Applying ICF in nursing practice: classifying elements of nursing diagnoses

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Aim: This study explores the relevance of the International Classification of Functioning, Disability and Health (ICF) to nursing diagnoses.

Background: As a multidisciplinary classification of human functioning, the ICF (previously known as ICIDH-2) is potentially relevant to nursing care. However, nurses have rarely used the classification during the 23 years of its existence.

Method: In part 1 of the study, 51 nursing diagnoses from anonymous patients were deliberately selected for diversity from an existing database. The 427 diagnostic elements from these diagnoses (problem statements, aetiological factors, signs and symptoms) were classified, using the ICF, by a panel of six nurses. In part 2 of the study, the panel classified 223 elements from 30 diagnoses of patients they had actually cared for.

Results: Nearly all diagnostic elements could be classified, most often in the sub-dimensions of body functions and activities. Agreement on appropriate ICF components was 61% for anonymous patients and 75% for familiar patients. Agreement at the more detailed 3-digit level of the classification was 42% for anonymous and 60% for familiar patients.

Conclusion: The ICF has relevance to nursing care. As a general classification, it was not designed by nurses or specifically for nursing care. This can explain some difficulties in using the classification that were identified in this study, as well as the rather low levels of agreement. To resolve these issues and to further improve the classification, nurses should further explore the use of the ICF and participate in future revision processes.

Keywords: Classification, ICF, Nursing Diagnosis, Terminology

Introduction

This paper describes a study into the usefulness of the International Classification of Functioning, Disability and Health (ICF, previously known as ICIDH-2) in nursing practice. The study is the first in a series of 10 studies conducted at three University Medical Centres in the Netherlands. Nurse researchers at these centres joined with the Dutch Centre for Nursing and Care to investigate the fit between the ICF and the nursing domain.

This initial study from the collaborative project explored the potential usefulness of the ICF in the construction of nursing diagnoses. For this purpose, an attempt was made to ‘translate’ existing diagnoses from nursing practice to ICF codes and terminology.

The International Classification of Impairments, Disabilities and Handicaps (ICIDH) was first published in 1980. The World Health Organization (WHO) developed it as a multidis-
disciplinary classification for the consequences of diseases. At the time, the classification was described as a useful tool in trials. From 1980 onwards, health care providers, such as physiotherapists, occupational therapists and physicians, have used it in the classification of patient problems. However, frequent criticisms of the ICIDH cited the incompleteness of the classification and the use of negative terms and vague concepts. Therefore a revision process began in 1992 (Halbertsma et al. 2000). During this revision, the name of the classification was changed to International Classification of Functioning and Disabilities (ICIDH-2). The final ICIDH-2 draft was released in July 2001. After completion, it was decided to change the abbreviation ICIDH-2 to ICF.

Our study took place during the ICIDH revision process when the so-called ICIDH-2 Beta-2 draft (1999) was the most recent version of the classification available and was therefore used in the project. A short introduction to the ICIDH-2 Beta-2 draft, its aim, structure and the differences with the ICF (or ICIDH-2 final draft) is given in Box 1. As results for this study were all transformed to fit the latest version of the classification (as explained in the methods section), ‘ICF’ will be used in the remainder of this text.

### Literature

From the international literature, it became clear that many nurse-researchers contributed to the development of valid nursing diagnoses (see for example: Smith et al. 1997; Chambers 1998; Wooldridge et al. 1998; Whiteley 1999). The actual use of nursing diagnoses was also studied to some extent (Woodl & Van Ort 1991, 1993; Sheppard 1993; Käpelli 1995; King et al. 1997; Courtens & Huijer Abu-Saad 1998 among others). The classification of diagnoses was addressed less often. In those cases where nurses attempted to classify diagnoses, they often used mono-disciplinary taxonomies such as those derived from the 11 functional health patterns (Gordon 1994), the classification of nursing diagnoses developed by the North American Nursing Diagnosis Association (NANDA 2000), and the International Classification for Nursing Practice (Wooldridge 2001).

