



# Toward Harmonization of the Nutrition Care Process Terminology and the International Classification of Functioning, Disability and Health—Dietetics: Results of a Mapping Exercise and Implications for Nutrition and Dietetics Practice and Research

**Q**UALITY, CONTINUITY, AND safety are essential aspects of all health care interventions and are equally important in

e-health care<sup>†</sup>. In addition, e-health is increasingly used in various settings and new models of care in European countries. The e-Health Governance Initiative founded by the European Union has worked to establish a common structure for e-health within Europe to facilitate quality health care within countries and across borders.<sup>1,2</sup>

The Guidelines on Minimum/Non-Exhaustive Patient Summary Dataset for Electronic Exchange in Accordance with the Cross-Border Directive 2011/24/EU<sup>1</sup> indicate that member states wishing to engage in cross-border communication may perform mapping, transcoding, and translation activities to support such activity. A major theme of this initiative is the semantic and technical interoperability of data,<sup>2</sup> which is a high-priority target in nutrition and dietetics care as well.<sup>3</sup> To achieve interoperability of data, a standardized nutrition and dietetics terminology is essential and should be mandatory for documentation in electronic health records systems.<sup>4</sup>

Currently, two different nutrition and dietetics terminologies are used in Europe, namely the Nutrition Care Process Terminology (NCPT),<sup>5</sup> developed by the Academy of Nutrition and

Dietetics, and the Classifications and Coding Lists for Dietetics (CCD),<sup>6</sup> developed by the Dutch Association of Dietitians, in collaboration with the Dutch Institute of Allied Health Care. The International Classification of Functioning, Disability and Health—Dietetics (ICF-Dietetics)<sup>7</sup> is the most important classification of the CCD.

The NCPT is based on the Nutrition Care Process and Model<sup>8-11</sup> and is designed to improve the consistency and quality of individualized or group care of individuals with any kind of nutrition-related problems and diagnoses. The NCPT defines standard terms for each step of the Nutrition Care Process and includes a reference manual providing definitions and important usage advice for each term.<sup>5</sup> The development and continuous dissemination of a standardized language covering the Nutrition Care Process began in 2003.<sup>12</sup> The fourth edition of this terminology was published in 2013.<sup>13</sup> Finally, the NCPT, the former International Dietetics and Nutrition Terminology, was published as an electronic version (eNCPT).<sup>5</sup> During the development of NCPT, the Academy of Nutrition and Dietetics began including the terminology in the Systematized Nomenclature of Medicine International and in Logical Observation Identifiers Names and Codes, and the International Classification of Diseases.<sup>5</sup>

Meanwhile, countries in Europe and worldwide, such as Sweden, Denmark, Norway, Switzerland, and Canada, have started to translate and implement the NCPT.<sup>5</sup> An advantage of the NCPT for

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Supplementary materials: Figure 1 and Table 2 are available at [www.andjrn.org](http://www.andjrn.org)

<http://dx.doi.org/10.1016/j.jand.2016.12.002>

<sup>†</sup>The term e-health care refers to health care practice supported by electronic processes and communication such as electronic health records, which enables the communication of patient data between different health care professionals and Telemedicine (physical and psychological diagnosis and treatments at a distance).

the practicing registered dietitian nutritionist (RDN) is that it is a sophisticated and specific nutrition and dietetics terminology covering the whole Nutrition Care Process.

The CCD is a standardized nutrition and dietetics terminology consisting of different classifications and code lists, such as a classification to describe a person's functioning (ICF-Dietetics), a classification of procedures of RDNs, a classification of assistive products for RDNs, a classification of medical terms for RDNs, and several code lists.<sup>6</sup> The CCD has been developed to document the Dietetic Care Process,<sup>14,15</sup> which consists of referral and nutrition/dietetics screening, nutrition/dietetics assessment, dietetics diagnoses, treatment plan and intervention, evaluation and closing. In 1999, the first draft of the CCD<sup>16</sup> was developed, followed by a first version of the CCD<sup>17</sup> in 2003. In 2012, a revision was published.<sup>6</sup>

The ICF-Dietetics, as the main classification of the CCD, is based on the International Classification of Functioning, Disability and Health (ICF) and the biopsychosocial Model of the World Health Organization (WHO).<sup>18,19</sup> The ICF-Dietetics can be seen as a derivative of the ICF and contains most of the original ICF categories specified by the ICF code, title, description and inclusions and exclusions, and of added specific nutrition/dietetics categories. The advantage of the ICF is the applicability by different health professionals. In addition, the ICF helps to achieve a common understanding of assessment, intervention targets, and evaluation.<sup>20</sup> The joint use of the ICF and the International Classification of Diseases,<sup>21</sup> in order to complement medical diagnosis with information on functioning and health-related information, is recommended by WHO and is true for the ICF-Dietetics as well.

The ICF-Dietetics is currently used by dietitians in the Netherlands and Belgium. It has been accepted by the Dutch WHO Collaborating Centre for the Family of International Classifications solely. Due to its multidisciplinary applicability of the ICF, Austria and other European Countries (eg, Germany) are considering implementing the ICF-Dietetics.

The aims of this article were to describe and discuss how interoperability and harmonization could influence nutrition/dietetics practice and

research on the one hand, and, on the other hand, provide information on a unidirectional mapping exercise from the NCPT to the ICF-Dietetics.

### PRACTICE IMPLICATIONS

The use of a standardized terminology will enhance communication, transparency, and measurability of the care process and its evaluation in terms of reimbursement and payment systems.<sup>22</sup> Moreover, a standardized terminology enables the comparison and interpretation of health care results or different studies across countries and would allow the creation of a new body of knowledge on effectiveness and efficiency of nutrition and dietetic care.<sup>12,22,23</sup>

Thus, a consequent use of a standardized terminology within countries is an important step in quality nutrition/dietetics care. Inadequate or inconsistent documentation of the nutrition/dietetics care process with ambiguous terminology or different meanings of terms will have a negative impact on quality.<sup>22,23</sup> Furthermore, documented care data are comparable only if the terms used to describe the care process have the same definitions and understanding among RDNs. This makes data pooling meaningful at both national and international levels. These are prerequisites for making quality health care available to every person in future. Therefore, interoperability and harmonization of the nutrition and dietetics terminologies are needed.

### What Is Interoperability?

The European Committee for Standardization defines *interoperability* as a process in which "an application can accept data from another and perform a specified task in an appropriate and satisfactory manner (as judged by the user of the receiving system) without the need for extra operator intervention."<sup>24</sup> Furthermore, semantic interoperability "means that data shared by systems are understood by these at the level of fully defined domain concepts." This includes that the meaning of exchanged information is unambiguously interpretable.<sup>24</sup>

Prerequisites for semantic interoperability and data sharing are a standardized terminology and a corresponding classification. For example, in a cross-border setting, it is agreed that it is

necessary to have structured and coded data for identified fields.<sup>1</sup>

### What Is Harmonization?

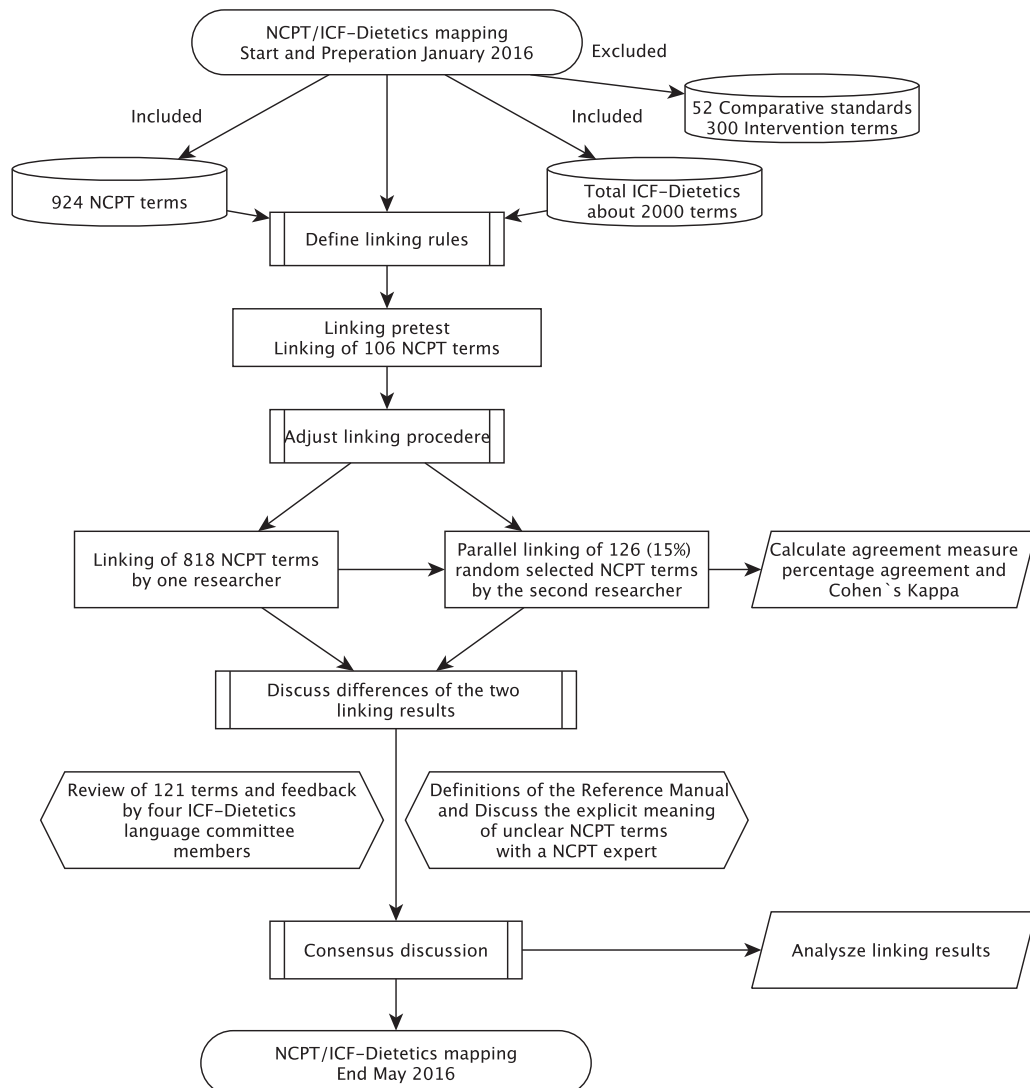
In the context of this article, two definitions of *harmonization* were considered that have been proposed by the International Organization for Standardization: concept harmonization and term harmonization.

