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## Original article

# Advanced practice nursing: Nutrition Nurse Specialist role and function

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## SUMMARY

**Background:** Different disciplines should be represented in Nutritional Support Teams, e.g. a physician, dietician, pharmacist and a nurse. The latter one can function as an Advanced Practice Nurse, which implicates that he or she must have sufficiently thorough knowledge, attitudes and competences to fulfill the profile of a nutritional expert in the field of clinical nutrition.

**Methods:** Description of the scope of practice, education and added value related to a Nutrition Support Nurse, based on detailed published competency profiles.

**Results:** The described competencies reflect the advanced role and clinical expertise of a Nutrition Support Nurse. She can make a significant contribution to the overall quality of nutritional care, uncover the multidimensional aspects of nutrition, monitor effectiveness/ appropriateness of nutrition therapy and improve clinical outcomes.

**Conclusions:** A Nutrition Support Nurse can incorporate nutrition nursing in the overall nutrition support, acting as an important player for users, carers and the healthcare organization in general.

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## 1. Introduction

Important transformations in the health care and patient groups and the increasing requirement for evidence-based care imply necessary changes to nursing practice and nursing care organization. Besides the requirement for specialized expertise, there is a need to develop evidence-based nursing innovations for specific patient groups or fields of specialization. To fulfill these requirements, it is essential to give consideration to “Advanced Practice Nursing” (APN) and achieve that by integrating nursing specialists into care.

Advanced Practice Nursing is one of the most important developments in the nursing profession in the twentieth century [1]. Even though APN developed in the USA, Europe is not trailing behind [2,3]. However, development and implementation of APN in Belgian health care is progressing rather more slowly. The International Council of Nursing defines an APN as ‘a registered nurse who has acquired the expert knowledge base, complex decision-

making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which she is credentialed to practice. A degree at Master's level is recommended for entry level’. [4].

Based on international literature, it seems that APN is actually difficult to define [5,6]. Differing terms are used, Clinical Nurse Specialist (CNS) and Nurse Practitioner (NP) being the most common. Clinical nurse specialists are characterized by their ability to introduce profundity and innovation in care and nursing through evidence-based, clinical specialist knowledge, skills and competences. They take on duties that broaden the scope of nursing tasks that were traditionally the responsibility of other professionals, e.g. physicians (*expansion*). They also have an important role in enhancing professionalization of the nursing profession (*advancement*). Clinical Nurse Specialists have their primary focus on *care*. Nurse Practitioners focus on both care and cure. They provide expert clinical care, including medical assessment, diagnosis and treatment of simple medical problems and prescribing medications (e.g. in countries including the Netherlands, UK, Sweden, and Australia). In the USA, CNSs have often been replaced with NPs during recent years. Sometimes a NPs role is actually controversial. The

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controversy primarily concerns 'role expansion', which involves questions about crossing traditional lines of demarcation in the medical world, and what are the current boundaries for nursing [7,8]. This creates the risk that medical tasks gain priority over nursing tasks, resulting in *expansion* without more depth in clinical nursing.

Clinical nurse specialists are deployed in different areas of specialization. In this article, we focus on the roles/tasks that a nutrition CNS performs, the benefit of the function and importance of certification and training for nutrition CNSs. To conclude, we will set out future challenges and formulate a conclusion.

## 2. The Nutrition Support Nurse as an advanced practice nurse

One can certainly consider a nurse specialized in (complex) nutrition support as a prototype of an APN. Currently, there are different titles referring to this role in this specialized nursing field. Frequently used titles are "Nutrition Nurse Specialist (NNS) and" Nutrition Support Nurse" (NSN), but others are used commonly in practice, e.g. "Nutrition Nurse Practitioner" (advanced or associated), or "Nutrition Support Consultant Nurse". In this article, we will not elaborate what exactly each title covers (these are often conceived on a national or local basis) but we will give an overview of the possible job content, role model and competencies of a NNS. In this article, we will simply use NSN from here onwards.

"Nutrition Support Nursing" developed in the mid-sixties with the advent of parenteral nutrition. This sophisticated method of providing nutrition also brought specialized nursing care along with it, e.g. venous access options, care for intravenous catheters/lines and monitoring possible complications (infectious, metabolic, mechanical, allergic). There was also a need to train other health care workers and patients in this method. With the development of Nutrition Support Teams (NSTs) in many hospitals, NSNs also gained an important role in them [9,10].