The nursing discipline has hardly any experience in using the multidisciplinary taxonomy ICF, or its forerunner, the ICIDH. Nevertheless, the Classification has been used around the world and was translated into many languages. Rehabilitation medicine, for instance, is one of the areas where the ICF or the ICIDH (De Klein-de Vrankrijker 1995; Van Bennekoom et al. 1995) was often applied.

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**Box 1 ICIDH-2 Beta-2 draft and ICF** (source: [http://www.who.int/icidh](http://www.who.int/icidh))

**Purpose**
The International Classification of Functioning, Disability and Health (ICF) provides a language for the description of human functioning and disabilities as components of health.

**Structure**
The International Classification of Functioning, Disability and Health (also known as ICIDH-2) beta-2 draft (pre-final draft of the current classification) described three dimensions related to functioning and disability: (1) body functions and structures; (2) activities at the individual level; and (3) participation in society. Categories within the sub-dimensions of body functions and body structures are organized according to the body systems. The dimension of activities covers all activities individuals might undertake, ordered in categories from simple to complex. The dimension of participation covers all areas of life and focuses on accessibility, opportunities and barriers (again ordered by the level of complexity). Besides the dimensions, a list of environmental factors is provided. These factors potentially influence all dimensions and are organized from the individual’s environment to the more general environment.

**Levels of classification**
The letters b, s, a, p, and e represented Body Functions, Body Structures, Activities, Participation and Environmental Factors. These letters are followed by the first level category numbers (1-digit), numbers of the second level (2-digits) and numbers of the third and fourth level categories (1-digit each). At least one number after a decimal point should be used; representing a qualifier for the extent or magnitude of a problem.

**Example**
The code a5101.2 indicates an activity (a) within the first level category of self-care (5), in this case bathing the whole body (101). The code 2 after the decimal point indicates a moderate problem for this individual.

**ICIDH-2 Beta-2 draft compared with ICF** (or ICIDH-2 final draft)

**Similarities** – The ICF (or ICIDH-2 final draft) is very similar to the ICIDH-2 Beta-2 draft. The classification structure was largely left unchanged, and important concepts remain intact.

**Differences** – (1) A list of ‘Activities and Life Domains’ was introduced. This list combines the classifications of Activities and Participation from the Beta-2 draft and uses the letter ‘d’ in all its codes. The combination of two classifications is less drastic than it appears. Activities and Participation can still be differentiated by users. (2) The World Health Organization decided to change the name to ‘International Classification of Functioning, Disability and Health’.
A brief MEDLINE and CINAHL search for references of nursing applications during the last 10 years, using the terms 'ICIDH' or 'ICF' and 'nurs . . .' (nursing, nurse, nurses, nursing care, etc.), resulted in no more than five references. Only one of the articles described a nursing application of the ICIDH (Tilquin et al. 1995). In this study, the classification was used in the development of an instrument that aimed at predicting the intensity of nursing care required by patients. One article discussed the relevance of the ICIDH to the rehabilitation of elderly patients (Meier-Baumgartner & Von Rentlen-Kruse 1997) and two studies were not about nursing care but focused on occupational therapists using ICF in nursing homes, hospitals and rehabilitation centres (Driessen et al. 1996a,b). The fifth article discussed two pilot studies that preceded the study described in this article (Van Acht-erberg et al. 2002). In these pilot studies, it was attempted (1) to diagnose and classify problems from a videotaped patient case, and (2) to classify problem statements from diagnoses that were produced by nurses without knowledge of the ICF or its terminology. The two pilot studies identified a potential fit between ICF and the nursing domain. Some difficulties were also encountered. These appeared to be related to nurses being unfamiliar with the classification and the incompleteness of some sections of the classification from a nurse’s perspective. However, these were only pilot studies. Furthermore, the fit with aetiological factors and signs & symptoms (and with other relevant aspects of nursing diagnoses) was not investigated. Therefore, the authors conclude that further studies are both needed and worthwhile.

The short overview clearly shows that nurses lack experience in using the ICF. Apart from our own pilot project, no studies with a clearly stated aim of investigating the fit between the nursing domain and the ICF or ICF classification were found. Nevertheless, the classification is potentially useful to the nursing discipline. Using a classification system that was established by the WHO could benefit the communication of nurses with policy makers, other professionals and patient organizations. In addition, nursing diagnoses, goals and evaluations could be more easily documented and linked to those of other care providers. Furthermore, the pilot projects indicated that ICF and the nursing domain were not an obvious mismatch.

