An European survey of structure and organisation of nutrition support teams in Germany, Austria and Switzerland

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Summary

Background & aims: Nutritional support teams (NST) have been demonstrated to be an excellent mechanism for identifying patients in need of nutrition support, improving the efficacy of nutrition support in a variety of hospital environments. Focus of this study was the investigation of function, structure and organisation of NST in Germany (D), Austria (A) and Switzerland (CH).

Methods: Prospective investigation of the function, structure and organisation of NST in D, A and CH, using standardised questionnaires.

Results: From a total of 3071 hospitals in D, A and CH, NST have been established at 98 hospitals (3.2%). Their main activities were creating nutritional regimes (100%), education (87%) and monitoring nutrition therapy (92%). In general, the NST are not independently operating units but are affiliated to a special discipline. Seventy-one per cent of the physicians, 40% of the nurses and 69% of the dieticians in the NST held a nutrition-specific additional qualification. A total of 12% of the physicians, 37% of the nurses and 46% of the dieticians are exclusively responsible for the NST. A reduction of complications (88%) and cost saving (98%) were indicated since their establishment. The NST received in 32% funding support.

Conclusion: In D, A, CH neither a uniform nor comprehensive patient care by NST existed in 2004. Standards of practice, development of guidelines in clinical...
Introduction

Recognition of malnutrition and initiation of adequate nutritional support care of critical importance in general clinical care. The frequency of malnutrition among newly hospitalised patients is shown to be between 8% and 38%. Patients may not only be malnourished at the time of admission to the hospital, but they can develop further deterioration in their nutritional status during their hospital stay. The association between poor nutritional status and treatment outcomes as well as increased healthcare costs has been shown in different clinical settings.

In the Anglo-American countries the medical nutrition of patients by means of the so-called nutrition support teams (NST) has an important role. In the Anglo-America region the NSTs showed their worth in clinical care as well as within the scope of medical nutrition education, research and in the quality management. At individual NST it could be shown that their operation is covering the costs and even savings in therapy costs could be demonstrated. Although the advantages of NST in various disciplines as well as in-hospital and out-patient field could be demonstrated for the USA and few European countries, very little is known on the structure and function of NST in Germany (D), Austria (A) and Switzerland (CH). Among others this must be due to the lacking acceptance of nutritional medicine in D, A and CH (general lacking of specialty, or sub-specialty or curriculum) but also due to the lacking specifications for a standardisation of clinical nutrition by the umbrella organisations, for example DGEM. As a consequence of the little acceptance of clinical nutrition therapy, no clear evolution of a clinically oriented medical nutrition competence becomes apparent in D, A and CH. The model of the American NST can certainly not easily be applied to hospitals in D, A and CH; however, the structures and organisation forms of these teams show how a successful nutrition therapy can be carried out. Focusing the resolution of the Council of Europe, concerning the food and nutritional care in hospitals and the prevention of undernutrition, there are less data describing the function, structure and organisation of NST in D, A and CH. In order to obtain information on the structure and organisation and thus also the conditions for a nutrition therapy by NSTs in D, A and CH this prospective study was carried out.

Methods

In 2004, we screened 2221 German, 278 Austrian and 572 Swiss hospitals for the existence of NST with the help of the NST-register of the German Society of Nutrition Medicine (DGEM), the Austrian Society of Clinical Nutrition (AKE) and the Swiss Society of Clinical Nutrition (GESKES). Condition for the inclusion into the evaluation was that the NST should comprise at minimum one physician plus one staff (nurse, dietician, oecotrophologist, pharmacist). The size of the team was undefined. For the evaluation and documentation an interview questionnaire with standardised questions relating to the structure and organisation of the NST were used (Table 1).

The following topics were investigated:

(a) Structure and work of the team and its financing.
(b) Qualification of team members.
(c) Quality control in providing nutritional support and outcome measures.

Data are reported as total counts (n), mean (x), and percentage (%).

Results

A total of 63 NSTs were found at 2221 German hospitals (2.83%), 43 NSTs at 278 Austrian hospitals (7.92%) and 14 NSTs at 572 Swiss hospitals (2.45%), meeting the requirements of the inclusion criteria. We had a questionnaire flyback of 52 NSTs (83%) in D, of 22 NSTs in A (51%) and 13 NSTs (92%) in CH. In average the NSTs worked for 10 years, where 45 (52%) of the teams, existed for 5 years. The staff composition of the NSTs is shown in Fig. 1. We found 46 NSTs (73%) located within internal medicine, followed by 15 surgical NSTs (24%) and 7 interdisciplinary NSTs (6%). A senior physician held the professional management in 53% (n = 46), by a chief physician in 20% (n = 18), and by an assistant physician in 26% (n = 23). Most NSTs were located at a university hospital and bigger county or...
teaching hospitals with an average number of beds ranged at 1132 (Fig. 2). In all hospitals where NSTs were evaluated, the disciplines surgery, anaesthesiology and internal medicine were present (Table 2). The NSTs cared for in average 167 outpatients per year, where most of the teams

Table 1 Questionnaire.