An NSN is not an occasional assistant for patient nutritional care; she is a health care professional who invests a significant part of her activity in all aspects of (complex) nutritional care. A NSN is therefore not bound to a single department, she can work on behalf of all departments and outpatient clinics [11].

## 3. A nutrition support team

If healthcare staff are not skilled and experienced in giving artificial nutritional support (ANS), serious and sometimes life

threatening complications can occur e.g. inadequate nutritional assessment, enteral nutrition aspiration pneumonia, misplacement of nasogastric feeding tubes, local gastrostomy problems, total parenteral nutrition (TPN) related catheter sepsis, metabolic and mechanical complications [9]. It is considered best practice that patients on ANS are managed by a specialist multidisciplinary team: the NST [12–19]. The British Association for Parenteral and Enteral Nutrition (B.A.P.E.N) defines a NST as a team 'which is required to provide safe and cost-effective artificial nutritional support in the minority of patients who need it. The NST supports the dietetic and nursing teams by providing specialist nutrition nursing, dietetic and pharmacist input and medical liaison, in order to optimize metabolic care of some of the sickest patients in the hospital, employing the parenteral route when necessary'. [20].

The structure and design of nutrition support activities will vary from organization to organization. These activities may be structured in various ways: a primary nutrition support team taking responsibility for the care for all patients receiving ANS e.g. assessing the nutritional and fluid requirements of the patient, establishing the access for feeding, writing the prescription, monitoring progress and managing any complications. Other models are a consultative (ad hoc) team or a pure administrative nutrition committee dealing with overall nutritional policy e.g. writing protocols, translating/implementing guidelines, providing education and assuring quality [9,21,22].

## 4. Core membership of a nutrition support team and individual roles

In most cases core membership of a NST consists of the following members: a clinician, a nurse, a dietician and a pharmacist [9,18]. To provide specialized and coordinated nutrition support, regularly communication and clear role definition and responsibilities are important to ensure the team's success. But is it also important that the team is flexible and can strengthen each other in developing knowledge and skills and avoid confrontation and discontent [22]. The potential role(s) of the core members are briefly described in Table 1.

## 5. Role of the nutrition support nurse

As stated in the previous paragraphs; to overcome barriers for role introduction and preventing role confusion, describing the

**Table 1**  
The potential role(s) of the core members of the Nutrition Support Team [9,18,21,22].

|                         |  |
|-------------------------|--|
| Clinician/physician     | <ul style="list-style-type: none"> <li>• In-depth understanding of nutrient metabolism, digestion, and absorption</li> <li>• Devotes a significant part of his or her professional activities to nutrition support</li> <li>• Leadership role in coordinating and delegating interdisciplinary clinical nutrition services and facilitating the nutrition care implementation structure in the health care facility</li> </ul>   |
| Dietician               | <ul style="list-style-type: none"> <li>• Ensures that standards for nutrition support provided by other team members are met</li> <li>• Individualized nutritional assessment with implementation and follow-up of a (transitional) feeding care plan</li> <li>• Monitors patient's response to the nutrition care delivered</li> <li>• Discussing with other team members the need for ANS</li> </ul>   |
| Pharmacist              | <ul style="list-style-type: none"> <li>• Education of patients, relatives, nursing staff, medical staff and students</li> <li>• Can assist in prescribing parenteral nutrition</li> <li>• Preparation of safe and aseptic parenteral nutrition solutions (including compounding)</li> <li>• Optimizes composition and advises on compatibility/stability issues and drug/nutrient interactions</li> <li>• Quality improvement, education of pharmacists, other health care professionals, patients and students</li> <li>• Conducts nutrition-related research or participates in research activities</li> </ul> |
| Nutrition Support Nurse | <ul style="list-style-type: none"> <li>• Participates in the assessment of nutritional status, nutrition requirements and in the development and monitoring of a specialized nutrition care plan</li> <li>• (Assists in) placement of enteral and parenteral feeding access</li> <li>• Prevention, management and problem-solving of complications with access devices</li> <li>• Acts as the patient's advocate, who also trains patients/carers to manage artificial nutrition at home</li> <li>• Provision of education to different health care workers</li> </ul>   |

scope of practice and outline specific professional responsibilities and competencies of a NSN (within a NST) is highly important.