A large-scale collaborative project, consisting of 10 practical studies, was therefore developed. A brief introduction to the project is given in Box 2. The project described in this paper was the first of 10 studies to be completed; it focused on exploring the relevance of the classification to all aspects of nursing diagnoses.

**Research questions**

This study investigates the applicability of the ICF within nursing practice, focusing on nursing diagnoses. In general, the project aimed at translating all elements of nursing diagnoses from daily practice into ICF codes and terminology. For this purpose, a selection of nursing diagnoses for anonymous patients formulated by nurses in practice, and from an existing database, was used. These diagnoses were ‘translated’ to ICF codes and terminology. The following questions were addressed:

1. To what extent can problem statements, aetiological factors and signs and symptoms from nursing diagnoses be classified using the ICF?
2. What is the inter-rater agreement with regard to the selection of ICF codes for these elements of nursing diagnoses?

With regard to the second research question, it was hypothesized that inter-rater agreement would be higher if nurses actually knew the patients to whom the nursing diagnoses referred. Therefore, a smaller, second study (Part 2, see below) was added.

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**BOX 2 Project ICF: mono-disciplinary and multidisciplinary applications by nurses**

| **Aim** | To explore, develop, implement and evaluate ICF (the International Classification of Functioning, Disability and Health) applications. Both mono-disciplinary (nursing) and multidisciplinary applications are explored. |
| **Projects** | Ten projects at three university medical centres focusing on applications in assessment, diagnoses, patient files, standard care plans, transfers and multidisciplinary consultations. |
| **Participants** | University Medical Centre Nijmegen (UMCN; Nursing Science & Department of Care), Academic Hospital Groningen (AZG), Academic Medical Centre Amsterdam (AMC), National Expert centre for Nursing and Care (LEVV). |
| **Steering group members** | Theo van Achterberg, Ype van der Brug, Carla Frederiks, Yvonne Heijnen, Fokje Hellema, John Kinds, Anke Persoon, Gabriël Roodbol. |
| **Funding** | Central College for Health Care Insurances (CVZ), together with the four participants. |
Selection of diagnoses

In order to answer the first research question, 51 nursing diagnoses were selected from a database containing 199 nursing diagnoses from 15 hospital wards at the University Medical Centre St Radboud. The database was originally constructed to gain insight into the use of nursing diagnoses in practice.

Nurses at the 15 hospital wards were all trained to construct and use nursing diagnoses according to the ‘PES format’ (problem – aetiology – signs & symptoms; Gordon 1994). The training did not prescribe standardized language or diagnoses. Using a criterion of maximal diversity, two project staff members selected 51 nursing diagnoses from a larger set of 199 diagnoses that were collected during a three-month period. The 51 diagnoses referred to health management,; cognition and perception (n = 5), nutrition and metabolism (n = 8), self perception (n = 3), roles and relationships (n = 3), stress (n = 3), general insight (n = 1), comfort (n = 1) and instability of vital signs (n = 1).

Diagnostic items

All nursing diagnoses used in this project were constructed using the PES format. Within the aspects of ‘aetiology’ and ‘signs & symptoms’, more than one element is often introduced. Therefore, the diagnoses were divided into diagnostic items. A diagnostic item is therefore a problem statement, an aetiologial factor or a sign or symptom from the original diagnosis. In the 51 nursing diagnoses used in this part of the project, the diagnoses contained 5–15 diagnostic items. A total of 427 diagnostic items were derived from the original diagnoses.

The panel

A panel of 6 nurses was formed. All nurses were trained at a bachelors degree level and worked at one of three selected pilot wards for the larger project on the use of the ICF in nursing (a combined ward for neurosurgery and plastic surgery, a psychiatry ward and a ward for ear, nose & throat surgery). All six nurses received a one-day introduction on the ICF purposes, structure and content. They had also practiced and discussed coding diagnostic items beforehand.

Procedure

All members of the panel participated in the translation of nursing diagnoses to ICF codes and terminology. The diagnostic items were distributed among the panel members in such a manner that two ICF-codes were obtained for every item. This implies that each of the nurses gave codes for approximately 142 diagnostic elements.