(a) Questions related to structure and work of the teams and their financing:

1. Type of hospital, number of beds and which disciplines are present?
2. How many outpatients and hospitalised patients per year?
3. How long does the team exist?
4. Composition of the team?
5. Which disciplines does the team care for?
6. Which tasks does the team perform?
7. When is the team called?
8. Does the team act consulting or deciding the therapy?
9. How much time does the team members invest in NST and do they have other tasks independent from NST?
10. How is the financing of the various team members organised?
11. Does NST render services for third parties?

(b) Questions related to qualification of team members:

1. Which additional qualification do the various team members hold?
2. How do the team members realise continuing education?
3. Visits to congresses and continuing educations organised by the various umbrella organisations?

(c) Questions concerning quality control in providing nutritional support and outcome measures:

1. Do you have guidelines or standards for nutritional therapy in your institution?
2. On what basis are these guidelines generated?
3. Do you assess the outcome of your nutritional therapy?
4. If yes, which parameters do you assess?
5. Which team member controls the nutritional therapy?
6. How often you assess the outcome parameters of the nutrition support?
7. What has changed since the establishment of a NST in your hospital?
   • Reduced length of hospital stay.
   • Lower complication rate.
   • Less costs.
   • Indications for special diets.
   • More enteral than parenteral nutrition.
   • More parenteral than enteral nutrition.
   • Reduction of morbidity.
   • Reduction of mortality.
   • Nothing.
(59%, n = 51) cared for 100–200 patients. With a longer period of existence of the NSTs increased also the number of the treated hospitalised patients (Fig. 3) excepted the NSTs in Switzerland. The specialties where nutrition care was most frequently were surgery and internal medicine, each 97% (Table 2). The top of the NST work was in enteral nutrition (Fig. 4). A total of 26 (30%) teams must also cover other duties such as for example pain therapy, obesity therapy, diabetes management, and chemotherapy. A list of tasks considered to be within the responsibility of the interviewed NST is shown in Table 3.

The most frequently treatment diagnoses are shown in Fig. 5. None of the teams are deciding independently on the nutrition therapy, 52% (n = 45) are consulting and in 48% (n = 42) the competency for decision is unclear. The NST is called in 29% (n = 25) with the admission of patients and in 71% (n = 62) in case of questions or problems. Thirty-six per cent (n = 54) of the NSTs are requested by doctors or staff on the wards, in 74% (n = 33) exists a combination of third-party request and own initiative of the NSTs. In 59% (n = 51) of all cases the team managers had founded the NST themselves. Seventy-one per cent (n = 62) of the physicians, 40% (n = 35) of the nurses and 69% (n = 60) of the dieticians in the NST held a nutrition-specific additional qualification. The following media were used for continuing education: professional journals (98%, n = 85), congresses (98%, n = 85) and specialised books (83%, n = 72). A total of 5% all physicians (n = 5), 20% (n = 18) of the nurses and 40% (n = 35) of the dieticians were exclusively responsible for the NST.

The working time (hours per week) spent by the team manager for the NST is listed in Fig. 6. The mean working time of the team manager amounted to 5.5 h, at the university hospital 7.2 h, at the teaching hospital 5.1 h and the other hospitals 3.6 h. The financing of the NST physicians was made at 91% (n = 79) by the hospitals, at 7% (n = 6) through funding support and at 2% (n = 2) by a mixed financing. The nurses were paid in 32% (n = 27) via funding support, at 66% (n = 58) by the hospital and at 2% (n = 2) via mixed financing. The majority of the dieticians were paid by the hospital (n = 52, 60%) and at 17% (n = 15) via funding support and at 23% (n = 20) via mixed financing.

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<td>At hospital represented specialities (%)</td>
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Charts of in hospital represented specialities and the need of nutrition care in these specialities. ENT = Ear Nose Throat, n = 87.

Figure 3 The number of treated in-patients per year related to the existence of the nutrition team, D = Germany, A = Austria, CH = Switzerland.

Figure 4 Percentual distribution of tasks of the NST in outpatient and in-patient environment, n = 87, D = Germany, A = Austria, CH = Switzerland.

