENP development team speaks of an **ENP practice guideline**. It is a professionally sound and possibly evidence-based assignment of possible nursing outcomes and intervention concepts for remedy/relief of a nursing problem or a nursing diagnosis. The ENP developer also used the terms "modified practice theory" (Wieteck, 2003) or "nursing diagnosis related pathway" (Wieteck, 2007a). Both descriptions are reflected in the term practice guideline.

An ENP practice guideline is defined analogously to the usual definitions of the general term "practice guideline" (*Bölicke, 2001; Field & Lohr, 1992; Ollenschläger et al., 1999; Wieteck, 2009*):

An ENP practice guideline describes the systematically developed decision support for an adequate, sufficient approach based on current nursing knowledge for concrete nursing diagnostic problems. The ENP practice guidelines show the action and decision corridor in which nursing activity after placing an ENP nursing diagnosis is being meaningfully carried out.

The result of the meaningful combination of items to a practice guideline is the part of ENP which is used in nursing practice, is visible in a software application, and is individualised as a nursing pathway for each patient in the nursing care plan.

According to the ENP developers, these nursing practice guidelines represent the up-to-date nursing knowledge.

1.4 (Further) development of ENP

The development and further development of ENP is published in numerous book publications (Wieteck, 2003, 2004c, 2013; Wieteck, Berger, & Opel, 2007). The actual change documentation can be read in the regularly publishes Scientific Background to ENP. Below, the key development steps and the current strategies for further development are briefly outlined.

ENP is registered as standardised nursing classification by means of object identifier (OID)³ in German healthcare ("Deutsches Gesundheitswesen"). This allows data exchange between the different electronic patient/resident records. The information on ENP can be viewed at the homepage of the German Institute for Medical Documentation and Information (Deutsches Institut für Medizinische Dokumentation und Information, DIMDI)⁴.

1.4.1 Historical Retrospective

The development of ENP began in 1989 at a German nursing school with the key objective to harmonise the nursing process documentation and to develop appropriate educational guidelines. A group of nursing teachers from various nursing schools were involved during the development. Coinciding with the first publication of the ENP practice guidelines in 1994, the implementation of ENP as software began in a relational database.

• Phase 1 (1989–1998) – inductive development

Starting point of the inductive approach was the objective to harmonise the educational contents and the actual organisation of the nursing process planning.

In the context of practice guidelines for the apprenticeship for nurse practitioners, specific nursing situations (> 2138) with patients/residents/clients were used to create a nursing care plan. The nursing care plan was consented with the trainee and the nursing team and afterwards reflected in the teaching team. Formulations found and consented by the experts to illustrate the nursing situation in the form of nursing problems/diagnoses, outcomes, and interventions were additionally supported by literature and then cataloged (Wieteck, 2004c).

The inductive development phase was characterised by 4 key research questions.

- 1. Which nursing diagnoses are required in nursing practice to illustrate the individual nursing process and are thus as standardised formulations?
- 2. Which characteristics, etiologies, and resource formulations appear in which nursing diagnosis and should be offered as a standardised formulation?
- 3. Which aims are agreed upon (with the patient/resident) in the nursing process and are documented in the nursing care plan?
- 4. Which nursing interventions are chosen and can be illustrated with which standardised text blocks as guiding information? Which nursing interventions are discussed in the nursing literature and can be offered as standardised text blocks? (Wieteck, 2004c, S. 28-29)

The inductive development was methodically characterised by three phases:

A) **Qualitative, participating observation** of specific care situations were carried out in the context of practice guidelines with a traineee and a nursing teacher. During this nursing diagnostic

³ In the context of informatics so called "Object Identifier" are used as globally unambiguous and permanent identifier for a specific information object.

⁴ Compare <u>http://www.dimdi.de/dynamic/de/klassi/oid/verzeichnis.html</u> (Accessed 26 June 2014).

process, the different nursing diagnoses were identified, nursing interventions determined and formulated in a nursing care plan for the patient/resident. If possible, the description of the nursing care plans are based on the already known and described nursing concepts. If this was not possible, own concept analyses according to Walker/Avant were carried out (Opel, 2004).

- B) Reflection of the nursing care plan with nursing practitioners and then in the teaching team in terms of a **consensus** and the illustration of the diagnostic process.
- C) Comparison of the identified nursing diagnoses, outcomes and interventions with the literature and cataloging of the new found results (Wieteck, 2004c). The ENP development team calls this a modified practice theory - in other words, it represents a nursing diagnosis-related pathway. Today, the term "ENP practice guideline" is used.

According to the ENP developers, these nursing practice guidelines (situation specific or practice theories), today also called ENP practice guidelines, represent the up-to-date nursing knowledge. The development of nursing related pathways is based, as already mentioned, on the one hand on inductive methods, and on the other hand on literature work/analysis (Wieteck, 2004) as well as review by validation works.

The nursing care process like the process of the development of a nursing diagnosis-related pathway has been understood during the development of ENP as a hypothesis-generating process (Gordon; Bartholomeyczik, 2001, Schrems, 2003). The suggestions of Dickoff, James, and Wiedenbach and their definition of the "situation-producing theory" (Dickoff; James; Wiedenbach, 1968, S. 420-422) or "practice theory" (Walker/Avant, 1998), which already contain key components of the nursing process, such as the objective of nursing performances and the resulting intervention instructions, have been expanded during the development of ENP by the dimensions of nursing diagnoses with characteristics, etiologies, and resources with regard to the nursing process model. While Dickoff, James, and Wiedenbach place the practice theory as the last of the four-step theory formation process, ENP's development team puts the modified "practice theory" as the second step of this process (see figure 3) (Dickoff et al. 1968). This is justified by the assumption that the nursing pathways/ENP practice guidelines, which are created by linking the nursing diagnoses with characteristics, etiologies and resources, develop hypotheses but do not yet constitute a theory.

Crucial to this assumption is that the developed hypotheses are considered as preliminary findings in the nursing field. The formulated hypotheses can be approved, rejected or modified through new findings. This process is reflected in a continual updating process of ENP.



Figure 5: Integration of the modified "practice theory" in the theory formation process.

The terms/concepts used in ENP are characterised by high complexity and granularity. In order to support clarity of the developed language, linguistic structures and definitions for the individual ENP formulations have been determined by the ENP development team over the course of the development process.

Phase 2 (1998 until today) – User feedback and validation for the further development of ENP

Since 1994 ENP is updated in a database and can be implemented by different software products in an electronic patient/resident record for nursing process documentation. From the first application of ENP in an electronic nursing process documentation in 1996 (Deppmeyer, 1999; Wieteck, 2001) onwards, the user feedback will be evaluated as an important aspect of the further development of ENP until today (Wieteck, 2013). The implementation of ENP in a database ensured that

each term in ENP has a notation (ie unambiguous number or ID number) which, however, will not be printed in book publications for reasons of readability and lacking relevance.

Since 2001 validation work is carried out on ENP. The studies on content and/or criteria validity are another important part of the further development of ENP. A rough overview of existing validation works is provided in chapter 1.4.3.

• Phase 3 (2005–2009) – The classification structure

In the book publication of 2004, ENP has no separate taxonomy structure. Previously, the ENP practice guidelines were assigned to the activities of daily living (ADL). The hierarchisation was transferred step by step to the present classification structure. First, a taxonomy⁵ was developed for the ENP nursing diagnoses. The classification structure of the ENP nursing diagnoses was mentioned for the first time in an article (2006), here also ENP was referred to as nursing classification system for the first time (Wieteck, 2006a, 2006c). In 2006, ENP had seven classes, now called groups (nursing diagnoses, etiologies, characteristics, resources, outcomes, interventions and action-guiding instructions). The group of nursing diagnosis had at that time already a monohierarchical structure with 3 domains, 22 classes, and 128 categories. The other classes/groups such as etiologies, characteristics, etc. did not have a hierarchic structure, but terms/concepts are managed next to each other in the database. The concepts/terms of the classes had relations, ie linkages to the relevant nursing diagnoses (Wieteck et al., 2007). During 2007 and 2009 the individual groups were systematically and monohierarchically structured by clustering and converted into the present classification structure.

The realisation of ENP in the form of a database can be best described with terms of informatics and knowledge representation: with regard to its database presentation ENP can be termed as ontology⁶. In ENP, up-to-date nursing knowledge is presented through linkages (relations). The basis are the nursing diagnoses, characteristics, etiologies, resources, nursing outcomes, and nursing intervention concepts which are managed in a database. Without linkages to each other this would have little benefit for the user in terms of knowledge representation. For this reason, the above mentioned elements are structured in a database and linked to each other based on nursing knowledge. Finally, a complete set of information in terms of nursing knowledge in the form of practice guidelines is achieved from the fragmented pieces of information on the horizontal level. A semantic net is created through linkages which can be helpful for decision-making within the context of the nursing care process. In an electronic patient or resident record the formulations are used to realise the nursing process documentation. Additionally, ENP is linked with several other terminology classifications systems and (see chapter 1.6).

⁵ The term taxonomy (also called classification scheme) describes a unified model or theoretical construct according to which single elements/objects are classified and divided into categories by certain criteria.

⁶ Ontologies are descriptions of conceptualisations of a knowledge domain, in case of ENP it is the nursing knowledge for representation and control of the nursing care process. An ontology is a controlled vocabulary which formally relates objects and its descriptions and makes a statement on a special domain. Often, the term 'semantic net' is used for ontology.

• Phase 4 (since 2008) – The translation of ENP as a continuous process

ENP is available as a database in German, English, Italian, and French. Book publications in English, French, and Italian are still pending, however in the dissertation of Serge Haag the validity of ENP in French is described (Haag, 2009a). The Italian translation of ENP has begun with a thesis in the Master's program for specialist translations at the University of Bologna. Since then, Ms. Elisabetta De Vecchis leads the ENP translation into Italian as well as the validation works of the translation as a member of the ENP development team.

1.4.2 Further development today

Today, ENP is a nursing language with a monohierarchical structure providing nursing knowledge by means of practice guidelines. The graph below shows the systematic process of further development of ENP. A new database version will be provded anually. Book publications are generally published every two years.



Figure 6: Process of the systematic further development of ENP

Influenced by health policy decisions, user feedback and new scientific findings in nursing and related disciplines of healthcare it is decided annually which ENP practice guidelines are subject to a systematic review and if necessary a revision. A systematic literature review is initiated as a central methodological step for update and review, which is carried out based on the following scheme:

1. Specifying the revision strategy with the formulated question of the targeted literature search

- 2. Definition of the preferred publication type and evidence level
- 3. Determination of inclusion and exclusion criteria and the databases to be used (eg. Medline, CINAHL, The Cochrane Library).
- 4. Development of search terms and determination of specific search phrases
- 5. Carrying out of database searches
- 6. Screening and procurement of relevant literature
- 7. Evaluation of found publications and studies with regard to their quality (critical appraisal)
- 8. Revision of the ENP catalogue according to the findings and facts from the literature
- 9. Consensus of the results in the ENP development team as needed, also with consulted external experts in their fields
- 10. Validation of the revision through expert rating, a study or a clinical trial in nursing practice.