To ease the process of translating diagnostic items to ICF codes and terminology, a computerized version of the classification was provided. Searching on key words was an option in this computerized version.

Finally, all panel members were asked to fill out a short questionnaire regarding their experiences in matching diagnostic items and ICF codes. The questionnaire addressed such items as completeness of the ICF, ease of classifying and relevance of terminology to the nursing domain.

Part 2: diagnoses from familiar patients

Selection of diagnoses

A total of 30 diagnoses from ‘familiar patients’ was selected. These were 10 diagnoses that were recorded for patients from each of three nursing wards (neurosurgery, psychiatry and ear, nose & throat surgery). The diagnoses were retrieved from the files of patients who were admitted to the ward at the time, or who were discharged during the two months prior to data collection. Moreover, the selection was restricted to patients who were known to two panel members (see below) from the ward. It was expected that the diagnoses from one ward would be more disease specific and would show less diversity than the purposive sample of 51 diagnoses from 15 wards. Therefore, the first research question was not addressed for this sample of diagnoses. The sample was only used to test the hypothesis that agreement on corresponding ICF codes would be higher if nurses were asked to provide these codes for their own patients.
Diagnostic items
As in Part 1 of the project, the nursing diagnoses were divided into diagnostic items. The 30 diagnoses consisted of a total of 223 diagnostic items.

The panel
The same six nurses were the panel members for this part of the study.

Procedure
The nurses independently searched for corresponding ICF codes for all diagnostic items derived from the 10 diagnoses from their own patient group. Two ICF codes (from two nurses who were familiar with the patients and who worked at the same nursing ward) were obtained for every diagnostic item.

From ICF-draft to ICF
As stated above, at the start of the project the 1999 ICF draft (known as the ICIDH-2 beta-2 draft) was the most recent version of the classification. In 2001, the new version of the classification was published and the abbreviation ICIDH was changed to ICF. The ICIDH-2 beta-2 draft and the ICF are largely similar, but of course topics were added or rephrased and in some instances codes were changed or added.

Our panel members used the ICIDH-2 beta-2 draft. The findings were updated afterwards. Two of the authors (MH and TvA) independently matched all codes from the draft version with codes in the new ICF. Spontaneous agreement on corresponding ICF codes was reached for all but six codes. For these remaining six codes, a consensus code was given after some discussion between the two authors.

Analysis
• Question 1: Just how many diagnostic items could (or could not) be classified using the ICF will be described, and the distribution over the main components within the classification.
• Question 2: The level of agreement between panel members is reported at the level of components and at the more detailed 3-digit level. Inter-rater agreement is very often computed as Cohen’s kappa (Cohen 1960). This kappa provides a correction for agreement based on chances. Certainly at the more detailed levels, the ICF consists of over a thousand different codes, therefore chance related agreement is very unlikely to appear. For this reason, only percentages of agreement are reported.

Results
Question 1
To what extent can problem statements, aetiological factors and signs and symptoms from nursing diagnoses be classified using the ICF?

The distribution of the 427 diagnostic items (problem statements, aetiological factors and signs and symptoms) from anonymous patients over ICF components is summarized in Table 1. Results for the two nurses showed some variation, but resulted in similar distributions of ICF terms and codes. Both raters classified large numbers of items as body functions (54–59%) and activities (25–26%). Within the ICF component of body functions, approximately half of the codes referred to the chapter on ‘mental functions’ of which orientation functions, intellectual functions and emotional functions are a few examples. Other frequently used chapters within this component referred to functions of the ‘cardiovascular, haematological, immunological and respiratory systems’, functions of the ‘digestive, metabolic and endocrine system’, and to functions of the ‘skin and related structures’. Items that were coded as activities often referred to the activities & participation chapters on ‘self-care’, ‘mobility’, ‘general tasks and demands’, ‘interpersonal interactions and relationships’ and ‘learning and applying knowledge’.