*Concept harmonization* means "the reduction or elimination of minor differences between two or more closely related concepts, without transferring a concept system to another language."<sup>25</sup> It involves the comparison and matching of concepts and concept systems in one or more languages or subject fields by describing similarities and differences. *Term harmonization*, on the other hand, "refers to the designation of a single concept (in different languages) by terms that reflect similar characteristics or similar forms." Term harmonization is possible if the concepts that the terms represent are almost the same or very similar.<sup>25</sup>

### Why Are Interoperability and Harmonization Important to the Profession of RDNs?

Electronic data storage and processing and exchange of data within a country as well as across country borders are increasingly important topics in health care. These issues are primarily driven by high quality, continuity, and quantity aspects—for example, big data initiatives.<sup>1</sup> Currently, health insurance and population-based data sets are increasingly used to enhance clinical practice and research in order to answer advanced clinical questions that can only be analyzed based on large data sets. RDNs should keep on track with this health information technology developments and changes.

RDNs apply the Nutrition/Dietetic Care Process in their clinical practice. This process was designed to improve consistency and quality of nutrition/dietetics care, as well as to assess outcomes.<sup>9,13</sup> Semantic interoperability of data is necessary to link the Nutrition/Dietetic Care Process to a valid outcome management system. To achieve semantic interoperability, a standardized nutrition and dietetics terminology as well as a coding system for documentation are needed.



**Figure 2.** Process of Nutrition Care Practice Terminology (NCPT)/International Classification of Functioning, Disability and Health (ICF)–Dietetics mapping exercise.

Outcomes research and cross-border care are reasons why harmonization of nutrition/dietetics care data across countries and different languages will become more important in the future. Harmonization improves effective and efficient nutrition/dietetics care and development of informed evidence by means of benchmark and good practice models. In accordance with the two definitions given here, the following two different aspects of this harmonization have to be considered: Firstly, harmonization is necessary in the cross-cultural adoption process when translating a standardized nutrition and dietetics terminology from the source into a target language. Ensuring equivalence involves

maintaining the same meaning of the word or concept between the source and target languages. Equivalence is achieved through interpretation, which goes beyond word-for-word translation in order to explain the meaning of concepts using understandable terms and the grammatical rules of the target language.<sup>26</sup> Secondly, because there are currently two different standardized nutrition and dietetics terminologies used, for interoperability and joint use, concept harmonization between these two terminologies is indispensable.

Inter-terminology mapping or linking is a common method to compare terminologies.<sup>26–28</sup> This method describes not only whether there are comparable

concepts, it also defines the gap, a potential different understanding of concepts and terms, and visualizes which terms and concepts are needed to be harmonized. Thus, mapping can be seen as a first step in a harmonization process.<sup>25</sup>

### Mapping of the NCPT to the ICF–Dietetics

The mapping exercise was carried out using the online version, eNCPT 2015,<sup>5</sup> and the ICF–Dietetics (Dutch Dietetic Association and Dutch Institute of Allied Health Care, ICF–Dietetics Draft- $\alpha$  version, unpublished data, 2012), as it was the only available English version. However, this version was presented to

**Table 1.** Nutrition Care Practice Terminology (NCPT)/International Classification of Functioning, Disability and Health (ICF)—Dietetics mapping: Definition and example of closeness-of-matched categories (granularity)

| Closeness of matched categories | Definition <sup>a</sup>  | Example NCPT                            | ICF-Dietetics – linked categories  |
|---------------------------------|--|---|--|
| Same                            | The term in the NCPT is nearly identical in wording and concept to the ICF term                        | PD-1.1.5.13<br>Epigastric pain          | b28012 Pain in stomach or abdominal <sup>b</sup><br>b280120 Pain in stomach <sup>c</sup>                                     |
| Similar                         | The term is comparable: or “alike in substance”  | FH-1.2.2.3<br>Meals/snack pattern       | d5701 Managing diet and fitness <sup>b</sup><br>a570100 Selecting and consuming meals <sup>c</sup>                           |
| Broader                         | The term is larger in scope, or less specific, or can be considered to encompass the term in the ICF   | PD-1.1.20.3<br>Difficulty moving tongue | b5103 Manipulation of food in the mouth <sup>c</sup>   |
| Narrower                        | The term is smaller in scope, or more specific, or can be considered to be encompassed by the ICF term | BD-1.4.29<br>Gastric emptying time      | b5150 Transport of food through stomach and intestines <sup>c</sup><br>b51500 Transport of food through stomach <sup>c</sup> |

<sup>a</sup>Adapted from Zielstorff and colleagues.<sup>36</sup>

<sup>b</sup>ICF-Dietetics original ICF category.

<sup>c</sup>Added, more-precise dietetics category. The ICF-Dietetics consists of original ICF categories and additional specific dietetics categories. The table depicts the original ICF categories and the added specific dietetics categories in case a more-precise added dietetics category was available.

all members of the European Federation of the Associations of Dietitians and also to a workgroup of the International Confederation of Dietetic Associations.

The specific objectives were to explore how many and which terms of the NCPT are covered by the ICF-Dietetics, distinguished between the original ICF categories and the added specific dietetics categories, furthermore, to highlight similarities and differences.

In total, the NCPT contains 1,276 NCPT terms, namely of 816 “nutrition assessment, monitoring and evaluation” terms (including 52 “comparative standards”), 160 “diagnosis” terms, and 300 “intervention” terms. Because ICF is not designed to classify interventions and comparative standards, 764 “assessment, monitoring and evaluation” (without “comparative standards”) and 160 “diagnoses” terms were selected for the mapping process (n=924).

The NCPT is organized in a hierarchical structure with domains, classes, sub-classes, and, in parts, sub-sub-classes. The smallest unit of the NCPT is the term with an alpha-numeric code that consists of the prefix of the domain and the number of the hierarchical structure. For example, the

diagnosis domain “Intake (NI)” is further classified with the class, for example, “Nutrient (5),” further with the sub-class “Fat and Cholesterol (5.6)” and finally the term “Inadequate Fat Intake (NI-5.6.1).”

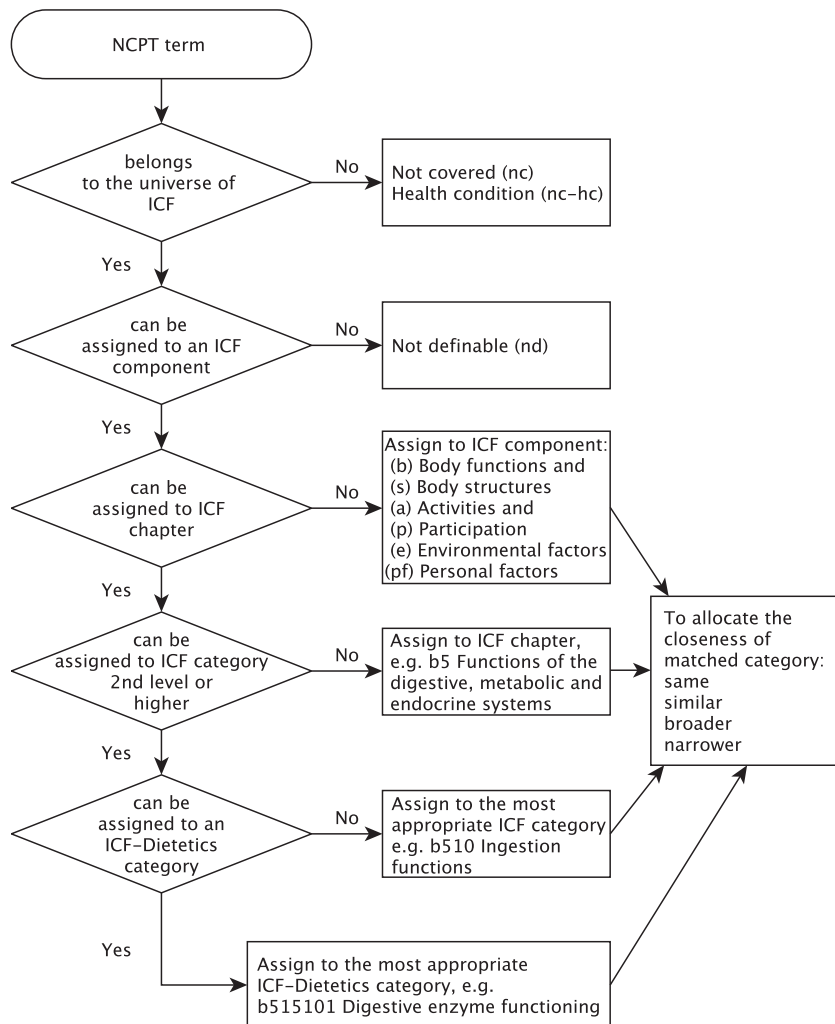
The ICF (as main part of the ICF-Dietetics) was used for the mapping as standard. The ICF is a core classification of WHO, is used worldwide, and has been used in numerous studies as standard for mapping exercises.<sup>29-32</sup> The ICF is structured hierarchically with a numeric code that begins with the chapter number (one digit) followed by the second level (three digits), and the third and fourth levels (one digit each). The ICF has two parts. Part one covers functioning and disability and includes two components “Body Functions (b)”/“Body Structures (s),” and “Activities/Participation (d).” Part two covers contextual factors that include the components “Environmental Factors (e)” and “Personal Factors (pf).”<sup>19</sup> Although Personal Factors has not yet been classified in the ICF.