The following table shows as an example a small extract of the revision table of ENP nursing diagnoses of the subject area dysphagia, which were updated in 2014. The nursing diagnoses in the first column are of the category "Impaired swallowing". In the second column are all etiologies (pictured), characteristics, nursing outcomes, and nursing interventions, which exist in this category altogether. The numbers in the third column refer to those publications that confirm the existing link of an item (pictured in this care as an etiology)

		Quellenangaben	Der Bewohner ist aufgrund einer hypotonen Wangen-/ Lippen- /Mundmusk ulatur bei der Nahrungsauf nahme besiettischeig	Der Bewohner ist aufgrund von Kauschvi erigkeite n beider Nahrungauf nahme beeintächti gt	Der Bewohner verschluck t sich häufig bei der Nahrungsa ufnahme, Schlucken ist beeinträchtigt	Der Bewohner verschluck t sich bei Flüssigkeit , Schlucken ist beeinträchtig t	Der Bewohner ist aufgrund eines Zungensto sses! pressen beim Schlucken beeinträchtig t	Der Bewohner ist aufgrund der reduzierte n veränderte n pharyngeal enłösopha galen Peristaltik bein	ID_1032_Der Bewohner ist aufgrund eines beeinträchti gten Bolusformun g/-kontrolle/- transport beim Schlucken beeinträchtigt NEU	ID_1033_Der Bewohner hat auf grund fehlender/u nzureichend e Schutzrefle xe das Risiko einer Aspiration NEU	Der Bewohner: - hat sonstige Ursachen für die Schluckstöru ng
	URSACHEN										
19998	Verminderte orofaziale Kontrolle	1+2+83+136+141+143	X								
921	Fazialisparese	1+2+134+138+147	X								
19863	Zentrale Fazialisparese	1+2	X								
19864	Periphere Fazialisparese	1+2	X								
931	Hypotonus der Wangen-/Gesichtsmuskulatur	1+2+136	x								
20573	Hypotnus der Lippenmuskulatur	1+2+136	x								
20567	Hypotonus der Pharynxmuskulatur mit reduzierter Clearing-(Reinigungs)Funktion	2	x								
6898	Schmerzen beim Kauen	1+2		x							
6899	Operative Eingriff im Kieferbereich	1+2+135+156		x							
6900	Verletzungen der Zunge	1+2		x							
19878	Myofunktionelle Ströung orofacial	1+2+119+134+135+140+					x				* ggf. entf
20568	Muskeldystrophie orofacial	148	x								
20569	Myopathie orofacial		x								
19986	Abnorme orale motorische Funktionalität	1+2+67									x
	Motorisoher Verlust oder Sohwäche bei neurologischen Störungen										
19987	Beeinträchtigung der neuromuskulären Koordination	1 + 2 +4+15+8 + 123 + 135 + 136 + 140 + 143 + 156		x						x	* ggf. entf
19976	Veränderte Kiefergelenksfunktion	1+2		x							
20014	Schädigung des Kiefergelenkes	1+2		x							
19995	Kiefergelenkluxation	1+2		x							
19977	Craniomandibuläre Dysfunktion	1+2		x							
19993	Uberlastung der Kaumuskulatur durch Zähneknirschen	1+2+136		x							
19975	Beeinträchtigte Kaumuskulatur	1+2		x							<u> </u>
19994	Oromandibuläre Dystonie	1+2		x							
20015	Kieferschlussdystonie	1+2+136		x							
20016	Zahnfehlstellungen	1+2		x							
20591	Läsionen im Bereich des Larynx (Kehlkopf)	1+2+137			x	x				X	* ggf, entf
19836	Läsionen im Bereich des Pharynx	1+2+137			entfernen	x		x		entfernen	00112111

Table 4: Section of a revision table of the ENP development team

With this approach it is possible to examine the differentiations of nursing diagnoses among each other and to support individual items with literature and studies – or to remove them according to the current state of knowledge.

The green highlighted fields show which content has been newly added, a green highlighted cross indicates that the diagnosis listed above has been newly linked with the etiology.

In the next step, the revisions were submitted to ten experts to evaluate the validity of the ENP practice guidelines through expert rating.

1.5 Application of ENP

Corresponding to the classification of terminologies into interface terminologies, reference terminologies, and administrative terminologies, ENP can be counted as interface terminology. Interface terminologies are intended for front-end use and should therefore be applied by the end users (nurses) in the direct care (Bakken, Cashen, Mendonca, O'Brien, & Zieniewicz, 2000) to realise the standardised nursing process and performance documentation.

The use of ENP is primarily intended for electronic patient records. For teaching purposes, for nursing schooling, or for training of nurses in nursing institutions which deal with the steps of the nursing care process, ENP can be a valuable benefit as the user is presented the up-to-date nursing knowledge through the linkages. Implemented in a software the advantages of ENP become apparent, because patient data can be obtained quickly and efficiently and are available for evaluation purposes. The actual implementation and visualisation of ENP can be very different from software product to software product⁷.

1.6 Linkages of ENP with other instruments

ENP is managed in a database for the implementation in software products. The notations (unambiguous numbering of items) are automatically allocated according to object-orientation within a class through the database management. Each item in the ENP system has an unambiguous coding within its group which remains stable and updated in further versions.

This notation allows the linking of the nursing classification system ENP to other instruments and classification systems. The previously linked instruments are:

- **ICD-10** and **OPS-Codes** for optimised coding of secondary diagnoses in hospital and support of DRG coding.
- LEP Nursing 3 for the evaluation of time values
- **PPR** (Nursing staff regulation)
- **IDEA** (Interdisciplinary Data based Electronic Assessment), an interdisciplinary anamnesis catalogue used to determine the need for action. For nursing, relevant nursing diagnoses are derived from the assessment through the linkages to ENP.
- **Search terms**, search system for quick retrieval of nursing diagnoses.

⁷ An exemplary impression of the software implementation of ENP offers the homepage of the company RECOM GmbH under <u>http://www.recom.eu/klassifikationen/enp.html</u>

- **Criteria of the MDK** (the German Medical Review Board of the Statutory Health Insurance Funds), time values, grades of dependence.
- **Several assessment instruments**, such as the Braden Scale, the Tinetti Scale or the FIM Scale, suggest relevant ENP nursing diagnoses.
- **PKMS (nursing complex measures score) as well as other complex codes** for automatic support of documentation demands and code generation.

In various studies and practice tests linkages to the listen instruments could already be evaluated (Baltzer, Baumberger, & Wieteck, 2006; Gärtner, 2006, 2008; Schmid, 2007; Schütze, 2006).

1.7 Dissemination of ENP

ENP is currently (as of August 2014) used in numerous outpatient and (acute) inpatient healthcare facilities in Germany, Austria, Luxembourg, and Italy in electronic patient/resident records for the complete nursing process documentation. The following list provides a detailed picture of the electronic use of ENP:

Germany:

12 hospitals and more than 300 outpatient facilities and nursing homes use ENP is four different software products.

Austria:

17 hospitals, five outpatient nursing services as well as 20 nursing homes use ENP in two different software products. The outpatient nursing services in Austria can not be compared to those in Germany in terms of size. The five outpatient nursing services working with ENP have more than 3,000 employees of nursing care who carry out the nursing process documentation daily with ENP.

Luxembourg:

Three hospitals, one nursing home as well as the two largest providers of outpatient nursing services who cover about 90 % of all patients in Luxembourg use ENP in two different software products. Also in Luxembourg the outpatient nursing services are different to those in Germany. The two outpatient nursing services employ more than 4,000 people of nursing working with ENP. Here, also the accounting positions were mapped with ENP to support accounting of services from the daily documentation.

In addition to the electronic use ENP is used in many institutions as well as for teaching as book publication for the hand-written nursing care planning.

2. Changes of the versions

In the following, the changes of the ENP versions will be described. In addition to the new nursing diagnoses listed below, also those diagnoses will be shown which where modified in meaning as a result of literature work and expert questioning. In addition to these diagnoses, numerous measures for standardisation were also carried out and suggestions from end users were continuously incorporated according to expert verification.

2.1 ENP versions 2.0 (Wieteck, 2004c) to 2.4

Not every version will be published in a book. In-between the book publications there will be additional interim versions in the ENP database. The practical test of ENP, for example, was carried out in several hospitals in 2005 using ENP version 2.3. After and during the practical test in Canton St Gallen major changes were carried out in ENP, which will be shown in the following.

ENP version 2.3 to 2.4

- a) Hierarchisation on the level of nursing diagnoses, development of the ENP taxonomy to establish a monohierarchical structure used for data evaluation.
- b) Hierarchisation works on the level of nursing outcomes, development of an outcome taxonomy.
- c) Hierarchisation works on the level of nursing interventions.
- d) Examination of nursing diagnoses regarding fluctuating abstraction levels and overlapping. In course of this work 41 nursing diagnoses were integrated into others from version 2.3 (n = 557 nursing diagnoses) to version 2.4 (n = 516 nursing diagnoses).
- e) Support of ENP through further literature work. The sources used to support the practice guidelines from version 2.0 (n = 279) consisting of nursing literature, reference books and studies, to version 2.5 were increased to a total number of 520. International literature was increasingly used.
- Work on gaps regarding completeness and level of detail found in practice tests, see for example (Kossaibati & Berthou, 2006).

2.2 ENP version 2.4 to 2.5 (2008/2009)

New included practice guidelines (n=14)

- 848 The resident/patient/client-- has malnutrition due to an eating disorder
- 849 The resident/patient/client has **malnutrition** due to a **cognitive impairment**
- 851 The resident/patient/client is at risk of **malnutrition** due to **cognitive impairment**
- 850 The resident/patient/client ist at **risk of malnutrition**
- 855 The resident/patient/client's well being is affected due to tube feeding
- The resident/patient/client is unable to keep/can only with effort keep attention to the contra-lesional (=neglected) space or side of the body (=neglect)
- 853 The resident/patient/client is **impaired in the ability** to **take up and process information**
- 856 The resident/patient/client is **impaired in the ability to acquire self-care competencies**, risk of ineffective therapy
- 857 The resident/patient/client has **pressure sore**, there is **difficult wound healing**
- 858 The resident/patient/client has **arterial ulcer**, there is **difficult wound healing** 859 The resident/patient/client has **venous ulcer**, there is **difficult wound healing**
- The resident/patient/client's well being is affected due to chronic wound

- The resident/patient/client has diabetic foot syndrome, there is difficult wound healing 858
- 887 The resident/patient/client is at risk of ineffective treatment due to lack of information/skills associated with diabetes/hypo/hyperglycemia

Extensively revised practice guidelines (n=31)