Far less diagnostic items were coded as body structures, where chapters on ‘skin and related structures’, ‘structures related to the digestive, metabolic and endocrine systems’ and ‘structures of the nervous system’ were among those most frequently used. Finally, items from the nursing diagnoses in this study were hardly linked to participation or the list of environmental factors. A comparison of diagnostic items from the three core elements of the diagnoses (problem statement, aetiological factors, signs & symptoms) showed no obvious deviations from the general distribution.

Not all diagnostic items could be linked to ICF terms and corresponding codes; 7–11% of all items could not be classified (Table 1). Some examples of items that nurses on the panel could not identify in the ICF are given in Table 2. Medical diagnoses were sometimes used in the aetiological factors and are not found in the ICF, but rather in the related International Classification of
Diseases (ICD-10). Other items that could not be classified relate to patients’ feelings and emotions, to nurses’ observations, for example, of abnormalities of human tissues, to patient behaviour and to various aspects of medical treatment.

Question 2
What is the inter rater agreement with regard to the selection of ICF codes for these elements of nursing diagnoses?

Table 3 shows the level of agreement in anonymous (part 1 of the study) and familiar patients (part 2). Agreement on ICF components refers to spontaneous, independent agreement at this level of the classification. In diagnostic elements from anonymous patients, agreement on corresponding ICF components was 56%. Agreement at the more detailed 3-digit level was considerably lower; 37% of the diagnostic elements was classified with the same 3-digit ICF code. If agreement on the fact that a diagnostic item is outside the scope of the ICIDH-2 is taken into account, the percentages of agreement on component level and 3-digit level increase to 61 and 43%. For some of the items in this category, the raters indicated that the item was medical in nature and could be classified within the WHO’s International Classification of Diseases (ICD-10).

The percentages of disagreement (at any level) vary from 36% in diagnostic elements from anonymous patients’ files to 24% in those belonging to familiar patients. ‘No agreement’ can refer to three situations: (1) the panel members chose different codes; (2) one of the panel members could not identify a matching ICF code, or (3) one or both of the members found more than one matching code.

In both parts of the study, the level of (dis)agreement was rather similar for diagnostic items derived from problem statements, aetiological factors, and signs and symptoms, with deviations from the overall percentages of agreement all within a 5% range.

Examples of problematic items
Perhaps even more interesting than the level of agreement is studying examples of diagnostic items that led to disagreement among raters. A frequently reported dilemma with regard to ICF codes in specific items is that of activity codes vs. body functions codes. This dilemma played a role in more than half of the diagnostic items where agreement was problematic. In a smaller group of items, some raters chose a body functions code where others referred to a code within the sub-dimension of body structures. Furthermore, in some cases raters disagreed on the use of activity codes vs. participation codes. Finally, in individual cases, other combinations of sub-dimensions were sometimes found.

Table 4 provides some examples of diagnostic statements that led to disagreement among raters. One of the examples in the table refers to the diagnostic item ‘Impaired mobility’. Three ICF codes were selected, two of them originating from the component of activities and participation: d4106 ‘Shifting the weight of the body’ and d450 ‘Walking activities’. The third code that was selected from the component of body functions: b710 ‘Mobility of joints functions’. The three codes in this example are not simply
Table 4 Examples of diagnostic items that led to disagreement among panel members

<table>
<thead>
<tr>
<th>Disagreement</th>
<th>Example of diagnostic item</th>
<th>Panel’s choices of ICF codes*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body function or Activity</td>
<td>Impaired mobility</td>
<td>d450 Walking activities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d4106 Shifting the weight of the body</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b710 Mobility of joints functions</td>
</tr>
<tr>
<td></td>
<td>Not knowing where to start</td>
<td>b1641 Organization and planning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d2200 Performing complex task</td>
</tr>
<tr>
<td></td>
<td>Few problem solving skills</td>
<td>d175 Solving problems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b1643 Cognitive flexibility</td>
</tr>
<tr>
<td>Body function or Body structure</td>
<td>Chafes at the armpit</td>
<td>b810 Protective functions of the skin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b820 Repair functions of the skin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>s810 Structure of area of the skin</td>
</tr>
<tr>
<td>Activity or Participation†</td>
<td>Inadequate social interaction between the patient and his or her environment</td>
<td>d750-actv. Informal social relationships</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d750-part. Informal social relationships</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d760-actv. Family relationships</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d760-part. Family relationships</td>
</tr>
<tr>
<td></td>
<td>Few social contacts</td>
<td>d7200-actv. Initiating interaction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d7200-part. Initiating interaction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d7589-actv. Unspecified participation in informal social relations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d7509-part. Unspecified participation in informal social relations</td>
</tr>
<tr>
<td>Other combinations</td>
<td>Disturbed sleep pattern</td>
<td>c2450 Day/night cycles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b1340 Amount of sleep</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b1348 Other specified sleep functions</td>
</tr>
</tbody>
</table>