The ICF-Dietetics enlarges the ICF by adding codes and categories addressing nutrition and dietetics-related issues. More precisely, the ICF-Dietetics includes

900 specific nutrition/dietetics categories in addition to approximately 1,000 of the original ICF categories. These enhance the granularity in this field. An example of the hierarchical structure of the ICF-Dietetics and its underlying model is shown in Figure 1 (available online at [www.andjrn.org](http://www.andjrn.org)). In contrast to the ICF, the ICF-Dietetics proposes categories addressing biochemical data, differentiates between “Activities (a)” and “Participation (p),” and provides a first draft of codes covering “Personal Factors (pf).”

### Method of the Mapping Exercise

The mapping exercise was based on well-established ICF-Linking Rules.<sup>33,34</sup> The first author (G.G.), a clinical and research dietitian trained in ICF linking, performed the entire mapping process of 924 NCPT terms. Each term/concept was linked to the most precise ICF-Dietetics category. A specific dietetic category was assigned in case a more precise dietetics category, compared to the original ICF categories, was available. If NCPT terms comprised more than one concept, every single concept was linked to the ICF-Dietetics, meaning



**Figure 3.** Nutrition Care Practice Terminology (NCPT)/International Classification of Functioning, Disability and Health (ICF)–Dietetics mapping: decision process (adapted from Cieza and colleagues<sup>33</sup>) complemented with closeness-of-match categories (adapted from Zielstorff and colleagues<sup>36</sup>).

that one NCPT term could be linked to more than one ICF–Dietetics category. For quality assurance, 15% of the NCPT terms were randomly selected and linked by a second researcher (M.C., psychologist) experienced in linking health-related data to the ICF. Percentage agreement with 95% CI and Cohen's  $\kappa$ <sup>35</sup> between the two linkers was calculated to verify the quality of the mapping. In addition, four members of the Dutch CCD committee (C.B., W.K.V., S.R., and Y.F.H.) involved in the development of the ICF–Dietetics, reviewed about 15% of the mapping results, which were chosen because of mapping difficulties and disagreements between the two raters (G.G. and M.C.). If unclear meanings

regarding the NCPT terms were brought up, requests for clarification were mailed to Naomi Trostler, PhD, RD, FAND, one of the developers of the NCPT. Based on this additional information, a final consensus for the mapping results was reached by the two researchers (G.G. and M.C.). Figure 2 illustrates the process of mapping exercise.

According to the ICF-Linking Rules,<sup>34</sup> concepts that could not be linked to an ICF category and that were clearly not personal factors were assigned “not covered (nc).” If the information about the NCPT term was not sufficient to make a decision about the most precise ICF–Dietetics category, the concept was assigned “not definable (nd).” If the

NCPT term referred to a medical diagnosis or a health condition according to the International Statistical Classification of Diseases and Related Health Problems, 10th revision,<sup>21</sup> it was assigned “health condition (nc-hc).” In addition to the ICF-Linking Rules, the closeness of the match with respect to comparable concepts was described by using “same,” “similar,” “broader,” and “narrower,” which is adapted from Zielstorff and colleagues.<sup>36</sup> Table 1 shows definitions and examples of these closeness-of-match categories. Figure 3 depicts the entire mapping decision process.

### What Are the Major Findings?

A total of 960 NCPT concepts were linked. Of these concepts 830 (86.5%) matched with a corresponding ICF–Dietetics category, namely, 259 NCPT concepts (31.2%) with an original ICF category and 571 NCPT concepts (68.8%) with a more precise dietetics category. Figure 4 illustrates the frequencies of matched NCPT concepts regarding NCPT domains and the corresponding ICF components.

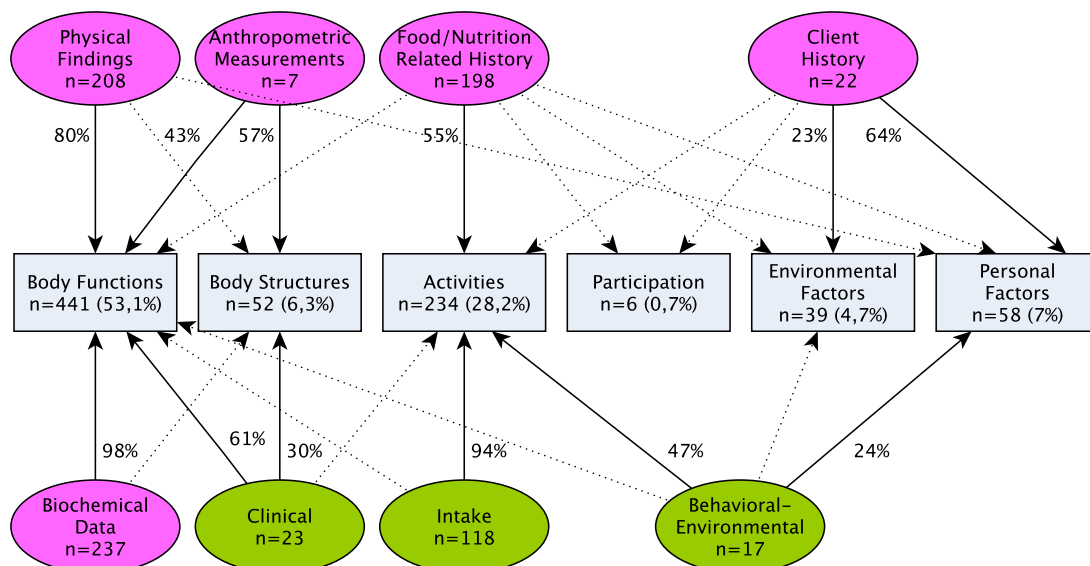
The mapping exercise demonstrate similarities and differences, in terms of 310 “same” concepts (37.3%) and 55 (6.6%) concepts of “similar” granularity, whereas 433 (52.2%) of the NCPT terms were more specific (“narrower”) and 32 (3.9%) less specific (“broader”) than the ICF–Dietetics categories. One hundred thirty NCPT terms (13.5%) could not be linked to a specific ICF–Dietetics category. Of these terms, 103 (79.2%) were assigned to “health condition,” 25 (19.2%) to “not definable,” and two (1.5%) to “not covered” (NO-1.1: No Nutrition Diagnosis at This Time and FH-2.1.3.5: Eats Alone).

The actual mapping results of Nutrition Diagnostic Terminology have been provided as Table 2 (available online at [www.andjrnl.org](http://www.andjrnl.org)).

### Accuracy of Mapping Process

The two researchers agreed on 83.3% (95% CI 76.3 to 89.7) of the linked concepts at component level. The calculated  $\kappa$  coefficients ranged between 0.76 at the component and 0.61 at the fourth level of the ICF–Dietetics classification. These results can, therefore, be regarded as substantial agreement.<sup>37</sup>





**Figure 4.** Nutrition Care Practice Terminology (NCPT)/International Classification of Functioning, Disability and Health (ICF)–Dietetics mapping results: Frequencies of 830 mapped concepts regarding NCPT domains and ICF components. The ovals represent NCPT domains and rectangles represent ICF components. Dark black arrows show to which ICF component the NCPT concepts of each domain were mainly linked. The additional dotted arrows indicate frequencies <20%.

### What Were the Challenges and Limitations of the Mapping Process?

Although the mapping process is explained in the literature and could, thus, be well planned and structured, we still faced some challenges. The ICF–Dietetics describes the actual situation of individuals at one point in time, not the future or past, and no causal relationships between domains of functioning. Thus, we linked, for example, NI-1.4: Predicted Inadequate Energy Intake to the ICF–Dietetics category a570103: Managing Intake of Energy, and PD-1.1.10.8: Hair Changes Due to Malnutrition to b850: Functions of Hair. In practical use of the ICF–Dietetics, notes should be added to document the time point(s) of the assessment or causal relationships.