The resident/patient/client has malnutrition 555

- The resident/patient/client refuses food intake (food refusal), there is a risk of malnutrition 558
- The resident/patient/client demonstrates neglect of food intake, there is a risk of malnutrition 554
- 134 The resident/patient/client suffers from involuntary urine loss due to an increased abdominal pressure (stress incontinence)
- The resident/patient/client suffers from involuntary urine loss due to heavy imperative urgency (urge incontinence) 135 The resident/patient/client suffers from involuntary urine loss at regular times due to a full bladder (spontaneous reflex
- 137 emptying)
- 138 The resident/patient/client suffers from urinary dribbling/involuntary urine loss due to an chronic urinary retention
- The resident/patient/client has an intact urogenital tract and is unable to avoid involuntary urine loss (functional urinary in-574 continence)
- 130 The resident/patient/client suffers from urinary incontinence (multiple incontinence type/uncategorised incontinence type)
- 845 The resident/patient/client has a continuous loss of urine due to extraurethral incontinence
- 012 The resident/patient/client is unable to wash independently due to restricted mobility
- The residen/patient/client is unable to carry out personal hygiene independently due to a hemiplegia/hemiparesis 018
- 007 The resident/patient/client is unable to carry out personal hygiene independently due to physical restrictions in coping with stress
- 027 The resident/patient/client is not allowed to exert himself whilst carrying out personal hygiene due to a reduced cardiac output, there is a self-care deficit personal hygiene
- 029 The resident/patient/client is unable to hold bathing articles due to restricted mobility, self-care deficit personal hygiene
- 022 The resident/patient/client is unable to organise personal hygiene independently due to being disorientated
- The resident/patient/client should avoid movement between the pelvis and torso due to an injury of the spinal column, there 011 is a personal hygiene self-care deficit
- 013 The resident/patient/client is completely dependent on personal hygiene being carried out due to a measurable altered consciousness
- 033 The resident/patient/client does not perform personal hygiene adequately, a personal hygiene self-care deficit exists
- 016 The resident/patient/client is unable to carry out perineal hygiene as accustomed due to a wound in the genital area
- 001 The resident/patient/client's personal hygiene is impaired due to other reasons (rest category)
- 676 The resident/patient/client has a chronic wound, there is difficult wound healing
- 339 The resident/patient/client's wound is healing by second intention, there is a disturbance of wound healing
- 331 The resident/patient/client's wound is healing by first intention, there is a risk of impaired wound healing
- 278 The resident/patient/client is at risk of complications due to a blunt injury to the extremities
- The resident/patient/client is restricted when eating due to a disturbance in sensation and reduced muscle innervation of 092 one side of the face
- The resident/patient/client is restricted when eating due to a reduced ability to close the mouth, partly digested foodstuffs 094 fall out of the mouth
- 078 The resident/patient/client is restricted in independent nail care
- 827 The resident/patient/client is restricted in independent foot care
- 069 The resident/patient/client is restricted in independent hair care

Deactivated practice guidelines: (n=8)

- The resident has a purulent, coated wound, risk of germ spreading
- The resident/patient/client has an elevated risk of skin damage caused by the application of detergent substances
- The resident/patient/client has an elevated risk of inflammation of the eyes due to germ spreading caused by body care per
 - formances
- The resident/patient/client is unable to wash hair independently
- The resident/patient/client has long toe nails and is unable to cut them independently
- The resident/patient/client has thick horny skin at the feet and is unable to remove it independently
- The resident/patient/client has dirt under his finger nails and is unable to remove it independently
- The resident/patient/client is restricted when drinking due to a reduced ability to close the mouth, fluid flows out of the mouth

The resident/patient/client is restricted when eating and drinking, food particles collect in cheek pouch of the affected side

Literature used (n=520)

2.3 ENP version 2.5 to 2.6 (2009 to May 2011)

New ENP practice guidelines (n=25)

- The resident/patient/client has ineffective self-cleansing function of the lung (rest category) 867
- The resident/patient/client is restricted in independent eye care (rest category) 868
- 869 The resident/patient/client is at risk of atelectasis/pneumonia due to other reasons (rest category)
- 870 870 The resident/patient/client is **restricted in swallowing** (rest category)
- The resident/patient/client is at risk of a fluid/electrolyte deficit (rest category) 872
- 873 \$wThe resident/patient/client ist at risk of inadequate breast feeding (rest category)
- 877 \$wThe resident/patient/client is handicapped during breast feeding (rest category)

- The resident/patient/client's eating behaviour is inadequate (rest category) 878
- 879 The resident/patient/client is restricted in urination (rest category)
- 880 The resident/patient/client has ineffective bowel elimination (rest category)
- 881 The resident/patient/client is otherwise impaired during stoma care
- The resident/patient/client is at risk of sudden infant death syndrome 886
- 892 The child aged older than 4 years defaecates without organic reasons (encopresis)
- The relative/important person is unable to carry out self-care activities independently 882
- 883 The relative/important person is at risk of being unable to carry out self-care activities of person concerned independently
- 894 The resident/patient/client has colonisation/infection of multi-resistant organisms, there is the risk of germ spreading
- 889 The resident/patient/client has hypertensive crisis due to an autonomic dysreflexia
- The resident/patient/client is at risk of autonomic dysreflexia due to paraplegia 893
- 896 The resident/patient/client's daily organisation/life organisation is affected due to dementia
- The resident/patient/client is at risk of ineffective treatment due to lack of information/skills associated with diabe-887 tes/hypo/hyperglycemia
- 891 The resident/patient/client is at risk of delayed development
- 897 The resident/patient/client's communication is restricted due to a language disorder
- 898 The resident/patient/client has dermatitis associated with elimination/incontinence, impaired wound healing
- 895 The resident/patient/client's activity level is low, risk of serious health problems

The new included rest categories were set up in co-operation with project hospitals. The categories are required because there are other nursing problem areas beside the specified, already pre-combined nursing diagnoses.

Extensively revised practice guidelines (n=30):

- The resident/patient/client has a sexually transmitted disease, there is a risk of infection for the sex partner 519
- 354 The resident/patient/client is at risk of hyperglycemia or hypoglycemia
- 383 The resident/patient/client has an infectious disease, there is a risk of spreading infection to the surrounding environment
- 263 The resident/patient/client has an unstable cardiovascular situation due to reduced cardiac output
- 610 The resident/patient/client is at risk of cardiovascular complications due to reduced cardiac output
- 261 The resident/patient/client is at risk of cardiovascular complications due to hypertonic circulatory changes
- 260 The resident/patient/client-- is at risk of cardiovascular complications due to hypotonic circulatory changes
- 696 The child aged older than 5 wets her/himself without organic reasons (enuresis)
- 160 The resident/patient/client is at risk of pressure sore (adjustment to the current expert standard)
- The resident/patient/client receives parenteral feeding via infusion, there is a risk of nutritional related complications 103
- 097 The resident/patient/client receives enteral tube feeding, there is a reduction in food intake
- 326 The resident/patient/client is at risk of being under or over infused due to intravenous infusion therapy
- 651 The resident/patient/client is at risk of complications due to central venous catheter/infusion therapy
- 451 The resident/patient/client's independent daily organisation/organisation of life is restricted due to age-related reduction processes
- The resident/patient/client's daily organisation/life organisation is affected due to a thought disorder 535
- 450 The resident/patient/client's is impaired in the independent daily organisation/organisation of life due to disorientation
- 634 The resident/patient/client's daily organisation/organisation of life is affected due to memory/thought disorders
- 793 The resident/patient/client is at risk of complications due to arterial access
- 627 The resident/patient/client's quality of drive is lowered, there is a risk of self-care deficit
- The resident/patient/client's reference to reality is affected due to a psychotic experience, there is a risk of self-care defi-428 cit
- 429 The resident/patient/client is impaired in structuring of the daily routine, there is a risk of self-care deficit
- 426 The resident/patient/client is restricted in the organisation of life, there is a risk of self-care deficit
- 313 The resident//patient/client is restricted in organising daily life/daily routine independently due to disturbance of the self
- The resident//patient/client is impaired in the daily organisation/organisation of life due to continual recurring thoughts 621 which cannot be suppressed by logic/reason (compulsive thoughts)
- 425 The resident/patient/client is restricted in the independent daily organisation/organisation of life due to a handicap
- 152 The resident/patient/client is restricted in the organisation of life due to an ostomy (artificial opening for the bowels)
- 467 The resident/patient/client is restricted in organising recreational activities independently
- 500 The resident/patient/client demonstrates repeated self-injury behaviour, there is an impaired problem solving strategy/coping strategy
- 684 The resident/patient/client displays avoidance behaviour due to a lack of confidence in his/her own physical strength
- The resident/patient/client is at risk of dermatitis associated with elimination/incontinence 131

Deactivated practice guidelines: (n=9)

- The resident/patient/client is at risk of circulatory collapse during mobilisation procedures (merged into diagnosis "hypo-188 tension", ID 260)
- 325 The resident/patient/client has a CVC (central venous catheter) there is a risk of inflammation of the vein (merged into diagnosis ID 651)
- 324 The resident/patient/client has an intravenous cannula in situ, there is a risk of an inflammation of the vein (merged into diagnosis ID 651)
- 326 The resident/patient/client is at risk of being under or over infused due to intravenous infusion therapy (merged into diagnosis 651)
- 887 The resident/patient/client is at risk of ineffective treatment due to lack of information/skills associated with diabetes/hypo/hyperglycemia
- The resident/patient/client has a fixation of the nasogastric tube, risk of skin irritation (merged into diagnosis ID 097) 082
- 098 The resident/patient/client has gastrointestinal pain due to tube feeding (merged into diagnosis ID 097)
- 106 The resident/patient/client has blood sugar fluctuations due to diabetes, there is a risk of hyperglycaemia or hypoglycaemia (merged into diagnosis ID 354)

107 The resident/patient/client is at **risk of not achieving health related aims** due to a **lack of information/skills** associated with **diabetes**

Literature used N=1018

2.4 ENP version 2.6 to 2.7 (May 2011 to August 2012)

The main reason for the development work between the versions 2.6 and 2.7 were two major projects with hospitals. On the one hand the illustration of "therapeutic care", on the other hand the specific characteristics of children's hospitals. Also, validation works led to revisions of some practice guidelines.

New ENP practice guidelines (n=11)

898	The resident/patient/client has dermatitis associated with elimination/incontinence, there is difficult wound healing
900	The resident/patient/client is unable to wash him/herself independently due to a sensory integration disorder
902	The resident/patient/client displays motor and/or behavioural abnormalities when there are adjustment responses to the en-
	vironment, impaired perception/sensory integration disorder
903	The resident/patient/client shows no reaction to stimuli, impaired consciousness
901	The resident/patient/client is at risk for irritations of the mucous membrane/dents due to a denture plate
905	The newborn baby is at risk of neonatal hyperbilirubinaemia
904	The resident/patient/client has renal impairment/kidney failure, there is a metabolic disorder
1017	The resident/patient/client is developmentally delayed
1034	Relatives/important persons' education does not promote development, there is a risk of delayed development
1032	1032 The resident/patient/client is restricted in swallowing due to an impaired bolus formation/control/transport
1033	The resident/patient/client ist at risk of aspiration due to a lack of/insufficient protective reflexes

Extensively revised practice guidelines (n=20)