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financing. The pharmacists in the NST were in 98% (n = 85) financed by the hospitals. 9% (n = 8) of all NSTs had the chance to charge services rendered to third parties (GP, nursing home, etc.). Two teams (2%) carried out an internal quality control. A total of 79% (n = 68) of all NSTs were using guidelines for their clinical work. In 37 teams (43%), these guidelines were generated by the NSTs themselves and not according to the guidelines set by national or international nutrition societies. Seventy-five of the NSTs (86%) indicated that they assess the outcome of their nutritional interventions, in contrast to 14% (n = 16) who do not perform any assessments to monitor the nutritional support interventions. Figure 7 demonstrates the parameters used to assess the outcome of the

Table 3

<table>
<thead>
<tr>
<th>Tasks (%)</th>
<th>D</th>
<th>A</th>
<th>CH</th>
<th>D–A–CH</th>
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<tr>
<td>Creation nutrition regime</td>
<td>100</td>
<td>91</td>
<td>100</td>
<td>97</td>
</tr>
<tr>
<td>Education of healthcare staff in clinical nutrition</td>
<td>100</td>
<td>91</td>
<td>92</td>
<td>94</td>
</tr>
<tr>
<td>Education of patients and relatives</td>
<td>100</td>
<td>91</td>
<td>100</td>
<td>97</td>
</tr>
<tr>
<td>Control the nutrition therapy</td>
<td>100</td>
<td>91</td>
<td>92</td>
<td>94</td>
</tr>
<tr>
<td>Control of laboratory analyses</td>
<td>97</td>
<td>82</td>
<td>67</td>
<td>82</td>
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<tr>
<td>Care for enteral nutrition access</td>
<td>100</td>
<td>91</td>
<td>83</td>
<td>91</td>
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<td>Screening for risk patients</td>
<td>100</td>
<td>100</td>
<td>92</td>
<td>97</td>
</tr>
<tr>
<td>Nutrition round</td>
<td>69</td>
<td>36</td>
<td>50</td>
<td>52</td>
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List of tasks considered to be within the responsibility of the interviewed NST (n = 87).

Figure 5 The most frequently mentioned treatment diagnoses of the NST and the associated average consultations per year, no limitation in voting, n = 87.

Figure 6 Number of the hours per week served for the NST of the team managers broken down according to hospital type, and proportion of the total working time in per cent.

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nutritional interventions (more than one answer was allowed). Thirty per cent \((n = 26)\) of the NST controlled these parameters on a regular weekly basis, whereas 92\% \((n = 80)\) of the NST controlled nutrition therapy as clinically required. The assessment of nutrition-related parameters was mainly done by nurses \((71\%, n = 62)\) and physicians \((71\%, n = 62)\) and in 60\% \((n = 52)\) by the dietitians.

The evaluation of the outcome parameters showed that 83 teams \((95\%)\) found that their activity led to a reduced hospital stay. Reduction in the incidence of complications was stated by 77 teams \((88\%)\). That the reduced complications led to cost savings was believed by 85 teams \((98\%)\). The specific use of special diets and increased use of enteral instead of parenteral nutrition was indicated by 87 teams \((100\%)\) and 73 \((84\%)\), respectively. Increased use of parenteral instead of enteral nutrition was stated by 26 teams \((30\%)\). A reduced morbidity and mortality was indicated by 81 NSTs \((93\%)\) and 29 \((29\%)\), respectively. The incidence of documentation of the outcome parameters were shown in Fig. 8.