ICF, the International Classification of Functioning, Disability and Health.

* b, body functions; s, body structures; d, activities & participation; e, environmental factors.

† Differentiating between activities and participation is not requested, but optional in the ICF.

right or wrong. Instead, they represent a difference of focus or perception and illustrate that the focus was not always clear from the original diagnostic elements.

Panel members’ experiences
The experiences of panel members were not the main focus of the study, but were registered to increase our understanding of the results. As described in the methods section, a short questionnaire was used to systematically gather the panel members’ evaluations.

Panel members in Part 1 of the study indicated that it was sometimes difficult to choose one ICF code because they did not have enough information about the patient’s situation and background. In some cases, the panel members experienced difficulties in choosing between components. Although this was often a matter of the items’ content as compared with the ICF codes, a few panel members also commented that some items contained unclear terminology or statements that were unspecific. Panel members also commented that the use of neutral terms (instead of problems) in the ICF sometimes hindered the process of matching items and ICF codes. As stated by some panel members, a term such as ‘auto-mutilation’ indicates a problem by definition and is therefore not found in the ICF. Proximal codes (such as d570 ‘looking after one’s health’) were seen as too general and lacking meaning.

An important area that all panel members found somewhat lacking in the ICF is that of human emotions. Panel members stated that emotions were given only marginal attention within the ICF. The code b1522, ‘range of emotions’ was used for all emotions that were encountered in the diagnostic statements. The lack of detail in this area is made even worse by a mistranslation in the official Dutch version of the ICF. Range of emotions was translated with a word that means ‘mood’.

Observations is another category of items that was found to be lacking. ‘Viscous mucus’ was given as one example within this category. According to the panel members, the aetiology of observations such as these can be coded using the ICF, but the observation itself cannot.

Panel members disagreed to some extent about whether the ICF applied to all core elements of the nursing diagnosis. Various numbers of panel members commented on the applicability to the three elements of the nursing diagnoses. Three panel members stated that ICF was unsuitable for problem-formulations. One of
their arguments was that neutral formulations (not problem formulations) are used. Two panel members expressed doubts about the use of the ICF for classifying aetiological factors. They thought that the ICD-10 had to be used for coding aetiological factors, and that aetiological factors were often vague and less concrete than ICF codes. Finally, two other panel members were sceptical about using ICF with signs & symptoms. They explained that signs & symptoms are often statements of patients and/or observations of nurses, and that ICF (partly owing to its neutral formulation) is limited to expressing these detailed statements or observations in general terms.

Discussion

Limitations of the study
An important limitation of this project is related to the translation of existing nursing diagnosis to ICF terminology. The quality of the existing diagnostic items was sometimes questioned by some of the panel members and may have resulted in lower inter-rater agreement. Using ICF in formulating nursing diagnoses would probably give more insight into how useful the classification can be for giving detailed information about a patient’s situation. Another limitation is that only nursing diagnoses from hospital patients were used. Consequently, the findings can only be interpreted for patients in a clinical setting. Using nursing diagnoses in outpatient care might give different and more meaningful results for the components of environmental factors and participation.

With regard to Part 2 of the study (with ‘familiar patients’), it should be noted that the numbers of patients were rather small. Although the findings for this part of the study support our initial assumption of a higher inter-rater agreement when familiar with the patient case, the results should be interpreted with some care.

Finally, the ICIDH-2 Beta-2 draft was used as we started out with this study. The ICIDH-2 final draft (later renamed ICF) was released in July 2001. In order to update our findings, two of the authors transferred all ICIDH-2 codes to ICF codes. This could have introduced some unintended bias. Given the ease of the transfer from ICIFH-2 Beta-2 draft to ICF, we believe our results to be valid for the most recent version of the classification (ICF).