- 522 \$wThe resident/patient/client's production of mother milk is impaired, risk of under feeding the baby
- 184 The resident/patient/client' ability to **sit independently** is **impaired**
- 712 The resident/patient/client's ability to change position in bed is impaired
- 160 The resident/patient/client is at risk of pressure sores
- 084 The resident/patient/client has limited independence when eating/drinking
- 842 The resident/patient/client is unable to perform self-care in nutrition independently due to the stage of development
- 849 The resident/patient/client has malnutrition due to a cognitive impairment
- 555 The resident/patient/client has **malnutrition**
- 851 The resident/patient/client is at risk of malnutrition due to cognitive impairment
- 608 The resident/patient/client's transfer skills are impaired
- 015 The resident/patient/client is at risk of complications due to a reduced body awareness
- 309 The resident/patient/client is at risk of complications due to a quantitative impaired consciousness
- 411 The resident/patient/client is unable to perceive/process environmental stimuli adequately, there is a risk of misinterpretation
- 840 The resident/patient/client has not developed skills and abilities for his age due to an impaired development of perception
- 537 The resident/patient/client is restricted in dressing and undressing due to a **hemiplegia**
- 529 The resident/patient/client is restricted in dressing and undressing due to other reasons
- 154 The resident/patient/client is at risk of kidney failure
- 234 The resident/patient/client is at risk of atelectasis/pneumonia due to reduced lung ventilation
- 828 The resident/patient/client is at risk of reduced lung ventilation
- 359 The resident/patient/client is at risk of complications due to a raised bilirubin
- 814 The resident/patient/client is at **risk of social exclusion** due to **behaviours** that breach the principles and valid standards of the community
- 815 The resident/patient/client has an altered social behaviour due to an **altered parent-child relationship** that breaches the principles of set standards, there is a **risk of social exclusion**
- 748 The resident/patient/client is at risk of delayed development due to separation from the parents/important person
- 838 The resident/patient/client is at risk of delayed development due to being premature
- 891 The resident/patient/client is at **risk of delayed development**
- 92 The resident/patient/client is restricted when eating due to hypotonic cheek/lip/mouth muscles
- 681 The resident/patient/client is restricted when eating due to chewing difficulties
- 87 The resident/patient/client often chokes when eating, swallowing is impaired
- 90 The resident/patient/client often chokes when drinking, swallowing is impaired
- 95 The resident/patient/client's swallowing is impaired due to pressing of the tongue
- 96 The resident/patient/client is restricted when swallowing due to reduced/altered pharyngeal/oesophageal peristaltic movement
- 870 The resident/patient/client has other/multiple reasons for dysphagia

Deactivated practice guidelines (n=5):

- 811 The resident/patient/client is at risk of **social exclusion** due to an **altered social behaviour** that breaches the principles of valid social norms
- 52 The resident/patient/client has an impaired swallow reflex, there is a risk of aspiration during oral hygiene
- 88 The resident/patient/client has no swallow reflex, there is a risk of aspiration
- 89 The resident/patient/client has no cough, pharyngeal reflex, there is a risk of saliva aspiration
- 94 The resident/patient/client is restricted when eating due to a reduced ability to close the mouth, partly digested foodstuffs fall out of the mouth

Literature used N=1214

The practice guidelines of that version level (2012) were supported on the basis of 1214 national and international literature sources, e.g. German rules and standards as wells as recommendations such as expert standards, guidelines of the MDS (Medical Service of the Central Association of Health Insurance Funds), legal peculiarities like activities according to §87b etc.

2.5 ENP versions 2.7 to 2.9 (August 2012 to August 2014)

From the most recent revision phase originated three new major extensions with regard to the criteria of transparency, clarity, and comprehensibility for the nursing classification of ENP in addition to a comprehensive literature-based and systematical revision of about a fifth of all practice guidelines.

- The development of a definition for each ENP nursing diagnoses (compare chapter 1.2)
- Indication of the evidence level (LOE) for each nursing diagnosis based on the criteria of the NANDA International (see chapter 3)
- The documentation of the revision history for each practice guideline shows the number and time of revisions for each nursing diagnosis as well as each practice guideline.

The following section from the original German revision documentation of the ENP development team serves as an example of the class personal hygiene/clothing to illustrate the changes:

Textart		ID-Nummer	ENP-Texte zur Pflegediagnose					
	Bearbeitungsh	nistorie: 1994*, 200	04, 2008; 2014					
		ENP-Praxisleitlin	ie	ENP Pflegediagnose				
	Evidenzlevel:	LOE 3.1		LOE 3.1				
Klasse		10.051	Körperpflege/Kleiden					
Kategorie		10.468	Selbstfürsorgedefizit Körperwaschung					
Pflegediagnose		11	Der Bewohner soll aufgrund einer Wirbelsäulenverletzung Bewegungen zwischen Becken und Rumpf vermeiden, es besteht ein Selbstfürsorgedefizit bei der Körperwaschung					
Definition			Kann/darf sich, Gewalteinwirk und/oder neur Rumpfbereich anderen Wasch [10020935] was	/darf sich, aufgrund einer Verletzung der Wirbelsäule (durch z.B. alteinwirkung, Tumore) verbunden mit dem Risiko eines Querschnittes oder neurologischen Ausfällen durch Drehbewegungen im Becken und ofbereich ,den ganzen Körper oder Körperteile am Waschbecken oder ren Waschmöglichkeiten zu waschen (ICF [d510] washing oneself, ICNP 20935] washing)				

Figure 7: Section of a revision documentation of the ENP development team

New ENP practice guidelines (n=17)

LOE with regard to the prac- tice guideline	LOE with regard to the nurs- ing diag- nosis	Year of devel- opment	ID	ENP nursing diagnosis title 2.9	
LOE 2.1	LOE 2.1	2014*	1080	The resident is at risk of impaired mobility	
LOE 2.1	LOE 2.1	2014*	1072	The resident is impaired in well-being [nursing problem without specification]	
LOE 2.1	LOE 2.1	2013*	1071	The resident is impaired in carrying out the activities of daily living	
LOE 2.1	LOE 2.1	2013*	1070	The newborn baby has neonatal hyperbilirubinaemia	
LOE 2.1	LOE 2.1	2013*	1068	The resident is at risk of impaired wound healing due to intertrigo	
LOE 2.1	LOE 2.1	2013*	1067	The resident has electrolyte imbalance	
LOE 2.1	LOE 2.1	2013*	1066	The resident has an allergic reaction, there is the risk of anaphylactic shock	
LOE 2.1	LOE 2.1	2013*	1064	The resident has fluid volume deficit	
LOE 2.1	LOE 2.1	2013*	1063	The resident is at risk of pulmonary complications due to surgery	
LOE 2.1	LOE 2.1	2013*	1062	The resident has insufficient respiration	
LOE 2.1	LOE 2.1	2012*	1041	The resident is at risk of complications due to tick bite	
LOE 2.1	LOE 2.1	2012*	1040	The resident is at risk of delayed development due to physical/medical ne- glect	
LOE 2.1	LOE 2.1	2012*	1039	The resident is at risk of delayed development due to psychological abuse/emotional neglect	
LOE 2.1	LOE 2.1	2012*	1035	The resident is at risk of delayed development due to physical abuse	
LOE 2.1	LOE 2.1	2012*	1038	The resident is at risk of delayed development due to a suspected sexual abuse/rape	
LOE 2.1	LOE 2.1	2012*	1037	The resident is at risk of delayed development due to sexual abuse/rape	
LOE 2.1	LOE 2.1	2012*	1037	The resident is at risk of physical abuse	

Extensively revised practice guidelines (n=112)

LOE with regard to the prac- tice guideline	LOE with regard to the nurs- ing diag- nosis	Systematic up- date	ID	ENP nursing diagnosis title 2.9
LOE 3.2	LOE 3.2	1989*, 1994, 2007, 2014	407	The resident is impaired in communication due to hypacusis (hardness of hearing)

LOE 3.2	LOE 3.2	1991*, 2004, 2007, 2014	416	The resident is impaired in verbal communication due to a global aphasia
LOE 3.2	LOE 3.2	1991*, 2004, 2007, 2014	419	The resident is impaired in verbal communication due to motor aphasia (Broca's aphasia)
LOE 3.2	LOE 3.2	1991*, 2004, 2007, 2014	417	The resident is impaired in verbal communication due to a sensory aphasia (Wernicke's aphasia)
LOE 2.1	LOE 2.3	1992*, 1994, 2003, 2008, 2014	412	The resident is impaired in verbal communication due to physical weakness
LOE 3.2	LOE 3.2	2006*, 2014	387	The resident has difficulty in expressing his/her own wishes/needs , there is a risk that these cannot be adequately fulfilled
LOE 2.1	LOE 2.3	2000* 2006 , 2014	424	The resident is impaired in verbal communication due to a speech disorder (impairment of motor-articulatory skills)
LOE 2.1	LOE 2.1	2010*; 2014	897	The resident is restricted in communication due to a language disorder
LOE 3.2	LOE 3.2	1990*,2006, 2014	414	The resident is unable to make contact in the accustomed way , an impaired in- teraction exists
LOE 2.1	LOE 2.3	2005*,2011, 2014	411	The resident is unable to perceive/process environmental stimuli adequately , there is a risk of misinterpretation
LOE 3.2	LOE 3.2	2000*,2004, 2006, 2014	746	The resident is restricted in establishing and maintaining relationships with other people , social interaction is affected
LOE 2.1	LOE 2.3	1993*, 2004, 2007; 2014	186	The resident is impaired in the ability to walk
LOE 2.1	LOE 2.3	1992*, 1994, 2004, 2008, 2014	193	The resident is restricted when walking due to uncertainty in the use of walk- ing aids
LOE 3.2	LOE 3.2	1992*, 2001, 2011, 2014	608	The resident is impaired in transfer skills
LOE 3.2	LOE 3.2	1990*, 2004, 2007, 2011, 2014	181	The resident is impaired in the ability to change position in bed independently
LOE 2.1	LOE 2.1	1989*, 1994, 2004, 2008, 2014	592	The resident is unable to move about in the wheelchair independently in the living space
LOE 3.2	LOE 3.2	2001*, 2004, 2008, 2014	648	The resident has restricted mobility due to reduced stamina/physical strength
LOE 2.1	LOE 2.3	1992*, 1994, 2004, 2007, 2014	179	The resident has limited mobility due to an amputation of a lower extremity
LOE 2.1	LOE 2.3	1990*, 1994, 2002, 2006, 2007, 2014	171	The resident is at risk of contracture
LOE 3.2	LOE 3.2	1991*, 1994, 2007, 2014	178	The resident has limited mobility due to a contracture
LOE 3.2	LOE 3.2	1991*, 1994, 2004, 2008, 2014	165	The resident is at risk of thrombosis due to immobility/restricted mobility
LOE 3.2	LOE 3.2	1992*, 1994, 2004, 2009, 2014	261	The resident is at risk of cardiovascular complications due to hypertonic cir- culatory changes
LOE 2.1	LOE 2.3	1993*, 1994, 2005, 2009; 2014	610	The resident is at risk of cardiovascular failure due to cardiac insufficiency
LOE 2.1	LOE 2.3	1989*, 1994, 2004, 2011, 2014	234	The resident is at risk of atelectasis/pneumonia due to reduced lung ventila- tion