PUBMED was searched for relevant articles mentioning the role of NSN or a NST. English titles/abstracts (in humans) from 1980 till 2017 were searched using the following search string: ([Nutrition [Title]] AND Nurse\*[Title]) OR ["Nutrition support team\*" [All fields] OR "multidisciplinary nutrition team\*" [All fields] OR "interdisciplinary nutrition team\*" [All fields] OR "Nutrition Team\*" [All fields]] resulting in 438 search results. Hundred and seven articles were identified based on titles/available abstracts and if available relevant full-text articles were read. In addition, websites from nutrition societies (and if existing their affiliated journals) and nutrition nursing societies (for English or bilingual speaking countries) were searched for nutrition nursing or NST related standards of practice, responsibilities or competencies.

In 2010, the National Nurses Nutrition Group (NNG), a founder group of BAPEN, published 'A Competency Framework for Nutrition Nurse Specialists' [23]. The nurse section of The American Society for Parenteral and Enteral Nutrition (ASPEN) recently published 'The Standards of Nutrition Care Practice and Professional Performance for Nutrition Support and Generalist Nurses' (an update of a similar set in 2007) [24,25]. Finally, the former (currently they are a part of a larger society) Dutch Society for Nutrition and Infusion Nurses ('Vereniging Van Voedings en Infusieverpleegkundigen' (VVIV)) detailed in a competency profile the scope of practice of a NSN in general clinical nutrition care [11].

The advanced nursing practice definition is characterized by a combination of primary criteria and core competencies. Besides graduate education and certification, a patient/family-focused direct clinical practice is the central and primary competency [26,27]. The practice of NSNs and level of competency or responsibility will vary with the individual nurses' educational background, expertise, position and practice environment (e.g. opportunities, legal recognition, team work and available support). A nurse new to nutrition support (proficient nurse) has mainly first to focus on (in)direct expert clinical care. Depending on further professional development, opportunities and expertise, the NSN has to expand her knowledge and skills in this field. Exploring more in depth the published competencies, they highlight the following primary (in)direct clinical patient care activities for a NSN in the domains of nutritional screening, assessment and care plan [11,22–25].

The NSN should be able to:

- identify nutritionally-at-risk patients and participate in an interdisciplinary nutritional assessment by incorporating relevant nursing data e.g. medical, medication and nutrition history, clinical examination but also functional, psychosocial, cultural, economic, financial and spiritual factors
- analyze independently or in collaboration (artificial) nutritional and fluid requirements
- identify potential patient/caregiver/family barriers, (educational) needs and the ability for self-manage nutritional therapies
- select, (re)place or repair the appropriate enteral or parenteral access device with prevention, monitoring and/or problem-solving of device-related problems (e.g. unblocking, peristomal infection, catheter related bloodstream infection)
- recommend in conjunction with other team members an appropriate nutrition support therapy formulation, mode of delivery, and administration rates (initiation, advancement, and discontinuation) that are compatible with the route of access
- provide ongoing education and support for health care professionals, patients/families and care givers

- participate in care or manage patients on home enteral and parenteral feeding
- make care procedures (mainly for enteral and parenteral access devices) in line with evidence-based guidelines

During further professional development following six additional core competencies should be invigorated: Expert coaching and guidance, consultation, research skills, clinical and professional leadership, collaboration and ethical-decision making skills [26,27]. Again we distilled from the published competencies some illustrative and clarifying practice examples for each core competency (see Table 2) [11,23–25].