As already discussed, the ICIDH-2 Beta-2 draft and the ICF are very similar. The most striking difference between the two is the joining of activities and participation into a single list of ‘activities and participation’. However, within this combined list one can still differentiate between activities and participation. We chose to still differentiate between activities and participation when using the ICF, and carried this through when computing the inter-rater agreement between panel members. This implies that the computed agreement percentages would be somewhat higher if we had chosen not to differentiate between activities and participation.

Conclusions
Fewer than 7–11% of the items could not be classified using the International Classification of Functioning, Disability and Health, and some of these items were within the scope of ICD-10. This indicates a good fit between the nursing domain and the ICF. Most codes were selected from the ICF components of body functions and activities. It appears that hospital based nurses focus especially on these two components. One could indeed expect hospital nurses to more often focus on functioning and activities and rather less on body structures, which lies more within the physician’s domain. Aspects of participation and the external factors might be more within the scope of community nurses. On the other hand, one could argue that hospital nurses should also focus on these aspects that are relevant especially in relation to discharge and caring for the patient’s other needs. In that case, using ICF might help these nurses to broaden their scope.

Our results showed that the three core elements of nursing diagnoses (problem statements, aetiological factors and signs and symptoms) could all be classified with the same ease, although panel members disagreed somewhat on whether this was appropriate for all three elements. The ICF is a classification in neutral terms, using different levels of generality and detail and was neither specifically developed as a classification of symptoms, nor as a classification of more general statements on patient functioning. Given this background together with our findings, it should be concluded that ICF codes and terminology can be used in problem statements, as well as in aetiology and signs and symptoms. Therefore, reluctance to use ICF with any of the three core components cannot be justified.

We found moderate levels of inter-rater agreement regarding the appropriate ICF components with items from nursing diagnoses. There was less agreement at the 3-digit level of codes. However, agreement was higher when the raters knew the patient to whom the diagnostic items referred. This supports our assumption that knowing the patient would contribute to ease of classification and to more agreement among raters. This also corresponds with the experience of the panel members in the study.

When there was no agreement on ICF codes, this often involved combinations of body function codes and activity codes. This result can probably be explained by the fact that body functions and activities were most frequently addressed in items from the nursing diagnoses in our database. However, it also indicates that it is not always possible to make a distinction between functions and activities or – alternatively – that most impairments in body functions will lead to (or result from) restricted activities.
Although confusion regarding body functions and activities occurred most frequently, in some cases inconclusive results were also found for body functions vs. body structures and for activities vs. participation. Items where both body function and body structure codes were given show that it is especially difficult to classify damaged tissue in the ICF. Items where both participation and activity codes were given, often related to interpersonal interaction. Here the distinction between the individual's activities and his/her participation is rather academic.

Overall conclusion
The ICF is a classification that has value and relevance to nursing care. Our findings indicate that the classification can be used for all parts of nursing diagnoses. A large majority of topics addressed in nursing diagnoses can be classified using the ICF. With a moderate number of diagnostic items, there was spontaneous agreement on ICF codes. However, our findings show there will be more agreement in cases where nurses classify nursing diagnoses from patients they have met and worked with. Furthermore, choosing ICF codes was often a matter of focus, rather than a matter of right or wrong. Therefore, it is plausible that agreement will improve when nurses are asked to formulate diagnoses working from the ICF, rather than to translate diagnoses to the classification.

The ICF is a general classification, and was not designed by nurses or specifically for use in nursing. This can explain the difficulties in using the classification as identified in this study. On the whole, there seem to be no insurmountable problems in using ICF in nursing. A positive aspect of the ICF is its multidisciplinary character. This can make a valuable contribution to improving communication and multidisciplinary patient care. Another positive aspect of the ICF is its structure, as it indicates the necessity of looking at all dimensions of human functioning, especially when a single problem is presented.

In conclusion, we recommend further exploration of the use of the ICF in both research and nursing practice. To resolve some of the issues identified in this study, and to further improve the classification, nurses should participate in future revision processes.

References