Discussion

This study presents so far the first attempt of a description of the qualitative and quantitative situation of the NSTs in D, A and CH. The low number of existing NSTs \((3.2\%)\) is remarkable and similar to an NST incidence of \(2.4\%\) in Germany 1999.\(^{19,20}\) These figures are clearly contrasted by countries where a clinical nutrition therapy is already established.\(^{9,14-18,22}\) Considering the structure and the size of the hospitals, it becomes apparent that primarily university hospitals and academic teaching hospitals with a high number of beds and a wide spectrum of specialties have NST teams in existence for a longer time. In ambulatory enteral nutrition therapy, the older teams were far more active. For the establishing of a NST the absolute number of disciplines has probably a rather secondary role, but disciplines with a high requirement for nutrition-therapeutical interven-
tions, for example surgery, internal medicine, enteral nutrition therapy, neurology must be present in the hospital (Fig. 5). The most frequent treatment diagnoses (Fig. 5) can usually also be allocated to the mentioned disciplines and these indicate already the topics of the work of the NST (diseases of the upper gastro-intestinal tract, neurological dysphagia, tumour diseases). An intensive interdisciplinary work will certainly be aggravated by a fixed affiliation to a certain discipline. A truly independent NST without any affiliation to a discipline has, however, not yet been founded.\textsuperscript{19,20} Future strategies must lead to a clear and permanent anchoring of the clinical nutrition therapy in the health care system. Generally, the NST are only called when problems have occurred with an already initiated nutrition therapy or the nutrition therapy of cachectic patients should be started. A systematic screening of all patients admitted to hospital still remains desirable and should become a part of the work of the NSTs in the future. Nutrition ward rounds, which are established in the USA,\textsuperscript{12–14} are not made in D, A and CH. The funding support financing of the nursing staff on the NST can be understood as an indication for the lacking attention the clinical nutrition therapy receives in the German, Austrian and Swiss health care. Furthermore, the funding support financing is always associated with the risk of depending on the interest of third parties. With a general acceptance of the clinical nutrition therapy, the cost absorbing party and hospital operating institution will also provide the funds for the financing of qualified staff. This lacking acceptance is reflected in the distribution of the workload of the medical staff. Only 5% of all physicians working in a NST were exclusively responsible for this. The majority of the NST physicians are primarily included into the clinical routine in the hospital. This expresses itself in the fact that more than half (52%) of all physicians can spend only up to 5 h per week for NST work. Comparing the hospitals it becomes apparent that the medical staff of university teams can clearly invest more time into the NST than the physicians at smaller primary care hospital. This speaks against the general acceptance of nutrition medicine as component of the structure of primary care. Only few NST members hold a specific additional qualification in the field of nutrition medicine. This is probably due to the lacking offer of a faculty curriculum and approval of the qualification in nutrition medicine by the Health Board. A European solution, e.g. by ESPEN guidelines, would be desirable to enforce standards in nutrition therapy, the faculty and certified continuing education in nutrition therapy.\textsuperscript{23} Due to the need for cost-effective treatment strategies, the reduction in length of hospital stay becomes more and more apparent, whereas homecare treatment gains significance. Besides the need for advanced qualification of health-care professionals involved in nutrition therapy, there is also an increasing demand for quality-assurance programmes evaluating the efficiency of nutritional support services.\textsuperscript{19–21,24} The purposes of these programmes are to monitor and evaluate the quality of the care provided, the pursue opportunities to improve patient care, to identify and correct problems and to save costs. As far as NST are concerned, such a quality-assurance programme would enable the team, to better define the patient populations requiring specialised nutrition support, and to focus on areas where improvement is required. Specific nutrition standards have been developed by the American Society of Parenteral and Enteral Nutrition (ASPEN).\textsuperscript{25} In our survey, 68% of the NSTs used guidelines for application of clinical nutrition. However, in 43% these guidelines were generated by the teams themselves ignoring the already existing standards set by clinical nutrition societies such as ASPEN or ESPEN (American or European Society of Parenteral and Enteral Nutrition). Reasons for not using these standards were not known.

This indicates that there is a demand for national guidelines and quality-assurance plans. Apart from this, each hospital should have guidelines for enteral and parenteral feeding. These protocols should address patient selection, management of treatment, type and amount of nutrients to be infused, and the monitoring of treatment. In particular, in respect of the applied monitoring, in order to evaluate efficiency of therapeutic nutritional interventions, the survey pointed out some inconsistencies. Although NSTs monitor their nutritional intervention by documenting body weight and other nutritional status related parameters, only 30% of the NST do this on a regular weekly basis as compared to the majority of 92% NSTs controlling these parameters as clinically required. However, it is surprising that 54% of the NSTs had no or an incomplete documentation of the evaluated outcome parameters. Without a constant documentation there is no ability for an internal or external quality control as well as for a Diagnose Related Groups (DRG) conformable calculation of the added performance. This lack of documentation is also the reason for the not utilisable impact on outcome parameter and therefore of the bad evidence of nutritional intervention.
Procedures in clinical nutrition have gained both invasiveness as well as complexity. Thus, improved education of professionals and their alliance in hospital based NST is demanding. The data from this survey not only indicate that in D, A and CH the number of NST has to be increased, but also that the efficiency of their work performance has to be optimised. This has to be considered as an indispensable precondition for both improvement of clinical nutrition support and funding.

The standardised European NST would be the ideal tool to fulfil the resolution of the Council of Europe, concerning the food and nutritional care in hospitals and the prevention of under-nutrition.

Despite of lacking infrastructure and moderate acceptance of their work, the currently existing NST in D, A and CH have made a lot of pioneer work in the field of clinical nutrition. However, when making a critical comparison to the NST in the USA or Scandinavia, their work is not yet standardised and enough established to be able to compete. In recapitulation and in comparison to the NSTs in North America, the UK or Scandinavia, the following items are desirable for further establishing NSTs and thus nutrition medicine in D, A and CH:

- Establishing of independently operating NSTs.
- Full financing of staff costs by the hospital operating party.
- Full time employment of all members of the NST.
- Throughout D, A, CH homogenous establishing of NSTs.
- European wide (ESPEN guideline) facultative and standardised qualification and continuing education for physicians, nursing staff, dieticians, and pharmacists.
- A Diagnosis-Related-Group (DRG) relevant quality control.

It is the task of all institutions and professional societies involved in health care to improve this situation and give clinical nutrition therapy in D, A and CH an established place in the future.

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References