Furthermore, the ICF–Dietetics is about functioning and contextual factors of the individual. Assistive products, like tests or questionnaires for nutrition diagnostics, are described in the Classification Assistive Products for Dietetics, and interventions are described in the Classification Interventions for Dietetics.<sup>17</sup> The NCPT, however, also includes tests and medical interventions. For our mapping exercise, we applied the following questions when linking these tests or interventions: What is the aim of this

intervention? What is assessed/tested with this test? This was done in agreement with the published ICF–Linking Rules.<sup>33</sup>

In addition, there were NCPT terms that can be linked to different ICF–Dietetics categories, for example, NI-4.3: Excessive Alcohol Intake was linked to a57022: Avoiding Risks of Drug or Alcohol Addiction and to the ICF–Dietetics component Personal Factors, having in mind personal habits with regard to the use of alcohol. In these cases, we documented both possible linking opportunities.

Limitations of this study were that we have mapped NCPT terms to the ICF–Dietetics and not the other way around, and not to other classifications of the CCD. This means that this study does not give detailed insight in terms of the ICF–Dietetics, which are not covered in the NCPT, and not which terms of the NCPT are covered by other classifications of the CCD. However, our study provides the first content comparison of the NCPT and the ICF–Dietetics. It is a first step to harmonize the currently used nutrition and dietetics terminologies.

### What Can We Learn from This Study?

The mapping of the NCPT to the ICF–Dietetics shows that although both

terminologies have different purposes and are based on different models, the great majority of the NCPT terms (86.5%) could be linked to corresponding ICF–Dietetics categories. That indicates that two standardized terminologies that illustrate the same process came largely to similar results.

The original ICF categories of the ICF–Dietetics cover the NCPT terms in a very nonspecific manner, while the more-specific added dietetic categories provide more specialization in the area of nutrition and nutrition-related aspects; for example, managing nutrition and diet and digestive functions. It is important to emphasize that the ICF has been established as a common language for describing health and health-related states in order to improve communication between different users.<sup>19</sup> It is a framework and reference system that describes functioning and contextual factors of people with all kinds of health conditions or health-related problems. Therefore, the ICF–Dietetics does not cover the whole nutrition/dietetics care process, as the NCPT does.

However, the NCPT has a mainly biomedical approach; about two-thirds of the NCPT terms were linked to the ICF–Dietetics components “Body Functions,” “Body Structures,” and “Health Conditions.” ICF–Dietetics provide a framework and classification based

on the biopsychosocial perspective, covering additional “Activities and Participation” and “Environmental Factors” categories.

In addition, the mapping exercise indicates that NCPT terms were likely to be more granular than categories from the ICF-Dietetics (eg, FH.1.5.3.5: Gluten Intake was linked to the ICF-Dietetics proposed category a5701021: Managing Intake of Protein and FH-1.5.1.2: Saturated Fat Intake to a5701020: Managing Intake of Fat). The NCPT terms describe precisely the whole care process. This is an advantage for the practicing RDN compared to the sole use of the ICF-Dietetics. However, the ICF-Dietetics in the Netherlands is used in combination with other classifications, such as the Classifications of Assistive Products.<sup>17</sup> This makes it possible to define the specific type of protein and fat.

Finally, the NCPT provides specific, validated, nutrition diagnosis terminology.<sup>38,39</sup> Nutrition diagnosis is defined by the Academy of Nutrition and Dietetics as “existing nutrition problems that the food and nutrition professional is responsible for treating.”<sup>10</sup> In the Netherlands, the diagnosis of the dietitian is formulated as the “professional specific judgment about the health profile of the client.”<sup>14,15,40</sup> The ICF-Dietetics can be employed to describe and code (problems in) functioning and the negative and positive influence of contextual factors (environmental and personal) using qualifiers. Qualifiers are additional digits that can be used to indicate the severity of problems, in terms of impairments in body functions or structures, limitations in activities, and restrictions in participation.<sup>19,40</sup>

Despite these differences, nearly all NCPT diagnosis terms were linked to ICF-Dietetics categories, just in their neutral form. In this study, no use was made of the possibility to add qualifiers. For example, NB-2.4: Impaired Ability to Prepare Foods/Meals was mapped to the ICF category a630: Preparing Meals. Further information and the actual mapping results of these diagnosis terms are provided in Table 2 (available online at [www.andjrn.org](http://www.andjrn.org)).

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## DISCLOSURES

### STATEMENT OF POTENTIAL CONFLICT OF INTEREST

No potential conflict of interest was reported by the authors.

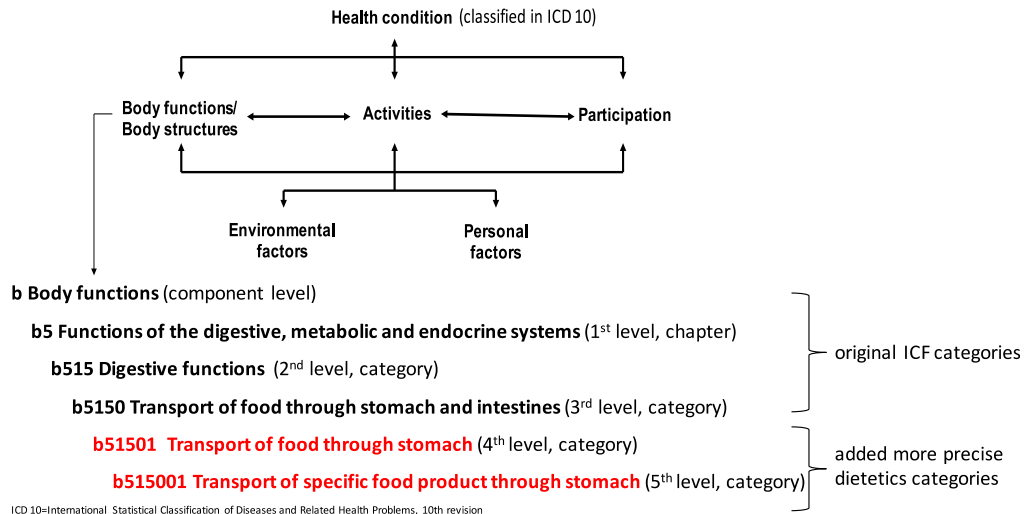
### FUNDING/SUPPORT

There is no funding to disclose.

### ACKNOWLEDGEMENTS

The authors thank both developers of the NCPT, Naomi Trostler, PhD, RD, FAND, and Esther Myers, PhD, RDN, FAND, for their contributions to this study.





**Figure 1.** Nutrition Care Practice Terminology (NCPT)<sup>5</sup>/International Classification of Functioning, Disability and Health (ICF)–Dietetics (Dutch Dietetic Association and Dutch Institute of Allied Health Care, ICF-Dietetics Draft- $\alpha$  version, unpublished data, 2012) mapping. The ICF-Dietetics is based on the Biopsychosocial Model of Functioning and Disability and on the hierarchical structure of the ICF.<sup>19</sup> The figure depicts the interactions between components of the ICF (Body Functions/Body Structures, Activities, Participation, Environmental Factors, Personal Factors) and an example of the hierarchical structure of original ICF categories and added more precise dietetics categories (highlighted in red). The ICF describes human functioning from different perspectives (Body Functions/Body Structures and Activities/Participation) that is influenced on the one hand by health conditions (classified with the International Statistical Classification of Diseases and Related Health Problems, 10th revision<sup>21</sup>) and, on the other hand, by contextual factors (Environmental and Personal factors). Each ICF component is organized in a hierarchical structure. The ICF-Dietetics enlarges the original ICF by adding categories and codes (highlighted in red) addressing nutrition and dietetics–related issues to enhance the granularity in this field. Throughout the whole ICF-Dietetics, the hierarchical structure of the ICF is maintained and further lower (more detailed) levels are added. Adapted and reprinted from: *International Classification of Functioning, Disability and Health: ICF*. Geneva, Switzerland: World Health Organization; page 18, Copyright 2001.<sup>19</sup>

**Table 2.** Nutrition Care Practice Terminology (NCPT)<sup>5</sup>/International Classification of Functioning, Disability and Health (ICF)–Dietetics (Dutch Dietetic Association and Dutch Institute of Allied Health Care, ICF-Dietetics Draft- $\alpha$  version, unpublished data, 2012) mapping result of 160 Nutrition Care Practice Terminology nutrition diagnostic terms<sup>a</sup>