LOE 3.2	LOE 3.2	2005*, 2007, 2014	347	The resident is restricted in taking medication independently , there is a risk of ineffective therapy
LOE 3.2	LOE 3.2	1992*, 2004, 2008, 2011, 2014	688	The resident is at risk of aspiration
LOE 3.2	LOE 3.2	1989*, 1994, 2004, 2008, 2014	12	The resident is unable to wash independently due to restricted mobility
LOE 3.2	LOE 3.2	1991*, 1994, 2004, 2008; 2014	22	The resident is unable to organise personal hygiene independently due to be- ing disorientated
LOE 3.1	LOE 3.1	1991*,1994, 2004, 2008, 2014	33	The resident does not perform personal hygiene adequately due to self-neglect
LOE 3.2	LOE 3.2	1989*, 1994, 2004, 2008, 2014	7	The resident is unable to carry out personal hygiene independently due to physi- cal restrictions in coping with stress
LOE 3.2	LOE 3.2	1989*, 1994, 2003, 2007, 2014	18	The resident is unable to carry out personal hygiene independently due to a hemiplegia/hemiparesis
LOE 3.1	LOE 3.1	1991*, 2000, 2004, 2008, 2014	13	The resident is completely dependent on personal hygiene being carried out due to a measurable altered consciousness
LOE 3.1	LOE 3.1	2001*, 2004, 2008, 2014	536	The resident is unable to shower/bathe independently
LOE 3.2	LOE 3.2	1990*, 1994, 2004, 2007, 2009, 2014	37	The resident is restricted in carrying out oral hygiene independently
LOE 3.2	LOE 3.2	1990*, 1994, 2004, 2009, 2014	46	The resident wears dentures and is unable to carry out mouth/denture care in- dependently
LOE 3.2	LOE 3.2	1990*, 1994, 2004, 2008, 2014	69	The resident is restricted in carrying out hair care independently
LOE 3.2	LOE 3.2	1989*, 1994, 2004, 2007, 2014	72	The resident is restricted in carrying out shaving/beard grooming independently
LOE 3.2	LOE 3.2	1990*, 1994, 2004, 2009, 2014	78	The resident is restricted in carrying out nail care independently
LOE 3.2	LOE 3.2	1989*, 1994, 2004, 2009*, 2014	827	The resident is restricted in independent foot care
LOE 3.2	LOE 3.2	1989*, 1994, 2003, 2007; 2014	63	The resident is at risk of skin damage due to dry skin
LOE 3.2	LOE 3.2	1991*, 1994, 2004, 2008, 2014	66	The resident is at risk of skin damage due to tendency to intertrigo
LOE 3.2	LOE 3.2	1989*, 1994, 2004, 2011, 2014	84	The resident is restricted when eating/drinking due to limited independence
LOE 3.2	LOE 3.2	2002*, 2004, 2008, 2014	554	The resident demonstrates neglect of food intake (self-neglect), there is a risk of malnutrition
LOE 2.1	LOE 2.3	2003*, 2008; 2014	559	The resident is at risk of developing obesity due to deficient dietary behaviour
LOE 3.2	LOE 3.2	2002*, 2008, 2014	562	The resident is at risk of fluid deficit due to oligodipsia/adipsia (re- duced/nonexistent thirst)
LOE 2.1	LOE 2.3	2009*, 2014	872	The resident is at risk of fluid/electrolyte deficit
LOE 2.1	LOE 2.3	2008*, 2014	850	The resident is at risk of malnutrition
LOE 2.1	LOE 2.3	2008*; 2014	851	The resident is at risk of malnutrition due to cognitive impairment

LOE 3.2	LOE 3.2	2004*, 2007, 2008, 2014	558	The resident refuses food intake (food refusal), there is a risk of malnutrition
LOE 3.1	LOE 3.1	2004*; 2008, 2014	555	The resident has malnutrition
LOE 3.2	LOE 3.2	1990*, 2003, 2009; 2014	97	The resident is receiving enteral tube feeding , there is a reduction in food in- take
LOE 3.1	LOE 3.1	1989*, 2003, 2009, 2011; 2014	87	The resident often chokes when eating, swallowing is impaired in the oral transport/pharyngeal stage
LOE 3.1	LOE 3.1	1989*, 2003, 2009, 2011; 2014	90	The resident only chokes when drinking, swallowing is impaired in the oral transport/pharyngeal stage
LOE 3.2	LOE 3.2	1989*, 1994, 2004, 2008, 2014	127	The resident is impaired in independent urinary/stool elimination
LOE 3.2	LOE 3.2	2003*, 2006, 2014	132	The resident does not reach the toilet in time due to impaired mobility , there is a risk of incontinence
LOE 3.2	LOE 3.2	2003*, 2006, 2008; 2012, 2014	130	The resident has involuntary urine loss (mixed incontinence) due to detrusor overactivity and an insufficient sphincter apparatus
LOE 3.2	LOE 3.2	2006*, 2008, 2012, 2014	574	The resident is unable to avoid urine loss with an intact urogenital tract (func- tional urinary incontinence)
LOE 3.2	LOE 3.2	1990*, 2003, 2006, 2008, 2012, 2014	134	The resident has involuntary urine loss (stress incontinence) due to an insuffi- cient sphincter apparatus with increased abdominal pressure (stress inconti- nence)
LOE 3.2	LOE 3.2	2003*, 2006, 2008, 2012, 2014	137	The resident has involuntary urine loss (reflex incontinence) due to involun- tary, un-inhibitable detrusor contractions
LOE 3.2	LOE 3.2	2003*, 2006, 2008, 2012, 2014	135	The resident suffers from involuntary urine loss due to heavy imperative ur- gency (urge incontinence)
LOE 3.2	LOE 3.2	1990*, 2003, 2006, 2012, 2014	143	The resident is at risk of a reduced frequency of defaecation (risk of constipa- tion)
LOE 3.2	LOE 3.2	2003*, 2006, 2012, 2014	576	The resident suffers from a reduced frequency of defaecation associated with hard/dry bowel movements (constipation)
LOE 3.2	LOE 3.2	1989*, 2003, 2006, 2012, 2014	145	The resident suffers from involuntary bowel movements (faecal incontinence)
LOE 3.2	LOE 3.2	1991*, 1994, 2003, 2006, 2012, 2014	321	The resident is at risk of an ascending urinary tract infection due to an in- dwelling transurethral catheter
LOE 3.2	LOE 3.2	1991*, 2003, 2006, 2012, 2014	322	The resident is at risk of an infection of the organs of elimination due to a su- prapubic catheter
LOE 3.2	LOE 3.2	1992*, 1994, 2004, 2007, 2011, 2014	529	The resident is restricted in dressing and undressing independently
LOE 3.2	LOE 3.2	1990*, 1994, 2004, 2008, 2014	170	The resident is unable to put on/take off the compression stockings inde- pendently, a self-care-deficit when dressing exists
LOE 2.1	LOE 2.3	2001*, 2004, 2007, 2014	530	The resident shows no interest in clean/neat clothing , there is a risk of self- neglect of clothing/outer appearance
LOE 2.1	LOE 2.3	1991*, 1994, 2004, 2008, 2014	537	The resident is restricted in dressing and undressing due to a hemiplegia

LOE 3.2	LOE 3.2	1990*,1995, 2004, 2014	299	The resident is unable to sleep throughout the night , there is a risk of sleep deficit	
LOE 3.2	LOE 3.2	1990*,1995, 2004, 2007, 2014	282	The resident is hampered when falling asleep, there is a risk of sleep deficit	
LOE 2.1	LOE 2.3	1991*, 1995, 2003, 2007, 2014	479	The resident is unable to relax	
LOE 2.1	LOE 2.3	1992*, 1994, 2003, 2007, 2009, 2014	467	The resident is restricted in organising recreational activities independently	
LOE 2.1	LOE 2.1	2006*, 2009, 2014	451	The resident is restricted in the independent daily organisation/organisation of life due to age-related reduction processes (frailty syndrome)	
LOE 2.1	LOE 2.3	2006*, 2010, 2014	450	The resident is impaired in the independent daily organisation/organisation of life due to disorientation	
LOE 2.1	LOE 2.1	2006*, 2009, 2014	634	The resident is impaired in the daily organisation/organisation of life due to memory disorders	
LOE 2.1	LOE 2.3	2006*, 2009, 2014	535	The resident is impaired in the daily organisation/organisation of life due to a thought disorder	
LOE 2.1	LOE 2.1	2006*, 2009, 2014	896	The resident is impaired in the independent daily organisation/organisation of life due to dementia	
LOE 2.1	LOE 2.1	1993* 2003, 2009, 2014	452	The resident is restricted in the independent daily organisation/organisation of life due to a handicap	
LOE 2.1	LOE 2.1	2003*, 2007, 2014	547	The resident is restricted in styling the outward appearance and is thereby af- fected in his/her well-being	
LOE 3.2	LOE 3.2	1990*, 1994, 2004, 2008, 2014	187	The resident is at risk of falls	
LOE 2.1	LOE 2.1	2005*, 2007, 2014	203	The resident has an impaired postural control/balance , is at risk for falls due to Parkinson's disease	
LOE 2.1	LOE 2.3	1993*, 2004, 2007, 2014	216	The resident is at risk for falls due to an impaired balance when walk- ing/standing/sitting	
LOE 3.2	LOE 3.2	1989*, 1995, 2003, 2007, 2010, 2012, 2014	160	The resident is at risk of pressure sores	
LOE 2.1	LOE 2.3	1991*, 1995, 2004, 2007, 2014	431	The resident withdraws from social events, there is a risk of social isolation	
LOE 2.1	LOE 2.1	2001*, 2008, 2014	429	The resident is impaired in structuring of the daily routine , there is a risk of self-care deficit	
LOE 2.1	LOE 2.3	2002*, 2008, 2014	626	The resident demonstrates a tendency to run away , there is a risk of self-harm	
LOE 2.1	LOE 2.1	2003*, 2007, 2014	217	The resident is impaired in the spatial orientation due to balance disorder	
LOE 3.2	LOE 3.2	2002*, 2005, 2008, 2014	317	The resident is at risk of self-injury/endangering others due to disorientation	
LOE 2.1	LOE 2.3	2005*, 2008, 2014	743	The resident shows acute behaviour which endangers self/others	
LOE 3.2	LOE 3.2	1990* 2003, 2007 2014	489	The resident has acute pain	
LOE 3.2	LOE 3.2	2003*, 2007, 2014	645	The resident has chronic pain	
LOE 2.1	LOE 2.3	1991*, 2004, 2007, 2014	493	The resident has pain of the musculoskeletal system	

LOE 2.1	LOE 2.3	1991*, 2004, 2007, 2014	491	The resident has joint pain with functional/mobility restrictions
LOE 2.1	LOE 2.3	1990*, 1994, 2004, 2009, 2014	354	The resident is at risk of hyperglycaemia or hypoglycaemia
LOE 2.1	LOE 2.3	2003*,2006, 2009, 2014	676	The resident has a chronic wound, there is poor wound healing
LOE 3.2	LOE 3.2	1990*, 1994, 2004, 2014	497	The resident is anxious , senses a real/fictitious threat
LOE 3.2	LOE 3.2	1990*, 1994, 2004, 2014	190	The resident is afraid of falling
LOE 2.1	LOE 2.3	1990*, 1994, 2004, 2014	498	The resident is afraid of falling out of the bed
LOE 2.1	LOE 2.3	2004*, 2008, 2014	703	The resident suffers from a state of agitation
LOE 2.1	LOE 2.3	1991*, 2004, 2007, 2014	464	The resident feels bored due to a lack of meaningful tasks
LOE 2.1	LOE 2.3	2004*, 2008, 2014	503	The resident suffers from homesickness
LOE 2.1	LOE 2.1	1989*, 1994, 2004, 2008, 2014	68	The resident is impaired in well-being due to pruritus
LOE 3.2	LOE 3.2	1989*, 1994, 2004, 2008, 2014	39	The resident has a reduced/lacking chewing activity/flow of saliva , there is a risk of thrush and parotitis
LOE 2.1	LOE 2.1	1991*, 1994, 2004, 2008, 2014	131	The resident is at risk of dermatitis associated with elimination/incontinence
LOE 3.2	LOE 3.2	2005*,2006, 2008, 2011, 2014	857	The resident has pressure sore, there is difficult wound healing
LOE 3.2	LOE 3.2	2003*, 2008, 2014	622	The resident is at risk of an increased (extracellular/intravascular) fluid vol- ume
LOE 2.1	LOE 2.1	2003*, 2008, 2011, 2014	887	The resident is at risk of ineffective treatment due to lack of information/skills associated with diabetes/hypo/hyperglycemia
LOE 2.1	LOE 2.3	2006*, 2011, 2014	569	The resident has the risk of skin damage due to sensitive/thin skin
LOE 2.1	LOE 2.3	2006*, 2009, 2014	383	The resident has an infectious disease , there is a risk of spreading infection to the surrounding environment
LOE 2.1	LOE 2.1	2009*, 2014	894	The resident has colonisation/infection of multi-resistant organisms, there is a risk of germ spreading
LOE 3.2	LOE 3.2	1989*, 2003, 2006, 2009, 2014	339	The resident has a secondary wound healing, there is a disturbance of wound healing

Deactivated practice guidelines (n=13):

As part of the revision the nursing diagnoses listed below have been merged or transferred to a new diagnosis.