## 6. Improved outcomes with a Nutrition Support Nurse

A NSN is considered as a vital part of a NST. In the literature we find several examples where a joined effort of the team members can improve clinical outcomes, cost savings and quality of care [12–19]. It is impossible to appoint to what extent each team member is contributing to the success of the team and/or to its positive outcomes. For example in a publication about the effect of nutritional support on clinical outcome in patients at nutritional risk, a joined effort of a nurse and a dietician resulted in a higher protein and energy intake of nutritionally at-risk patients which shortened both the part of the length of stay that was considered to be sensitive to nutritional support and the length of stay among patients with complications [28]. Although scarce, there are a few studies specifically focusing on the added value of a NSN in terms of improved outcomes and/or cost-effectiveness more specific in the field of parenteral nutrition. In an old publication by Keohane et al., the presence of a NSN in the NST resulted in a significant drop in catheter related infections from 33% to 4% [29]. Goldstein et al. demonstrated that after the termination of a NSN, TPN-associated line sepsis increased from 8,8% to 13,2%. Additional costs in the form of inappropriate TPN, TPN-wastage and increased line sepsis raised with 38.148 dollars per year [30]. To the same conclusion came Sutton et al. when they stated that the employment cost of a NSN was almost completely covered by the savings resulting from the reduction in wasted central venous catheters, TPN and operating time [31]. In another study by Fraher et al. the introduction of a TPN surveillance nurse saved the hospital at least 78,300 euro per annum and led to a significant decrease in catheter related bloodstream infections in TPN patients [32]. Finally in another study in home TPN patients, less rehospitalizations for line sepsis and depression prevention were noted because of a nurse led educational catheter care program [33].

## 7. Educational requirements and job employment

The basis of any APN is a high degree of knowledge, special expertise in coordinating care, managing transitions across care settings to achieve optimal outcomes through critical analysis, problem solving and accurate decision making. As stated in the introduction, a Master degree in nursing is nowadays recommended to achieve the above-mentioned competencies for expanded practice but some countries regulate it but others do not. Without legislative title protection there is the risk of confusion and ambiguity surrounding the title and not meeting extended standards [34]. This Master degree should, when available, be followed by a formal sub-specialty certification to adhere to the specific discipline-based competencies and APN curricula. Data derived from a survey from ASPEN amongst their nurses' members, revealed that 38% of the NSN's had a Master's degree and 18% were even doctorally prepared but not all of them spent all their time to nutritional support activities [10,24]. Not much is known about

**Table 2**  
Illustrative practice examples/responsibilities of advanced practice core competencies for a Nutrition Support Nurse (NSN) distilled from the competency profiles from three organizations: The National Nurses Nutrition Group (NNG), The American Society of Enteral and Parenteral Nutrition (ASPEN) and the former Dutch society of Feeding-and infusion Nurses ('Vereniging Voor Voedings-en infusieverpleegkundigen (VVIV)) [11,23–26].

|  | NNG   | ASPEN   | VVIV   |
|--|---|---|--|
| CORE COMPETENCY:<br>Expert coaching and guidance         | <ul style="list-style-type: none"> <li>The NSN liaisons with appropriate agencies to arrange ongoing management of patients considering how their artificial nutrition impacts on their wider medical, physical and social needs.</li> </ul>                          | <ul style="list-style-type: none"> <li>The NSN assesses the patient and caregiver's learning needs, ability, and willingness to perform care.</li> <li>The NSN coordinates the patient/caregiver education program related to nutrition support, partnering with the patient to promote a high level of participation.</li> </ul> | <ul style="list-style-type: none"> <li>The NSN supports, coaches and gives advice for practical but also complex feeding problems.</li> </ul>  |
| CORE COMPETENCY: Consultation                            | <ul style="list-style-type: none"> <li>The NSN identifies when a patient requires referral to other members of the multi-disciplinary team and makes arrangements for this.</li> </ul>  | <ul style="list-style-type: none"> <li>The NSN communicates consultation recommendations to all appropriate stakeholders.</li> </ul>  | <ul style="list-style-type: none"> <li>The NSN is a consultant and provides support for doctors, nursing specialists, hospital wards, home care and any referrals from other disciplines.</li> </ul>   |
| CORE COMPETENCY:<br>Clinical and professional leadership | <ul style="list-style-type: none"> <li>The NSN shares expert knowledge and skills in nutrition support across professional, organizational and geographical boundaries.</li> <li>The NSN co-ordinates the overall activity of the nutrition nurse service.</li> </ul> | <ul style="list-style-type: none"> <li>The NSN provides leadership in the coordination of interprofessional nutrition care for integrated delivery of nutrition support patient care services.</li> </ul>   | <ul style="list-style-type: none"> <li>The NSN ensures that he/she is an initiator, organizer and executor of professional development through continuing education programs, individual sharing and clinical classes.</li> </ul>              |
| CORE COMPETENCY: Collaboration                           | <ul style="list-style-type: none"> <li>The NSN is establishing links with community partners such as general physician's practices, community hospitals and other care facilities.</li> </ul>   | <ul style="list-style-type: none"> <li>The NSN collaborates to develop and implement organizational policies and procedures for the management of enteral and vascular access devices.</li> </ul>   | <ul style="list-style-type: none"> <li>The NSN forms a link between the patient and other disciplines.</li> <li>The NSN shares both internal and external knowledge with other disciplines that are involved in the patient's care.</li> </ul> |
| CORE COMPETENCY:<br>Ethical decision making              | <ul style="list-style-type: none"> <li>The NSN has a thorough understanding of legal and ethical issues associated with nutrition support and applying these to highly complex situations and advising others on these.</li> </ul>                                    | <ul style="list-style-type: none"> <li>The NSN provides advocacy for ethical decision making and implementation discussions with the interdisciplinary healthcare team regarding nutrition decisions in collaboration with palliative care or hospice care.</li> </ul>  | <ul style="list-style-type: none"> <li>The NSN is a care provider, who takes ethical questions into consideration, e.g. whether or not to provide nutrition through a feeding tube or line.</li> </ul>   |
| CORE COMPETENCY: Research                                | <ul style="list-style-type: none"> <li>The NSN takes a lead in identifying learning opportunities and develops education and training programmes within and outside of the workplace.</li> </ul>  | <ul style="list-style-type: none"> <li>The NSN develops operational mechanisms in his or her workplace for initial nutrition screening and the processes by which nutritionally-at-risk patients are referred to the next level of nutrition care.</li> </ul>   | <ul style="list-style-type: none"> <li>The NSN is a researcher.</li> </ul>   |