| NCPT term  | Domain/<br>class | NCPT<br>term no. | ICF type of<br>category | ICF-Dietetics<br>category  | ICF-Dietetics<br>code | Closeness<br>category <sup>b</sup> | Not-matched<br>category <sup>c</sup> |
|--|------------------|------------------|-------------------------|--|-----------------------|------------------------------------|--------------------------------------|
| <b>Nutrition diagnostic terminology</b>                  |                  |                  |                         |  |                       |                                    |                                      |
| Intake   | NI               |                  |                         |  |                       |                                    |                                      |
| Energy balance   | 1                |                  |                         |  |                       |                                    |                                      |
| Increased energy expenditure                             |                  | NI-1.1           | Added ICF-Dietetics     | Increased need for energy  | b5404.x2              | Same                               |                                      |
| Inadequate energy intake                                 |                  | NI-1.2           | Added ICF-Dietetics     | Managing intake of energy according to RGV <sup>d</sup>                      | a570103               | Same                               |                                      |
| Excessive energy intake                                  |                  | NI-1.3           | Added ICF-Dietetics     | Managing intake of energy according to RGV                                   | a570103               | Same                               |                                      |
| Predicted inadequate energy intake                       |                  | NI-1.4           | Added ICF-Dietetics     | Managing intake of energy according to RGV                                   | a570103               | Same                               |                                      |
| Predicted excessive energy intake                        |                  | NI-1.5           | Added ICF-Dietetics     | Managing intake of energy according to RGV                                   | a570103               | Same                               |                                      |
| Oral or nutrition support intake                         | 2                |                  |                         |  |                       |                                    |                                      |
| Inadequate oral intake                                   |                  | NI-2.1           | Added ICF-Dietetics     | Managing nutrition according to RGV  | a57010                | Narrower                           |                                      |
| Excessive oral intake                                    |                  | NI-2.2           | Added ICF-Dietetics     | Managing nutrition according to RGV  | a57010                | Narrower                           |                                      |
| Inadequate enteral nutrition infusion                    |                  | NI-2.3           | Added ICF-Dietetics     | Managing use of diet products, diet preparations and nutritional supplements | a570111               | Narrower                           |                                      |
| Excessive enteral nutrition infusion                     |                  | NI-2.4           | Added ICF-Dietetics     | Managing use of diet products, diet preparations and nutritional supplements | a570111               | Narrower                           |                                      |
| Enteral nutrition composition inconsistent with needs    |                  | NI-2.5           | Added ICF-Dietetics     | Managing use of diet products, diet preparations and nutritional supplements | a570111               | Narrower                           |                                      |
| Enteral nutrition administration inconsistent with needs |                  | NI-2.6           | Added ICF-Dietetics     | Managing use of diet products, diet preparations and nutritional supplements | a570111               | Narrower                           |                                      |
| Inadequate parenteral nutrition infusion                 |                  | NI-2.7           | Added ICF-Dietetics     | Managing use of diet products, diet preparations and nutritional supplements | a570111               | Narrower                           |                                      |

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**Table 2.** Nutrition Care Practice Terminology (NCPT)<sup>5</sup>/International Classification of Functioning, Disability and Health (ICF)—Dietetics (Dutch Dietetic Association and Dutch Institute of Allied Health Care, ICF-Dietetics Draft- $\alpha$  version, unpublished data, 2012) mapping result of 160 Nutrition Care Practice Terminology nutrition diagnostic terms<sup>a</sup> (continued)

| NCPT term   | Domain/<br>class | NCPT<br>term no. | ICF type of<br>category | ICF-Dietetics category   | ICF-Dietetics<br>code | Closeness<br>category <sup>b</sup> | Not-matched<br>category <sup>c</sup> |
|---|------------------|------------------|-------------------------|--|-----------------------|------------------------------------|--------------------------------------|
| Excessive parenteral nutrition infusion                     |                  | NI-2.8           | Added ICF-Dietetics     | Managing use of diet products, diet preparations and nutritional supplements                     | a570111               | Narrower                           |                                      |
| Parenteral nutrition composition inconsistent with needs    |                  | NI-2.9           | Added ICF-Dietetics     | Managing use of diet products, diet preparations and nutritional supplements                     | a570111               | Narrower                           |                                      |
| Parenteral nutrition administration inconsistent with needs |                  | NI-2.10          | Added ICF-Dietetics     | Managing use of diet products, diet preparations and nutritional supplements                     | a570111               | Narrower                           |                                      |
| Limited food acceptance                                     |                  | NI-2.11          | Added ICF-Dietetics     | Motivation to eat  | b13010                | Narrower                           |                                      |
| Fluid intake  | 3                |                  |                         |  |                       |                                    |                                      |
| Inadequate fluid intake                                     |                  | NI-3.1           | Added ICF-Dietetics     | Managing intake of fluids according to RGV   | a5701023              | Same                               |                                      |
| Excessive fluid intake                                      |                  | NI-3.2           | Added ICF-Dietetics     | Managing intake of fluids according to RGV   | a5701023              | Same                               |                                      |
| Bioactive substances  | 4                |                  |                         |  |                       |                                    |                                      |
| Inadequate bioactive substance intake                       |                  | NI-4.1           | Added ICF-Dietetics     | Managing intake of nutrients according to RGV other specified <sup>e</sup> : bioactive substance | a5701028              | Same                               |                                      |
| Inadequate plant stanol ester intake                        |                  | NI-4.1.1         | Added ICF-Dietetics     | Managing intake of nutrients according to RGV other specified: plant stanol ester                | a5701028              | Same                               |                                      |
| Inadequate plant sterol ester intake                        |                  | NI-4.1.2         | Added ICF-Dietetics     | Managing intake of nutrients according to RGV other specified: plant sterol ester                | a5701028              | Same                               |                                      |
| Inadequate soy protein intake                               |                  | NI-4.1.3         | Added ICF-Dietetics     | Managing intake of nutrients according to RGV other specified: soy protein                       | a5701028              | Same                               |                                      |
| Inadequate psyllium intake                                  |                  | NI-4.1.4         | Added ICF-Dietetics     | Managing intake of nutrients according to RGV, other specified: Inadequate psyllium              | a5701028              | Same                               |                                      |

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**Table 2.** Nutrition Care Practice Terminology (NCPT)<sup>5</sup>/International Classification of Functioning, Disability and Health (ICF)—Dietetics (Dutch Dietetic Association and Dutch Institute of Allied Health Care, ICF-Dietetics Draft- $\alpha$  version, unpublished data, 2012) mapping result of 160 Nutrition Care Practice Terminology nutrition diagnostic terms<sup>a</sup> (continued)

| NCPT term                            | Domain/<br>class | NCPT<br>term no. | ICF type of<br>category | ICF-Dietetics<br>category   | ICF-Dietetics<br>code | Closeness<br>category <sup>b</sup> | Not-matched<br>category <sup>c</sup> |
|--------------------------------------|------------------|------------------|-------------------------|---|-----------------------|------------------------------------|--------------------------------------|
| Inadequate $\beta$ -glucan intake    |                  | NI-4.1.5         | Added ICF-Dietetics     | Managing intake of nutrients according to RGV, other specified: $\beta$ -glucan     | a5701028              | Same                               |                                      |
| Excessive bioactive substance intake |                  | NI-4.2           | Added ICF-Dietetics     | Managing intake of nutrients according to RGV, other specified: bioactive substance | a5701028              | Same                               |                                      |
| Excessive plant stanol ester intake  |                  | NI-4.2.1         | Added ICF-Dietetics     | Managing intake of nutrients according to RGV, other specified: plant stanol ester  | a5701028              | Same                               |                                      |
| Excessive plant sterol ester intake  |                  | NI-4.2.2         | Added ICF-Dietetics     | Managing intake of nutrients according to RGV, other specified: plant sterol ester  | a5701028              | Same                               |                                      |
| Excessive soy protein intake         |                  | NI-4.2.3         | Added ICF-Dietetics     | Managing intake of nutrients according to RGV, other specified: soy protein         | a5701028              | Same                               |                                      |
| Excessive psyllium intake            |                  | NI-4.2.4         | Added ICF-Dietetics     | Managing intake of nutrients according to RGV, other specified: psyllium            | a5701028              | Same                               |                                      |
| Excessive $\beta$ -glucan intake     |                  | NI-4.2.5         | Added ICF-Dietetics     | Managing intake of nutrients according to RGV, other specified: $\beta$ -glucan     | a5701028              | Same                               |                                      |
| Excessive food additive intake       |                  | NI-4.2.6         | Added ICF-Dietetics     | Managing intake of nutrients according to RGV, other specified: food additive       | a5701028              | Same                               |                                      |
| Excessive caffeine intake            |                  | NI-4.2.7         | Added ICF-Dietetics     | Managing intake of nutrients according to RGV, other specified: caffeine            | a5701028              | Same                               |                                      |
| Excessive alcohol intake             |                  | NI-4.3           | Added ICF-Dietetics     | Excessive use of alcohol at this moment   | pf615.x2              | Same                               |                                      |
|                                      |                  |                  | Added ICF-Dietetics     | Avoiding risks of drug or alcohol addiction   | a57022                | Same                               |                                      |