52	The resident has an impaired swallow reflex, there is a risk of aspiration during oral hygiene
88	The resident has no swallow reflex, there is a risk of aspiration
89	The resident has no cough, pharyngeal reflex, there is a risk of saliva aspiration
94	The resident is restricted when eating due to a reduced ability to close the mouth, partly digested foodstuffs fall out of the mouth
561	The resident is at risk of fluid deficit
654	The resident must eat a low protein diet due to a protein intolerance, there is a risk of dietary related complications

828	The resident is at risk of reduced lung ventilation
235	The resident has shallow breathing and is unable to perform active breathing exercises, there is a risk of atelecta- sis/pneumonia
249	The resident is unable to cough up due to a glottis closure defect, there is a risk of atelectasis/pneumonia
198	The resident has restricted freedom of movement due to external factors
206	The resident has impaired mobility due to pain on weight bearing
647	The resident has postoperative restricted mobility
490	The resident has joint pain including pain on initiation of movement

Literature used N=3545

The practice guidelines of the version 2.9 (2014) are supported on the basis of 3,545 national and international literature sources. Among them are German regulations, guidelines, and recommendations such as the national expert standards, etc., and several international guidelines have been considered. In total, 10,355 links to sources exist for the 552 ENP practice guidelines. Above all reference books or articles, which describe broad nursing phenomena, are repeatedly linked to ENP practice guidelines.

3. Evidence grades of the ENP nursing diagnoses and practice guidelines

For the ENP nursing diagnoses and practice guidelines the level of evidence was evaluated and established as part of the revisions in 2014. An important goal of the development was from the very beginning of the development process to establish comparability of evidence levels with those of other nursing classifications. Against this background the levels of evidence(LOE) of ENP are based on the classification criteria of NANDA International⁸, although this classification system can also be critically discussed. This ensures that the explanatory power of individual nursing diagnoses of various classification systems can be compared with each other. The following list shows the individual evidence levels of ENP in detail:

1. Development of a new practice guideline

The ENP practice guidelines are generally developed inductively, which means that the nursing practitioners working with ENP identify a gap. The path of development is the identification of a phenomenon in nursing practice. The development request will be implemented. The result will be consented with the nursing practice. Subsequently, the diagnosis will be included in the catalogue. Less frequently, the new development is excited by literature reviews. If this is the case, a development proposal is first being developed (see LOW 1.1/1.2/1.3) which is discussed with experts from clinical practice and evaluated by them.

1.1 Nursing diagnosis title only (development request)

The ENP nursing diagnosis is clearly clarified and supported by literature. The syntactical and structural requirements are examined. Similarly, overlaps are examined.

1.2 Nursing diagnosis title and definition (development request)

The ENP nursing diagnosis is clearly formulated, the definition is consistent with the title. The definition differs from the characteristics and the diagnosis title, and these components are not included in the definition. The diagnosis and definition are supported by literature references.

1.3 Nursing diagnoses and definition are added by nursing objectives and nursing interventions (development request)

The ENP practice guideline is in an early stage and made available to end users in software applications and jointly evaluated and improved.

In clinical nursing practice it may occur that an ENP practice guideline is made available to end users at an early state of 1.3 in the context of projects. In the official ENP catalogue as well as in book publications, however, only diagnoses will be listed which have at least reached the maturity level of 2.1.

⁸ The levels of evidence of NANDA-I can be viewed at the following internet address: <u>http://www.nanda.org/nanda-international-level-of-evidence-criterial.html</u> (Access: 25 June 2014)

2. Nursing diagnoses and practice guidelines included in the ENP catalogue and confirmed by international literature references, nursing practice and/or consensus studies

2.1 a) Diagnosis title, definition, characteristics, etiologies, and resources are supported by literature references

The nursing diagnosis, its definition as well as all characteristics, etiologies, and resources are confirmed by national and international literature.

2.1 b) Diagnosis title, definition, characteristics, etiologies, resources, and nursing outcome and interventions are developed for the nursing diagnosis and supported by literature references

In addition to literature support of the diagnosis title, definition, all characteristics, etiologies, and resources the nursing interventions and nursing outcomes are assigned to the nursing diagnosis and supported by literature.

2.2 Concept analysis of the nursing diagnosis

In addition to literature support of diagnosis title, definition, all characteristics, etiologies, resources, nursing interventions and outcomes, a concept analysis with a detailed literature review on the central nursing diagnostic concepts is carried out. The concept analysis supports the nursing diagnosis and the definition and includes the discussion and support of characteristics.

2.3 Consensus studies on existing diagnoses by experts

In addition to the literature support of all elements of the nursing diagnosis and practice guideline consensus studies are carried out with experts from the respective specialist area. The studies include expert's opinions, Delphi or cross mapping studies with other nursing classification systems as well as similar study designs with diagnostic content.

3. Clinically supported nursing diagnoses and practice guidelines (validation and verification)

3.1 a) Literature synthesis

Systematic literature analysis and evaluation of the nursing diagnosis and nursing intervention with documented and proven search strategy.

3.1 b) Literature synthesis and expert rating

Systematic literature analysis and evaluation of the nursing diagnosis and nursing intervention with documented and proven search strategy as well as subsequent expert rating (eg through surveys, conferences, etc.)

3.2 Clinical studies of nursing diagnoses and practice guidelines which can not be generalised to the general population

The study refers to the nursing diagnosis as well as all characteristics and etiologies that are related to the diagnosis. The studies can be qualitative or quantitative. Among those are also studies which examine the concurrent validity in the clinical context. The sample size is limited and not random (non-probabilistic).

3.3 Well-designed clinical studies with small sample sizes

The study refers to the nursing diagnosis as well as all characteristics and etiologies that are related to the diagnosis. A random sample (probabilistic sample) is used, but with a limited sample size.

3.4 Well-designed clinical studies with random sample of sufficient size which can be generalised to the total population

The study refers to the nursing diagnosis as well as all characteristics and etiologies that are related to the diagnosis. A random sample (probabilistic sample) is used, the sample size is sufficient to generalise the results to the total population.

4. Definitions of the class terms in ENP

In order to enhance clarity of the European Nursing care Pathways as nursing language and classification system, linguistic structures and definitions for the individual ENP groups have been determined by the ENP development team over the course of the development. These are presented in the chapters below.

4.1 Definition of ENP nursing diagnoses

An ENP nursing diagnosis is defined as follows:

A **nursing diagnosis in ENP** is the term nurses use, if possible, together with a person affected based on the systematic assessment/evaluation (assessment, nursing anamnesis physical examination) with regard to the health status and his/her mental, physiological and developmental state, or his reaction to health problems that provide the basis for decision-making regarding nursing outcomes and interventions that must be selected.

An ENP nursing diagnosis describes possible nursing diagnostic judgments in a standardised form. The elements of an ENP nursing diagnosis are a nursing problem and a specification. A small proportion of ENP nursing diagnoses, currently 13.6 % (n=75), contains no specification and serves as rest category if no provided pre-combined nursing problems with specification apply. A pre-combination of specification and nursing problem was conducted, if there are specific intervention concepts for the ENP nursing diagnosis. A nursing problem in ENP is defined as follows:

Nursing problems are actual impairments of the person affected which are due to his/her person or his/her environment. Or, there are risks which are related to the health status or the treatment of the person affected which he/she cannot cope with or eliminate and which restrict his/her independence and/or those of others. Psychological, environmental and developmental conditions or changes of the physiological health status as well as age-related restrictions can be the starting point of nursing problems. Professional action is required to determine the nursing problem, change into a nursing diagnosis and to positively influence the health status through planned care.

Gordon und Bartholomeyczik (2001) say that a nursing diagnosis consist of three essential elements, "[...] which are also termed as PES schema". *These three components are: Health problems (P), Etiologic and related factors (E) [and] defining characteristics or cluster of signs and symptoms (S)*". The group of nursing problems describe nursing problems on the level of the category which represent disjunctive features to which the nursing diagnosis terms are being attributed to. Due to the composition of an ENP nursing diagnosis out of a nursing problem and a specification, it already contains at least two essential elements of a nursing diagnosis as defined by Gordon & Bartholomeyczik (2001, p. 38). Within the diagnostic process the nurse chooses adequate characteristics and etiologies from ENP. The characteristics in ENP do not only refer to the nursing problem, but to the combination of the nursing problem and the specification.

The following table 5 presents exemplary ENP nursing diagnoses of the category 1.1 Personal hygiene/clothing and the category 1.1.1 Self-care deficit personal hygiene from the domain 1 nursing diagnoses: functional/physiological context, to clarify the difference between nursing problem (= category) and nursing diagnosis in ENP.

Class	Category (= nursing prob- lem)	ENP nursing diagnoses
1.1 Personal hygiene/clothing	1.1.1 Self-care deficit washing	The resident/patient/client is unable to wash independently due to restricted mobility The resident/patient/client is unable to carry out personal hygiene independently due to a hemiplegia/hemiparesis The resident/patient/client is unable to carry out personal hygiene independently due to physical restrictions The resident/patient/client is not allowed to exert himself whilst carrying out personal hygiene due to a reduced cardiac output, there is a self-care deficit personal hygiene The resident/patient/client is unable to hold bathing articles due to restricted mobility, self-care deficit personal hygiene The resident/patient/client is unable to organise personal hygiene independently due to being disorientated The resident/patient/client is completely dependent on personal hygiene self-care deficit The resident/patient/client is unable to a measurable altered consciousness The resident/patient/client is unable to carry out personal hygiene adequately due to self-neglect The resident/patient/client is unable to carry out personal hygiene self-care independently due to stage of development The resident/patient/client is unable to carry out personal hygiene self-care independently due to a sensory integration disorder The resident/patient/client is unable to carry out personal hygiene self-care independently due to a sensory integration disorder The resident/patient/client is unable to carry out personal hygiene independently due to other reasons The resident/patient/client is unable to carry out personal hygiene independently due to other reasons The resident/patient/client is unable to shower/bathe independently due to ther reasons

Table 5: Exemplary ENP nursing diagnoses from the category personal hygiene/clothing

The operationalisation of the self-care deficit personal hygiene presented here is determined by the development of the practice guideline. If during the development of the nursing practice guideline it is realised that there are eg particular intervention concepts for self-care deficit personal hygiene for patients with hemiplegia, the ENP nursing diagnosis will be further developed pre-combined. In a literature analysis which was created as part of the ENP development of the nursing diagnoses of the sub-category self-care deficit personal hygiene, it is shown that for the ENP nursing diagnoses sellsted in table 4 there are specific intervention concepts (Helmbold, 2010a).