formal additional certification for NSN's. The step from institution-specific or on-the-job training (although important) to a certified education program seems not so evident [27]. A good example for certification comes again from the US where The National Board of Nutrition Support Certification (NBNSC) is acting as an independent credentialing board responsible for administering the multidisciplinary certification examination in nutrition support. Nursing was in 1985 the first discipline to be credentialed in nutrition support. In 2008 they changed their policy and started to offer just one certification (both nationally and internationally) for all key-disciplines involved in nutrition care because an audit demonstrated the common core of practice between them [35].

In a recent survey of the ASPEN board of directors practice management task force, nurses were least represented in terms of interdisciplinary team members. Almost 27% of respondents reported that their team did not have a nurse member, 47% reported 1 nurse, 14% had 2 nurses, and a small minority (less than 12% of respondents) had 3 or more nurses on their team. But when on an NST, nurses had the highest percentage (40%) of the key disciplines that spent 100% of their time seeing nutrition support therapy patients [17].

In Europe, recent data from the UK revealed that 134 NNG members work as nutrition nurses in one of the 181 acute trusts so this means an average of 0,74 nurses per trust. No additional information was given about their certification [36]. But in the

UK there is a possibility for nurses, doctors and pharmacists to obtain a Master Degree in clinical nutrition after 1 year full-time study [37]. In a nationwide overview about the current practice of nutrition in Portugal, approximately 1/3 (34%) of the responding hospitals (44/100) confirmed the presence of an NST but nurses were never involved [38]. In The Netherlands and Belgium a joined network of NSNs counts about 40 members, only a few of them have an APN protected title [39]. To our knowledge, there are no further objective data published from other countries.

## 8. Future challenges

Without any doubt, currently in many countries there is still a lack of regulation and formal high-quality education for advanced practice nursing in general and the nutrition nursing practice specialty [34]. But even with or without a protected title and/or certificate, the existence and the scope of practice and the application of standards for a NSN will also be influenced by other factors. In many cases a NSN can only fulfill her role adequately when integrated in a well-organized clinical nutrition team. However, in many hospitals around the world, there are actually no such teams present or they are being phased out for financial reasons [18,40]. Simultaneously within the health care system, all APNs should receive support at different levels: their clinical expertise



should be valued (also financially) and encouraged by physicians, hospital managers, state boards of nursing and other health care professionals [41].

## 9. Conclusions

Published competencies outline the advanced scope of practice and clinical expertise needed to fulfill the role of a NSN as an advanced practice nurse. High-quality education and certification by higher education institutions or credentialing boards, legislative title protection and recognition are essential factors to foster job employment and long-term sustainability.

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## Contributions of the authors

AVH wrote the introduction and was involved in the correction and approval of the final manuscript. KB was responsible for the design and wrote the other sections.

## Conflict of interest

None declared.

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