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**Table 2.** Nutrition Care Practice Terminology (NCPT)<sup>5</sup>/International Classification of Functioning, Disability and Health (ICF)–Dietetics (Dutch Dietetic Association and Dutch Institute of Allied Health Care, ICF-Dietetics Draft- $\alpha$  version, unpublished data, 2012) mapping result of 160 Nutrition Care Practice Terminology nutrition diagnostic terms<sup>a</sup> (continued)

| NCPT term  | Domain/<br>class | NCPT<br>term no. | ICF type of<br>category | ICF-Dietetics<br>category                         | ICF-Dietetics<br>code | Closeness<br>category <sup>b</sup> | Not-matched<br>category <sup>c</sup> |
|--|------------------|------------------|-------------------------|---|-----------------------|------------------------------------|--------------------------------------|
| Nutrient   | 5                |                  |                         |   |                       |                                    |                                      |
| Increased nutrient needs                               |                  | NI-5.1           | Added ICF-Dietetics     | Need for nutrients                                | b5405                 | Same                               |                                      |
| Inadequate protein-energy intake                       |                  | NI-5.2           | Added ICF-Dietetics     | Managing intake of protein according to RGV       | b5405                 | Similar                            |                                      |
| Decreased nutrient needs                               |                  | NI-5.3           | Added ICF-Dietetics     | Need for nutrients                                | b5405                 | Same                               |                                      |
| Imbalance of nutrients                                 |                  | NI-5.4           | Added ICF-Dietetics     | Managing intake of nutrients according to RGV     | a570102               | Same                               |                                      |
| Fat and cholesterol                                    | 5.5              |                  |                         |   |                       |                                    |                                      |
| Inadequate fat intake                                  |                  | NI-5.5.1         | Added ICF-Dietetics     | Managing intake of fat according to RGV           | a5701020              | Same                               |                                      |
| Excessive fat intake                                   |                  | NI-5.5.2         | Added ICF-Dietetics     | Managing intake of fat according to RGV           | a5701020              | Same                               |                                      |
| Intake of types of fats inconsistent with needs        |                  | NI-5.5.3         | Added ICF-Dietetics     | Managing intake of fat according to RGV           | a5701020              | Narrower                           |                                      |
| Protein  | 5.6              |                  |                         |   |                       |                                    |                                      |
| Inadequate protein intake                              |                  | NI-5.6.1         | Added ICF-Dietetics     | Managing intake of protein according to RGV       | a5701021              | Same                               |                                      |
| Excessive protein intake                               |                  | NI-5.6.2         | Added ICF-Dietetics     | Managing intake of protein according to RGV       | a5701021              | Same                               |                                      |
| Intake of types of proteins inconsistent with needs    |                  | NI-5.6.3         | Added ICF-Dietetics     | Managing intake of protein according to RGV       | a5701021              | Narrower                           |                                      |
| Amino acid   | 5.7              |                  |                         |   |                       |                                    |                                      |
| Intake of types of amino acids inconsistent with needs |                  | NI-5.7.1         | Added ICF-Dietetics     | Managing intake of protein according to RGV       | a5701021              | Narrower                           |                                      |
| Carbohydrate and fiber                                 | 5.8              |                  |                         |   |                       |                                    |                                      |
| Inadequate carbohydrate intake                         |                  | NI-5.8.1         | Added ICF-Dietetics     | Managing intake of carbohydrates according to RGV | a5701022              | Same                               |                                      |
| Excessive carbohydrate intake                          |                  | NI-5.8.2         | Added ICF-Dietetics     | Managing intake of carbohydrates according to RGV | a5701022              | Same                               |                                      |

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**Table 2.** Nutrition Care Practice Terminology (NCPT)<sup>5</sup>/International Classification of Functioning, Disability and Health (ICF)—Dietetics (Dutch Dietetic Association and Dutch Institute of Allied Health Care, ICF-Dietetics Draft- $\alpha$  version, unpublished data, 2012) mapping result of 160 Nutrition Care Practice Terminology nutrition diagnostic terms<sup>a</sup> (continued)

| NCPT term   | Domain/<br>class | NCPT<br>term no. | ICF type of<br>category | ICF-Dietetics<br>category                         | ICF-Dietetics<br>code | Closeness<br>category <sup>b</sup> | Not-matched<br>category <sup>c</sup> |
|---|------------------|------------------|-------------------------|---|-----------------------|------------------------------------|--------------------------------------|
| Intake of types of carbohydrate inconsistent with needs |                  | NI-5.8.3         | Added ICF-Dietetics     | Managing intake of carbohydrates according to RGV | a5701022              | Narrower                           |                                      |
| Inconsistent carbohydrate intake                        |                  | NI-5.8.4         | Added ICF-Dietetics     | Managing intake of carbohydrates according to RGV | a5701022              | Narrower                           |                                      |
| Inadequate fiber intake                                 |                  | NI-5.8.5         | Added ICF-Dietetics     | Managing intake of carbohydrates according to RGV | a5701022              | Narrower                           |                                      |
| Excessive fiber intake                                  |                  | NI-5.8.6         | Added ICF-Dietetics     | Managing intake of carbohydrates according to RGV | a5701022              | Narrower                           |                                      |
| Vitamin   | 5.9              |                  |                         |   |                       |                                    |                                      |
| Inadequate vitamin intake                               |                  | NI-5.9.1         | Added ICF-Dietetics     | Managing intake of vitamins according to RGV      | a5701024              | Same                               |                                      |
| A   |                  | NI-5.9.1.1       | Added ICF-Dietetics     | Managing intake of vitamins according to RGV      | a5701024              | Narrower                           |                                      |
| C   |                  | NI-5.9.1.2       | Added ICF-Dietetics     | Managing intake of vitamins according to RGV      | a5701024              | Narrower                           |                                      |
| D   |                  | NI-5.9.1.3       | Added ICF-Dietetics     | Managing intake of vitamins according to RGV      | a5701024              | Narrower                           |                                      |
| E   |                  | NI-5.9.1.4       | Added ICF-Dietetics     | Managing intake of vitamins according to RGV      | a5701024              | Narrower                           |                                      |
| K   |                  | NI-5.9.1.5       | Added ICF-Dietetics     | Managing intake of vitamins according to RGV      | a5701024              | Narrower                           |                                      |
| Thiamin   |                  | NI-5.9.1.6       | Added ICF-Dietetics     | Managing intake of vitamins according to RGV      | a5701024              | Narrower                           |                                      |
| Riboflavin  |                  | NI-5.9.1.7       | Added ICF-Dietetics     | Managing intake of vitamins according to RGV      | a5701024              | Narrower                           |                                      |
| Niacin  |                  | NI-5.9.1.8       | Added ICF-Dietetics     | Managing intake of vitamins according to RGV      | a5701024              | Narrower                           |                                      |
| Folate  |                  | NI-5.9.1.9       | Added ICF-Dietetics     | Managing intake of vitamins according to RGV      | a5701024              | Narrower                           |                                      |
| B-6   |                  | NI-5.9.1.10      | Added ICF-Dietetics     | Managing intake of vitamins according to RGV      | a5701024              | Narrower                           |                                      |

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**Table 2.** Nutrition Care Practice Terminology (NCPT)<sup>5</sup>/International Classification of Functioning, Disability and Health (ICF)–Dietetics (Dutch Dietetic Association and Dutch Institute of Allied Health Care, ICF-Dietetics Draft- $\alpha$  version, unpublished data, 2012) mapping result of 160 Nutrition Care Practice Terminology nutrition diagnostic terms<sup>a</sup> (continued)

| NCPT term                | Domain/<br>class | NCPT<br>term no. | ICF type of<br>category | ICF-Dietetics category                       | ICF-Dietetics<br>code | Closeness<br>category <sup>b</sup> | Not-matched<br>category <sup>c</sup> |
|--------------------------|------------------|------------------|-------------------------|--|-----------------------|------------------------------------|--------------------------------------|
| B-12                     |                  | NI-5.9.1.11      | Added ICF-Dietetics     | Managing intake of vitamins according to RGV | a5701024              | Narrower                           |                                      |
| Pantothenic acid         |                  | NI-5.9.1.12      | Added ICF-Dietetics     | Managing intake of vitamins according to RGV | a5701024              | Narrower                           |                                      |
| Biotin                   |                  | NI-5.9.1.13      | Added ICF-Dietetics     | Managing intake of vitamins according to RGV | a5701024              | Narrower                           |                                      |
| Excessive vitamin intake |                  | NI-5.9.2         | Added ICF-Dietetics     | Managing intake of vitamins according to RGV | a5701024              | Same                               |                                      |
| A                        |                  | NI-5.9.2.1       | Added ICF-Dietetics     | Managing intake of vitamins according to RGV | a5701024              | Narrower                           |                                      |
| C                        |                  | NI-5.9.2.2       | Added ICF-Dietetics     | Managing intake of vitamins according to RGV | a5701024              | Narrower                           |                                      |
| D                        |                  | NI-5.9.2.3       | Added ICF-Dietetics     | Managing intake of vitamins according to RGV | a5701024              | Narrower                           |                                      |
| E                        |                  | NI-5.9.2.4       | Added ICF-Dietetics     | Managing intake of vitamins according to RGV | a5701024              | Narrower                           |                                      |
| K                        |                  | NI-5.9.2.5       | Added ICF-Dietetics     | Managing intake of vitamins according to RGV | a5701024              | Narrower                           |                                      |
| Thiamin                  |                  | NI-5.9.2.6       | Added ICF-Dietetics     | Managing intake of vitamins according to RGV | a5701024              | Narrower                           |                                      |
| Riboflavin               |                  | NI-5.9.2.7       | Added ICF-Dietetics     | Managing intake of vitamins according to RGV | a5701024              | Narrower                           |                                      |
| Niacin                   |                  | NI-5.9.2.8       | Added ICF-Dietetics     | Managing intake of vitamins according to RGV | a5701024              | Narrower                           |                                      |
| Folate                   |                  | NI-5.9.2.9       | Added ICF-Dietetics     | Managing intake of vitamins according to RGV | a5701024              | Narrower                           |                                      |
| B-6                      |                  | NI-5.9.2.10      | Added ICF-Dietetics     | Managing intake of vitamins according to RGV | a5701024              | Narrower                           |                                      |
| B-12                     |                  | NI-5.9.2.11      | Added ICF-Dietetics     | Managing intake of vitamins according to RGV | a5701024              | Narrower                           |                                      |