So that the user of ENP is provided with differentiate and purpose-oriented intervention concepts, the already described structure of the ENP nursing diagnoses was chosen. The ENP nursing problems which don't have any specification serve as rest category which is converted by the nurse in a nursing diagnosis by coding characteristics and etiologies. These rest categories should only be used, if no specific ENP nursing diagnosis is available for the existing individual patient/resident/client situation.

4.2 Definition: ENP characteristics

Any analysis of a concept inevitably leads to the defining characteristics of the term. To determine the meaning of a concept and the nursing diagnostic concept of eg the ENP nursing diagnoses, the determination of the characteristics is decisive which can represent the nursing diagnosis. In terminology, the characteristics are attributed to different meanings. *"The entirety of the defined attributes of a concept at a given time is the sum of knowledge about this concept"* (Arntz, Picht, & Mayer, 2004, S. 53 f). The knowledge of a concept helps to specify and define its meaning. Also, characteristics help to structure terms and to classify them in a taxonomy.

In nursing diagnostic process the characteristics become indicators for the determination of a nursing diagnosis (Gordon & Bartholomeyczik, 2001, S. 43 ff.). In the context of the development of the ENP nursing diagnoses the characteristics are used for the conceptualisation. In the following, the definition of the ENP characteristics will be presented.

ENP characteristics are indicators, symptoms and expressions of the person affected. These help to identify the nursing diagnosis/problems or to differentiate the nursing diagnosis/problem from each other. These indicators can describe symptoms, further features of the problem, biographic or historical, physiological or psychological indicators, a described verbal expression of the person affected regarding the problem, reported reactions of a human being or risk factors.

The ENP characteristics refer to the nursing problem included as well as the problem specification. The nursing diagnoses within a category can include general characteristics which refer to the nursing problem.

4.3 Definition: ENP-Ursachen

Etiologies can "be defined as terms for an incident or a number of incidents which cause an other incident (causality), the effect". Mittelstrass defines the concept of etiology in the Enzyklopädie Philosophie und Wissenschaftstheorie (Encyclopedia of philosophy and theory of science) on the basis of four etiology types according to Aristoteles, the modern cause-effect relations according to Humes and other philosophers (Mittelstraß, 1996, S. 442). A similar understanding forms the basis of the definition of etiologies in the development of ENP. For further differentiation of the nursing diagnosis, etiologies are formulated if they are the cause of the health problem/condition and its maintenance (Brobst et al., 1997, S. 17 f., Gordon, 2001, S. 41).

In ENP etiologies are defined as follows:

ENP etiologies are causal and/or influencing factors which lead to the development of a nursing diagnosis and/or to its continuation. Etiologies/influencing factors can be the behaviour of the affected person, present or known illnesses as well as describable psychosocial or physical and cognitive restrictions. Etiologies/influencing factors can also result from the patient's immediate environment, his socialisation and experiences.

Within the context of the nursing care process it is meaningful to be aware of the etiologies of nursing problems as they have often to be considered for intervention offers to eliminate or relieve a nursing problem. For example, there is a difference for the planning and selection of adequate nursing interventions, whether an individual is unable to wash himself/herself, because the etiology is due to the restriction of movement after surgery or an apraxia.

The understanding of etiologies in ENP also follows the philosophical analysis of the concept which gives the following differentiation (Hügli & Lübcke, 2001, S. 640 ff):

Etiologies as causal relation between etiologies and effect. *Etiologies as chain of causation and causal relation means "this net of etiology and effect that is interlaced in the result".*

Contributive etiologies are etiologies that are associated with a cause, but are not the single cause.

Major etiology is a cause that can be proven to be of major importance for the effect.

Constitutive etiology which is a necessary condition for the effect.

The different perspectives and distinctions of the concept 'etiology' are always formulated in ENP in relation to the nursing diagnoses. Of interest are the special relationships between the person's identified health problems/conditions, its etiologies as well as the factors that maintain the problem. Each nursing diagnosis can be assigned to several etiologies. This means, that different etiologies can influence and/or cause the diagnosis. The formulated etiologies that have been selected during the diagnostic process provide a basis for the selection of adequate interventions.

The etiology formulations can be diseases (e.g. *mania, right-sided heart failure, eating disorder, multiple sclerosis*), motives for behaviour (e.g. *need for self-affirmation, aversion to food intake, lack of interest, fear, sense of shame*), conditions (e.g. *confused state, prolonged loss of appetite, deformation at the soft palate, sucking weakness, dyspnea at exertion, lack of self-esteem, limited mobility*) knowledge-/ information deficits (e.g. *lacking knowledge on breast feeding, lack of access to information*), socio-cultural influences (*e.g. family dynamic factors, unemployment*), habits/behaviour (e.g. *ritualised compulsive behaviour, stool smearing, lack of activity, insufficient setting of boundaries*), impaired interaction (e.g. *speaks a different language*), or restricted/impaired abilities (e.g. *restricted cognitive abilities*).

4.4 Definition: Resources

In ENP, the resources (abilities) of the person concerned are formulated in addition to the nursing diagnosis which are relevant for the selection of the nursing outcomes and nursing interventions.

An ENP resource is defined as follows:

ENP resources are descriptions of conditions, physical, mental and psychosocial abilities, behaviours and/or factors of the social environment which contribute to developing and supporting coping strategies and interventions which will reduce the health problems.

The development of the resources is always formulated against the background of extremely differentiated description and assessment of the health problem/condition from which the demand for health care is derived. Therefore, in terms of the selection of nursing interventions it is crucial to know whether the patient, who has a self-care deficit in personal hygiene, is able to sit or stand and/or is able to hold the facecloth by himself. The resource terms do not claim to be exhaustive in contrast to the other groups in ENP. Nurses are asked to add individual entries of resource formulations as part of the diagnostic process.

In ENP, the standardised resource formulations refer to behaviours, activity-promoting attitudes, support of the social environment or physiological conditions that help to develop and support coping strategies and interventions to address the health problems and to cope with (health) crises through use of personal and socially mediated resources (resilience).

4.5 Definition: ENP nursing outcomes

The nursing outcome should be met by targeted nursing care and the promotion of individual resources. Nursing outcomes should be realistic, achievable, verifiable, positively formulated and based on the nursing problem/diagnosis. A nursing diagnosis can be assigned to multiple possible outcomes. The nurse chooses one or many nursing outcomes depending on the patient's condition. ENP nursing outcome is defined as follows:

ENP nursing outcomes determine the nursing results which nurses and the person affected agree on and which will be achieved within an agreed time frame. The results expected are described in the form of actual conditions to be achieved in the future. The nursing objectives can refer to physical abilities, physiological parameters, knowledge, behaviours and personality traits, findings, emotional experience and subjective sensation as well as the identification of physical changes.

The use of nursing outcome for outcome measurement is possible. For this purpose, ENP nursing outcomes are linked with a five-point Likert scale to assess the grade of outcome achievement. There are different types of five-point scales. Common to all is that 5 means the outcome was achieved and 1 that the nursing outcome has not been achieved. Examples:

ENP nursing diagnosis: The patient-- withdraws from social events, social isolation is impaired **Etiology:** Psychological illness

Characteristic: Withdraws to his/her room

Nursing outcome: Participates group activities without being asked

The nurse evaluates the grade of achievement of objectives on a five-point Likert scale. The evaluation criteria linked to assess the grade of achievement of outcome are:

5 = completely achieved 4 = extensively achieved 3 = achieved in part 2 = less achieved 1 = not achieved

The coding 1 would mean that the patient has not achieved the nursing outcome "Participates group activities without being asked" with regard to the nursing diagnosis (0 % achievement of objects). The coding "less" would mean that little approaches to the achievement of outcome are observable, "moderate" evaluation shows that there is a average achievement of objectives (26-50 %), "extensively achieved" is used if the outcome has been achieved by more than 50 % (51-75 % achievement of outcome) and "completely achieved" will be coded if the outcome has been achieved by 75 %.

Another type of scaling is realised in ENP by operationalised items of the outcome. For example, the three nursing objectives for personal hygiene are described in the following table.

	Scale sectioned in 5 Personal hygiene										
	Value 5	Value 4	Value 3	Value 2	Value 1						
Is able to wash and dry body independently	Is able to wash and dry body independently	Is able to wash and dry body independently by using aids and/or extended wash time (> 15 Min.)	Is able to wash and dry body independently under supervision and provision of material	Is able to wash and dry body partly, nurse takes over body parts difficult to achieve	Is completely dependent on personal hygiene being carried out						
Is able to wash and dry upper part of the body independently	Is able to wash and dry upper part of the body independently	Is able to wash and dry body independently by using aids and/or extended wash time (> 7 Min.)	Is able to wash and dry body independently under supervision and provision of material	Is able to wash and dry body partly, nurse takes over body parts difficult to achieve	Is completely dependent on washing of upper part of the body being carried out						
Is able to wash and dry face and hands independently	Is able to wash and dry face and hands independently	Is able to wash and dry face and hands with extended wash time (> 3 Min.)	Is able to wash and dry face and hands independently under supervision and provision of material	Is able to wash and dry face and hands partly, nurse has to refinish	Is completely dependent on washing of face and hands being carried out						

Table 6: Five-step scale of ENP outcome for personal hygiene

Example from the class Breathing and category "Physiologic respiration"

	Scale sectioned in 5 Physiologic respiration								
	Value 5	Value 4	Value 3	Value 2	Value 1				
The subjectively perceived dyspnoea after/during physical activity is >3 on the scale sectioned in 5 (1=maximal dyspnoea, 5=no dyspnoea). Source: Gillissen, A. et al. 2008	Senses normal/unmodifi ed breathing activity during/immediat ely after physical activity	Senses little dyspnoea during/immediat ely after physical activity	Senses medium dyspnoea during/immediately after physical activity, which can be characterised by activation of auxiliary respiratory muscles	Senses severe dyspnoea during/immediately after physical activity, which can be characterised by activation of auxiliary respiratory muscles	Senses very severe dyspnoea during/immediately after physical activity which can be characterised by death anxiety, panic, cyanosis, activation of auxiliary respiratory muscles and/or nasal flaring				

Table 7: Scale sectioned in five of ENP outcomes of the category physiologic respiration

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A further example is from the class Feeling and the category "Painfree".

	Scale sectioned in 5 Painfree							
	Value 5	Value 4	Value 3	Value 2	Value 1			
Is painfree	Feels (no) pain, which was evaluated between 1-2 on the numeric scale	Feels pain , which was evaluated between 4-3 on the numeric scale	Feels pain , which was evaluated between 5-6 on the numeric scale	Feels pain , which was evaluated between 7-8 on the numeric scale	Feels pain , which was evaluated between 9-10 on the numeric scale			

Table 8: Scale sectioned in 5 of the ENP outcomes of the class "Painfree"

The last example is from the class feeling, category "Demands adapted to abilities"

	Scale sectioned in 5 Demands adapted to abilities						
	Value 5	Value 4	Value 3	Value 2	Value 1		
The physical demands expected for personal hygiene activities are in keeping with the actual physical abilities	The physical demands expected for personal hygiene activities are in keeping with the actual physical abilities	The physical demands expected for personal hygiene activities are partly in keeping with the physical abilities, which is demonstrated by total exhaustion after personal hygiene activities	The physical demands expected for personal hygiene activities are partly in keeping with the physical abilities, which is demonstrated by severely changed vital parameters and/or pain after personal hygiene activities	The physical demands expected for personal hygiene activities are not in keeping with the physical abilities, which is demonstrated by severely changed vital parameters with exceeding of limit values and/or pain, personal hygiene activities had to be interrupted several times	The physical demands expected for personal hygiene activities exceed the physical abilities, which is demonstrated by circulatory collapse, respiratory insufficiency or other crises, personal hygiene activities cannot be continued as planned		

Table 9: Scale sectioned in 5 of ENP outcomes from the category "Demands adapted to abilities"

Currently, 50 differentiated evaluation scales have been developed. The conversion of ENP nursing outcome into operationalised items is being continuously carried out. The aim is to develop further result indicators which serve as self-evaluation instruments for patients/residents/clients as well as measurement instrument for nurses. The result indicators developed so far are available in the software application or database.