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**Table 2.** Nutrition Care Practice Terminology (NCPT)<sup>5</sup>/International Classification of Functioning, Disability and Health (ICF)—Dietetics (Dutch Dietetic Association and Dutch Institute of Allied Health Care, ICF-Dietetics Draft- $\alpha$  version, unpublished data, 2012) mapping result of 160 Nutrition Care Practice Terminology nutrition diagnostic terms<sup>a</sup> (continued)

| NCPT term                 | Domain/<br>class | NCPT<br>term no. | ICF type of<br>category | ICF-Dietetics<br>category                    | ICF-Dietetics<br>code | Closeness<br>category <sup>b</sup> | Not-matched<br>category <sup>c</sup> |
|---------------------------|------------------|------------------|-------------------------|--|-----------------------|------------------------------------|--------------------------------------|
| Pantothenic acid          |                  | NI-5.9.2.12      | Added ICF-Dietetics     | Managing intake of vitamins according to RGV | a5701024              | Narrower                           |                                      |
| Biotin                    |                  | NI-5.9.2.13      | Added ICF-Dietetics     | Managing intake of vitamins according to RGV | a5701024              | Narrower                           |                                      |
| Mineral                   | 5.10             |                  |                         |  |                       |                                    |                                      |
| Inadequate mineral intake |                  | NI-5.10.1        | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Same                               |                                      |
| Calcium                   |                  | NI-5.10.1.1      | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Chloride                  |                  | NI-5.10.1.2      | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Iron                      |                  | NI-5.10.1.3      | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Magnesium                 |                  | NI-5.10.1.4      | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Potassium                 |                  | NI-5.10.1.5      | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Phosphorus                |                  | NI-5.10.1.6      | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Sodium                    |                  | NI-5.10.1.7      | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Zinc                      |                  | NI-5.10.1.8      | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Sulfate                   |                  | NI-5.10.1.9      | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Fluoride                  |                  | NI-5.10.1.10     | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Copper                    |                  | NI-5.10.1.11     | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Iodine                    |                  | NI-5.10.1.12     | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |

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**Table 2.** Nutrition Care Practice Terminology (NCPT)<sup>5</sup>/International Classification of Functioning, Disability and Health (ICF)–Dietetics (Dutch Dietetic Association and Dutch Institute of Allied Health Care, ICF-Dietetics Draft- $\alpha$  version, unpublished data, 2012) mapping result of 160 Nutrition Care Practice Terminology nutrition diagnostic terms<sup>a</sup> (continued)

| NCPT term                | Domain/<br>class | NCPT<br>term no. | ICF type of<br>category | ICF-Dietetics category                       | ICF-Dietetics<br>code | Closeness<br>category <sup>b</sup> | Not-matched<br>category <sup>c</sup> |
|--------------------------|------------------|------------------|-------------------------|--|-----------------------|------------------------------------|--------------------------------------|
| Selenium                 |                  | NI-5.10.1.13     | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Manganese                |                  | NI-5.10.1.14     | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Chromium                 |                  | NI-5.10.1.15     | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Molybdenum               |                  | NI-5.10.1.16     | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Boron                    |                  | NI-5.10.1.17     | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Cobalt                   |                  | NI-5.10.1.18     | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Excessive mineral intake |                  | NI-5.10.2        | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Same                               |                                      |
| Calcium                  |                  | NI-5.10.2.1      | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Chloride                 |                  | NI-5.10.2.2      | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Iron                     |                  | NI-5.10.2.3      | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Magnesium                |                  | NI-5.10.2.4      | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Potassium                |                  | NI-5.10.2.5      | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Phosphorus               |                  | NI-5.10.2.6      | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Sodium                   |                  | NI-5.10.2.7      | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |
| Zinc                     |                  | NI-5.10.2.8      | Added ICF-Dietetics     | Managing intake of minerals according to RGV | a5701025              | Narrower                           |                                      |

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**Table 2.** Nutrition Care Practice Terminology (NCPT)<sup>5</sup>/International Classification of Functioning, Disability and Health (ICF)—Dietetics (Dutch Dietetic Association and Dutch Institute of Allied Health Care, ICF-Dietetics Draft- $\alpha$  version, unpublished data, 2012) mapping result of 160 Nutrition Care Practice Terminology nutrition diagnostic terms<sup>a</sup> (continued)

| NCPT term                               | Domain/<br>class | NCPT<br>term no. | ICF type of<br>category | ICF-Dietetics<br>category                     | ICF-Dietetics<br>code | Closeness<br>category <sup>b</sup> | Not-matched<br>category <sup>c</sup> |
|---|------------------|------------------|-------------------------|---|-----------------------|------------------------------------|--------------------------------------|
| Sulfate                                 |                  | NI-5.10.2.9      | Added ICF-Dietetics     | Managing intake of minerals according to RGV  | a5701025              | Narrower                           |                                      |
| Fluoride                                |                  | NI-5.10.2.10     | Added ICF-Dietetics     | Managing intake of minerals according to RGV  | a5701025              | Narrower                           |                                      |
| Copper                                  |                  | NI-5.10.2.11     | Added ICF-Dietetics     | Managing intake of minerals according to RGV  | a5701025              | Narrower                           |                                      |
| Iodine                                  |                  | NI-5.10.2.12     | Added ICF-Dietetics     | Managing intake of minerals according to RGV  | a5701025              | Narrower                           |                                      |
| Selenium                                |                  | NI-5.10.2.13     | Added ICF-Dietetics     | Managing intake of minerals according to RGV  | a5701025              | Narrower                           |                                      |
| Manganese                               |                  | NI-5.10.2.14     | Added ICF-Dietetics     | Managing intake of minerals according to RGV  | a5701025              | Narrower                           |                                      |
| Chromium                                |                  | NI-5.10.2.15     | Added ICF-Dietetics     | Managing intake of minerals according to RGV  | a5701025              | Narrower                           |                                      |
| Molybdenum                              |                  | NI-5.10.2.16     | Added ICF-Dietetics     | Managing intake of minerals according to RGV  | a5701025              | Narrower                           |                                      |
| Boron                                   |                  | NI-5.10.2.17     | Added ICF-Dietetics     | Managing intake of minerals according to RGV  | a5701025              | Narrower                           |                                      |
| Cobalt                                  |                  | NI-5.10.2.18     | Added ICF-Dietetics     | Managing intake of minerals according to RGV  | a5701025              | Narrower                           |                                      |
| Multinutrient                           | 5.11             |                  |                         |   |                       |                                    |                                      |
| Predicted inadequate nutrient intake    |                  | NI-5.11.1        | Added ICF-Dietetics     | Managing intake of nutrients according to RGV | a570102               | Same                               |                                      |
| Predicted excessive nutrient intake     |                  | NI-5.11.2        | Added ICF-Dietetics     | Managing intake of nutrients according to RGV | a570102               | Same                               |                                      |
| Clinical                                | NC               |                  |                         |   |                       |                                    |                                      |
| Functional                              | 1                |                  |                         |   |                       |                                    |                                      |
| Swallowing difficulty                   |                  | NC-1.1           | Original ICF            | Swallowing                                    | b5105                 | Same                               |                                      |
| Biting/chewing (masticatory) difficulty |                  | NC-1.2           | Original ICF            | Biting  | b5101                 | Same                               |                                      |
|   |                  |                  | Original ICF            | Chewing                                       | b5102                 | Same                               |                                      |

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**Table 2.** Nutrition Care Practice Terminology (NCPT)<sup>5</sup>/International Classification of Functioning, Disability and Health (ICF)—Dietetics (Dutch Dietetic Association and Dutch Institute of Allied Health Care, ICF-Dietetics Draft- $\alpha$  version, unpublished data, 2012) mapping result of 160 Nutrition Care Practice Terminology nutrition diagnostic terms<sup>a</sup> (continued)

| NCPT term                                      | Domain/<br>class | NCPT<br>term no. | ICF type of<br>category | ICF-Dietetics<br>category             | ICF-Dietetics<br>code | Closeness<br>category <sup>b</sup> | Not-matched<br>category <sup>c</sup> |
|--|------------------|------------------|-------------------------|---------------------------------------|-----------------------|------------------------------------|--------------------------------------|
| Breastfeeding difficulty                       |                  | NC-1.3           | Original ICF            | Carrying out breastfeeding            | a5601                 | Same                               |                                      |
| Altered gastrointestinal function              |                  | NC-1.4           | Original ICF            | Gastric functions                     | b5332                 | Broader                            |                                      |
|  |                  |                  | Original ICF            | Intestinal function                   | b5335                 | Broader                            |                                      |
| Predicted breastfeeding difficulty             |                  | NC-1.5           | Original ICF            | Carrying out breastfeeding            | a5601                 | Same                               |                                      |
| Biochemical                                    | 2                |                  |                         |                                       |                       |                                    |                                      |
| Impaired nutrient utilization                  |                  | NC-2.1           | Original ICF            | Assimilation functions                | b520                  | Similar                            |                                      |
| Altered nutrition-related<br>laboratory values |                  | NC-2.2           |                         |                                       |                       |                                    | nd                                   |
| Food—medication interaction                    |                  | NC-2.3           |                         |                                       |                       |                                    | nd                                   |
| Predicted food—medication<br>interaction       |                  | NC-2.4           |                         |                                       |                       |                                    | nd                                   |
| Weight   | 3                |                  |                         |                                       |                       |                                    |                                      |
| Underweight                                    |                  | NC-3.1           | Added ICF-Dietetics     | Body weight too low                   | s7052.x1              | Same                               |                                      |
| Unintended weight loss                         |                  | NC-3.2           | Added ICF-Dietetics     | Undesired weight loss                 | b 5310.x2             | Same                               |                                      |
| Overweight/obesity                             |                  | NC-3.3           | Added ICF-Dietetics     | Body weight too high                  | s7052.x2              | Same                               |                                      |
| Overweight, adult or pediatric                 |                  | NC-3.3.1         | Added ICF-Dietetics     | Overweight/BMI <sup>f</sup> 25.0-29.9 | s7052.x21             | Broader                            |                                      |
| Obese, pediatric                               |                  | NC-3.3.2         | Added ICF-Dietetics     | Body weight too high                  | s7052.x2              | Narrower                           |                                      |
| Obese, class I                                 |                  | NC-3.3.3         | Added ICF-Dietetics     | Obesity I/BMI 30.0-34.9               | s 7052.x22            | Same                               |                                      |
| Obese, class II                                |                  | NC-3.3.4         | Added ICF-Dietetics     | Obesity II/BMI 35.0-39.9              | s 7052.x23            | Same                               |                                      |
| Obese, class III                               |                  | NC-3.3.5         | Added ICF-Dietetics     | Obesity III/BMI>40.0                  | s 7052.x24            | Same                               |                                      |
| Unintended weight gain                         |                  | NC-3.4           | Added ICF-Dietetics     | Undesired weight gain                 | b5311.x2              | Same                               |                                      |
| Growth rate below expected                     |                  | NC-3.5           | Original ICF            | Growth maintenance functions          | b560                  | Same                               |                                      |
| Excessive growth rate                          |                  | NC-3.6           | Original ICF            | Growth maintenance functions          | b560                  | Same                               |                                      |
| Malnutrition disorders                         | 4                |                  |                         |                                       |                       |                                    |                                      |
| Malnutrition                                   |                  | NC-4.1           | Added ICF-Dietetics     | Nutritional status                    | b532                  | Narrower                           |                                      |
| Starvation related malnutrition                |                  | NC-4.1.1         | Added ICF-Dietetics     | Nutritional status                    | b532                  | Narrower                           |                                      |

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**Table 2.** Nutrition Care Practice Terminology (NCPT)<sup>5</sup>/International Classification of Functioning, Disability and Health (ICF)–Dietetics (Dutch Dietetic Association and Dutch Institute of Allied Health Care, ICF-Dietetics Draft- $\alpha$  version, unpublished data, 2012) mapping result of 160 Nutrition Care Practice Terminology nutrition diagnostic terms<sup>a</sup> (continued)

| NCPT term  | Domain/<br>class | NCPT<br>term no. | ICF type of<br>category | ICF-Dietetics<br>category   | ICF-Dietetics<br>code | Closeness<br>category <sup>b</sup> | Not-matched<br>category <sup>c</sup> |
|--|------------------|------------------|-------------------------|---|-----------------------|------------------------------------|--------------------------------------|
| Chronic disease— or condition-<br>related malnutrition   |                  | NC-4.1.2         | Added ICF-Dietetics     | Nutritional status  | b532                  | Narrower                           |                                      |
| Acute disease- or injury-related<br>malnutrition   |                  | NC-4.1.3         | Added ICF-Dietetics     | Nutritional status  | b532                  | Narrower                           |                                      |
| Behavioral—environmental   | NB               |                  |                         |   |                       |                                    |                                      |
| Knowledge and beliefs  | 1                |                  |                         |   |                       |                                    |                                      |
| Food- and nutrition-related<br>knowledge deficit   |                  | NB-1.1           | Added ICF-Dietetics     | Knowledge about nutrition<br>Inclusion of myths about nutrition,<br>relation to nutrition and disease | pf4652                | Same                               |                                      |
| Unsupported beliefs/attitudes<br>about food- or nutrition-related<br>topics (use with caution) |                  | NB-1.2           | Added ICF-Dietetics     | Attitude on nutritional behavior  | pf4550                | Broader                            |                                      |
| Not ready for diet/lifestyle<br>change   |                  | NB-1.3           | Added ICF-Dietetics     | Motivation to adjust diet   | b13011                | Same                               |                                      |
| Self-monitoring deficit  |                  | NB-1.4           | Original ICF            | Higher-level cognitive functions  | b164                  | Narrower                           |                                      |
| Disordered eating pattern  |                  | NB-1.5           | Added ICF-Dietetics     | Managing nutrition according to RGV   | a57010                | Similar                            |                                      |
| Limited adherence to nutrition-<br>related recommendations                                     |                  | NB-1.6           | Added ICF-Dietetics     | Keep to therapy   | pf450                 | Same                               |                                      |
| Undesirable food choices   |                  | NB-1.7           | Added ICF-Dietetics     | Managing proper choice of food<br>products  | a5701012              | Similar                            |                                      |
| Physical activity and function   | 2                |                  |                         |   |                       |                                    |                                      |
| Physical inactivity  |                  | NB-2.1           | Added ICF-Dietetics     | Managing adequate physical activity   | a57013                | Same                               |                                      |
| Excessive physical activity  |                  | NB-2.2           | Added ICF-Dietetics     | Managing adequate physical activity   | a57013                | Same                               |                                      |
| Inability to manage self-care  |                  | NB-2.3           | Original ICF            | Self-care   | a5                    | Same                               |                                      |
| Impaired ability to prepare foods/<br>meals  |                  | NB-2.4           | Original ICF            | Preparing meals   | a630                  | Same                               |                                      |
| Poor nutrition quality of life   |                  | NB-2.5           | Added ICF-Dietetics     | Quality of life   | pf480                 | Narrower                           |                                      |
| Self-feeding difficulty  |                  | NB-2.6           | Original ICF            | Eating  | a550                  | Same                               |                                      |

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| NCPT term                                    | Domain/<br>class | NCPT<br>term no. | ICF type of<br>category | ICF-Dietetics<br>category  | ICF-Dietetics<br>code | Closeness<br>category <sup>b</sup> | Not-matched<br>category <sup>c</sup> |
|--|------------------|------------------|-------------------------|--|-----------------------|------------------------------------|--------------------------------------|
| Food safety and access                       | 3                |                  |                         |  |                       |                                    |                                      |
| Intake of unsafe food                        |                  | NB-3.1           | Added ICF-Dietetics     | Identification of rotten, contaminated, or in any other way dangerous food | a6304                 | Same                               |                                      |
| Limited access to food                       |                  | NB-3.2           | Original ICF            | Food   | e1101                 | Same                               |                                      |
| Limited access to nutrition-related supplies |                  | NB-3.3           | Original ICF            | Food   | e1102                 | Same                               |                                      |
| Limited access to potable water              |                  | NB-3.4           | Added ICF-Dietetics     | Drinking water   | e112                  | Same                               |                                      |
| Other  | NO               |                  |                         |  |                       |                                    |                                      |
| Other  | 1                |                  |                         |  |                       |                                    |                                      |
| No nutrition diagnosis at this time          |                  | NO-1.1           |                         |  |                       |                                    | nc                                   |

<sup>a</sup>The mapping exercise was based on well-established Linking Rules.<sup>33</sup> The ICF-Dietetics consists of original ICF categories and additional specific dietetic categories (added ICF-Dietetics). Each NCPT term were linked to the most precise ICF-Dietetics category. An added ICF-Dietetics category was assigned in case a more precise specific dietetic category compared to the original ICF was available. If an NCPT term comprised more than one concept, every single concept was linked to the ICF-Dietetics, meaning that one NCPT term could be linked to more than one ICF-Dietetics category.

<sup>b</sup>In addition to the ICF-Linking Rules,<sup>33</sup> the closeness of the match in respect of comparable concepts was described by using “same,” “similar,” “broader” and “narrower,” adopted from Zielstorff and colleagues<sup>36</sup>. Same: The term in the NCPT is nearly identical in wording and underlying concept to the ICF term. Similar: The term is comparable: or “alike in substance.” Broader: The term is larger in scope, or less specific, or can be considered to encompass the term in the ICF. Narrower: The term is smaller in scope, or more specific, or can be considered to be encompassed by the ICF term.

<sup>c</sup>Accordinging the ICF-Linking Rules, concepts that could not be linked to an ICF-Dietetics category and that were clearly not personal factors were assigned “not covered (nc).” If the information of the NCPT term was not sufficient to make a decision about the most precise ICF-Dietetics component, the concept was assigned “not definable (nd).” If the NCPT term referred to a medical diagnosis or a health condition according to the ICD-10, it was assigned “health condition (nc-hc).”

<sup>d</sup>RGV=Dutch Dietary Guidelines: Making sure that nutritional intake is optimum for the person, which usually means that the nutrition complies with the RGV or Dietary Reference Values established by age category.

<sup>e</sup>In contrast to the previous versions of the ICF-Linking Rules,<sup>34</sup> it is recommend now to use “other specified” categories (ending with the digit “8”). Experience has shown that not using “8”-categories leads to lost information. Therefore, the authors of the ICF-Linking Rules<sup>33</sup> suggest now, if a concept is linked to an “8”-category, the additional information not specified within the ICF should be documented along with the ICF category. Furthermore, it must be mentioned that the ICF-Dietetics is used in combination with other classifications, such as the Classifications of Assistive Products.<sup>5</sup> This makes it possible to define the specific type of protein (such as gluten or amino acids) and fat (such as saturated fat).

<sup>f</sup>BMI=body mass index; calculated as kg/m<sup>2</sup>.