To enable a standardised evaluation of achievement of outcome in the nursing team, it is important to discuss the achievement of outcome with the patient and/or the team. Especially outcome formulations, such as "Participates group activities without being asked", are subject to a certain subjectivity.

4.6 Definition: ENP nursing interventions

Nursing interventions in ENP are all performances as part of nursing care carried out directly for and with the patient (eg whole body wash) as well as indirectly for patients (eg prepare medication) which are carried out by nurses on the basis of the nursing diagnosis process.

An ENP nursing intervention is defined as follows:

An ENP nursing intervention is the term for an intervention concept. The intervention concepts are abstract formulations of nursing action which consist of several partial steps. The ENP nursing intervention concepts can refer to direct, indirect, or administrative nursing services which are initiated and carried out by nurses for achievement of outcomes on the basis of clinical decision processes and nursing knowledge.

An example to clarify: the nursing performance "Carry out 30° positioning according to Seiler" consists of numerous partial steps. This partial intervention begins among others with the disinfection of hands, preparation of material, greeting of the patient, information of the patient, the actual positioning performance (which can be described in several single steps, eg place head rest in flat position, remove pillow, etc.) and ends with the reassurance that the patient has no further desire after positioning and eg is able to reach the bell. The single practical steps of the nursing interventions in ENP are not described, but have been conceptualised as part of nursing schooling. For nursing care documentation it is also not meaningful to take over the single practical steps of an intervention concept written out in full into the patient record(vgl. hierzu u.a. Göpfert-Divivier, Mybes, & Igl, 2006).

Intervention specification

In textbooks it is demanded that the written nursing interventions have to answer the following commonly known questions. Which are "who is doing what, how, with what, and when?" From these requirements on nursing intervention formulations it can be deduced that nursing intervention concepts should have activity-directed character. This requirement is taken into account in ENP with intervention specifications.

ENP intervention specifications are defined as follows:

ENP intervention specifications are additional detailed information which refer to the nursing intervention. Those can include the following dimensions: detailed description of the nursing intervention, the type of support for the performance of the intervention, frequency and scheduled time of the intervention (including time intervals of the interventions), nursing products and aids used, order of interrelated interventions, topology, statements of place and paths as well as the amount, number of nurses required for the adequate performance of the nursing intervention.

4.7 Normative time values in ENP

In addition to the other elements in ENP the normative time values are linked to nursing interventions and are summed case-related. For situation-based illustration of the summed time values, different factors are taken into account such as severity levels, location of performance, etc. The time values are estimates that were negotiated over years in an empirical process with nurses. The integrated normative time values are also weighted by the context of the nursing diagnosis. For example, there are different time values in a demented patient/resident for personal hygiene than in a patient who is unable to carry out personal hygiene independently due to physical weakness. The process of time values has started in 1996 and was continuously adjusted in focus groups of nurses with the first software application used in practice. Due to own time value measurements further adjustments of the time values were carried out as part of research studies. The linkage between LEP Nursing 3 and ENP interventions carried out in 2004 shows that the integrated time values correspond to a high degree.

5. Quality of the ENP practice guidelines

The nursing diagnoses-related pathways in ENP have been developed inductively in Germany (Wieteck 2004, p. 27 ff.). Until today users have great influence on the development of ENP. Users submit demands on the illustration of nursing diagnoses and nursing interventions to the ENP development team. These demands from the practice will be defined as development input. For example, in 2010 the following items were submitted as part of the illustration of restricted communication of a resident with dementia: "Unclear speech" and "Meaningless speech". After discussions on the meaning with nurses on site and a first literature analysis the following practice guideline was developed: "The resident/patient/client's communication is restricted due to a language disorder". After positive feedback of nurses on site the next steps are a deeper literature analysis and systematic comparison of with possible similar nursing diagnoses.

Literature references of ENP practice guidelines relate to international and national studies. Literature support has been massively increased during the last five years and the quality of practice guidelines thus significantly improved. Each ENP is supported with current literature, as part of the discussion on content validity of nursing diagnostic terms Woodtli, 1988 refers to this already as a sign of content validity.

There are eight content and criterion-related validation studies so far (Berger, 2010, Hardenacke, 2007, Helmbold, 2010a, 2010b, Schmitt, 2010, Wieteck, 2006b, 2006c, 2008)further eg on the topic of dysphagia are currently in progress (as of August 2014). Berger used 1.931 narrative formulations of nursing plans for illustration in ENP in terms of criterion-related validation. The formulations stem from nursing exams graded with 1–2. Altogether 73 % of the formulations could be illustrated completely, 14 % partly completely and 13 % could not be illustrated. Altogether 73 % of the formulations could be illustrated completely, 14 % partly completely and 13 % could not be illustrated. Similar results were reached by Schmitt 2010 in his criterion-related validation study on neonatologic intensive care (Schmitt, 2010). These studies relate to complete practice guidelines (which is nursing diagnosis, characteristics, etiologies, nursing interventions). Also the literature analysis of Helmbold refers to the complete practice guideline (Helmbold, 2010a, 2010b). Revision and further development of ENP can be exemplified by nursing diagnoses on malnutrition where validity restrictions were found in the study by Hardenacke (2007) (Helmbold, 2010b).

Some studies and projects were carried out to evaluate the practical use of ENP. Baltzer (2006) points out in her report on the hospital implementation project: "ENP formulations are in step with actual practice and comprehensible" and "With ENP, nursing processes can be illustrated clearly and completely." (Baltzer et al., 2006, S. 9) The evaluation project of Canton St Gallen, carried out in four different hospitals, aimed at testing the nursing language ENP for a cantonal implementation decision. For this reason, ENP was tested by different institutions and disciplines. See the final report on the *Conception and piloting of the implementation of ENP in hospitals of Canton St Gallen* (2006) (Kossaibati und Berthou 2006, p. 8 ff.). As part of the evaluation project the nurse experts of the different pilot institutions evaluated the nursing care plans documented with ENP regarding the criterial "reliability", "guidance", "nursing relevance", "clarity", "comprehensibility" and "completeness". "At least 80 % of the analysed nursing care plans met the analysis criteria." (Kossaibati und Berthou 2006, S. 41)

In an intervention study it was analysed whether the use of ENP (at that time referred to as "blocks of text for nursing process documentation") in a software would have any effect on the nursing process documentation in a nursing home. The frequency and valence-analytic evaluations show significant positive effects on the documentation quality (Wieteck, 2001). In a further study it was examined to what extent "actually carried out nursing interventions" (collected by observers) matched with "documented nursing services using ENP". Altogether 1.068 nursing intervention codings of 34 patient cases were evaluated in this multi-centric descriptive cross-sectional study using parallel test method. The percentage agreement of the rater results of both institutions averages at 76 %. The study leaves open to what extent the proportion of the 24 % not correct codings can be linked to failure of nurses or missing items of ENP nursing interventions (Wieteck, 2007b). ENP data evaluations of hospitals, nursing homes, and outpatient services have been published in two studies. Here, ENP data was used from nursing process documentations regarding different questions (Haag, 2009b, Konrad, 2009, Wieteck, 2004a). In a research paper Wieteck (2009) shows that ENP has the granularity, ie the clarity, fineness, and selectivity, eg to answer audit questions of the expert standard on pressure sore from the daily nursing process documentation (Wieteck, 2009). ENP is also discussed in the context of the illustration of nursing performance within the DRG system (Bartholomeyczik, Haasenritter, & Wieteck, 2009). Furthermore, validation works were carried out on the translation of ENP into Italian, English, and French. For this purpose there are coopertions eg with the University Collegio Provinciale IPASVI L'Áquila as well as several hospitals in Luxembourg.

The strength of ENP is for one thing its granularity which corresponds to documentation requirements for nurses in German speaking countries. The classification has been developed in Germany, so cultural adaptions for German-speaking countries are not necessary. International data exchange can be ensured by mapping (Wieteck, 2007c). Also the requirements of the policy statements on the nursing care process and documentation by the MDS (German Medical Service of the Central Association of Health Insurance Funds) (MDS Medizinischer Dienst der Spitzenverbände der Krankenkassen e. V., 2005) can be met.

In contrast to other pre-combined nursing classifications ENP structures nursing diagnoses, outcomes, and interventions which offer nursing knowledge, individually combined as practice guidelines, in a horizontal structure for decision-making. Therefore, comparisons of quality criteria with other classification systems are difficult.

6. Critical remarks

ENP is currently not complete yet to a degree to offer all necessary nursing phenomena and interventions relevant for process documentation. This is the result of various studies and evaluation projects. Approx. 23 % of NANDA-I nursing diagnoses could not be illustrated using ENP at the time of the study in 2008 (Wieteck 2008). Many of these nursing diagnoses are listed under 1.3 as they are part of version updates. In addition, about 18 % of the formulations had to be added individually at that time. This statement refers to the complete nursing care process (nursing diagnoses, outcomes, interventions) (Berger, 2008, 2010, Schmitt, 2009, Wieteck, 2004b). After the broadly based practice test of St Gallen, Kossaibati and Berthou find it noticeable that the nursing language origins from Germany and suggest a Swiss adaption to support its acceptance. The results confirm, as well as other studies, that ENP is not yet complete in all specialist areas of nursing. In some areas elements of the pathways were found to be inconsistent and not yet on the current state of scientific knowledge. Therefore, the following aspects were suggested to adapt and correct the limitations experienced in the project of the hospitals of the Canton St Gallen:

- Swiss adaption (linguistic and cultural): amongst others, illustration of Swiss nursing competence area and nursing concept and substitution of non-Swiss terms by the Swiss equivalent;
- Aktualisierung der ENP-Inhalte (insbesondere Berücksichtigung internationaler, auch fremdsprachiger Fachliteratur, sowie Forschung aus der Pflege),
- Vereinheitlichung des Detaillierungsniveaus,
- Completion of ENP in the fields of oncologic nursing, transcultural nursing, addiction nursing, psychosocial aspects etc. (Kossaibati & Berthou, 2006, S. 61)

The validity of the ENP practice guidelines has been tested in depth on high scientific level. There are hints that some ENP nursing diagnoses are not complete and can be improved (Hardenacke, 2007).

Summary

Since the nursing knowledge is constantly expanding with rapid progression, the validation process of ENP is also a continuous requirement as part of the further development of the system. However, it does not seem wrong to speak of a high maturity of the system. Signs for this are the application now in all sectors of nursing care to illustrate the nursing care process, as well as the positive feedback from users. The quality of ENP is also supported by the fact that the high level of agreement between the systems NANDA-I and ICNP and the expressiveness and clarity of ENP nursing diagnoses were rated by experts to about 84 % as good or higher compared to NANDA-I nursing diagnoses (Wieteck 2008).

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