

## IMPLEMENTATION OF NURSING DIAGNOSES AND CARE AFTER NASOENTERAL TUBE PLACEMENT IN AN EMERGENCY SERVICE\*

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**ABSTRACT:** The objective of the present study was to identify the frequency of nursing diagnoses and care regarding the placement and maintenance of nasoenteral tubes. A prospective cohort study was carried out with adults in the emergency unit of a teaching hospital in Southern Brazil from April to July 2015. The patients were followed up from the indication to the use of nasoenteral tubes. Medical records were revised to identify nursing diagnoses and care within 24 hours after the procedure. Of the 150 tube placement procedures, 20.7% (n=31) had some related nursing diagnosis. "Imbalanced nutrition: less than the body requirements" was the most common diagnosis (n=22, 71%). In 64 (42.7%) of the procedures, there was prescription of at least one care. "Implementing care with NET" was prescribed 41 times, isolated or combined. A greater proportion of care was found when there were implemented nursing diagnoses ( $p<0.001$ ). Although the use of nasoenteral tubes demands special care, the implementation of nursing diagnoses and care in emergency services is still low.

**DESCRIPTORS:** Enteral Nutrition; Gastrointestinal Intubation; Nursing Diagnosis; Emergencies; Nursing Care.

### IMPLEMENTAÇÃO DE DIAGNÓSTICOS E CUIDADOS DE ENFERMAGEM PÓS SONDA NASOENTERAL EM SERVIÇO DE EMERGÊNCIA

**RESUMO:** O objetivo deste estudo foi identificar a frequência de diagnósticos de enfermagem e cuidados relacionados à inserção e manutenção de sonda nasoenteral. Coorte prospectiva de adultos de uma emergência, em hospital universitário do sul do Brasil, entre abril e julho de 2015. Os pacientes foram acompanhados da indicação ao uso da sonda nasoenteral. Prontuários foram revisados para identificar diagnósticos de enfermagem e cuidados nas 24 horas após a inserção. Das 150 inserções de sonda, 20,7% (n=31) tiveram algum diagnóstico de enfermagem relacionado. "Nutrição desequilibrada: menos que as necessidades corporais" foi o mais frequente (n=22, 71%). Em 64 (42,7%) do total de inserções houve prescrição de pelo menos um cuidado. "Implementar cuidados com sonda" foi prescrito 41 vezes de forma isolada ou combinada. Houve maior proporção de cuidados quando havia diagnósticos de enfermagem implementados ( $p<0,001$ ). Observa-se que, apesar da utilização da sonda nasoenteral exigir diferentes cuidados, a implementação de diagnósticos de enfermagem e cuidados em emergência ainda são baixas.

**DESCRIPTORES:** Nutrição enteral; Intubação gastrointestinal; Diagnóstico de enfermagem; Emergências; Cuidados de enfermagem.

### IMPLEMENTACIÓN DE DIAGNÓSTICOS Y ATENCIÓN DE ENFERMERÍA POSTERIOR A SONDA NASOENTERAL EN SERVICIO DE URGENCIAS

**RESUMEN:** Se objetivó identificar frecuencia de diagnósticos de enfermería y cuidados relacionados a inserción y mantenimiento de sonda nasoenteral. Cohorte prospectiva de adultos en servicio de emergencias de hospital universitario del sur de Brasil, de abril a julio de 2015. Fueron seguidos pacientes con indicación de uso de sonda nasoenteral. Se revisaron historias clínicas para identificar diagnósticos de enfermería y atención en 24 horas posteriores a inserción. De 150 inserciones de sonda, 20,7% (n=31) tuvieron diagnóstico de enfermería relacionado. El más frecuente fue "Nutrición desequilibrada: inferior a necesidades corporales" (n=22, 71%). En 64 (42,7%) inserciones existió prescripción de al menos un cuidado. "Implementar cuidados con sonda" fue prescripto 41 veces, solo o combinado. Hubo mayor proporción de cuidados existiendo diagnósticos de enfermería implementados ( $p<0,001$ ). A pesar de que la utilización de sonda nasoenteral exige cuidados diferenciales, la implementación de diagnósticos de enfermería y cuidados en urgencias son aún bajas.

**DESCRIPTORES:** Nutrición Enteral; Intubación Gastrointestinal; Diagnóstico de Enfermería; Urgencias Médicas; Atención de Enfermería.

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## ● INTRODUCTION

The indication of nasoenteral tubes (NET) for administration of diets, medications, or water may occur at any time during hospitalization<sup>(1)</sup>. However, in a study<sup>(2)</sup> carried out with institutionalized elderly people regarding the need for enteral nutrition therapy (ENT) over one year, the authors pointed out that about two-thirds of indications of NET or percutaneous gastrostomy occurred in acute situations and in emergency environments.

In settings of great demand for care, such as emergencies, where overcrowding is constant<sup>(3)</sup>, a greater management of nursing care with regard to planning, implementation, supervision, and evaluation of actions related to the use of NET is required. For nursing teams, especially nurses, there are specific regulations for care, which include from insertion up to maintenance of nasoenteral tubes<sup>(4-5)</sup>.

In addition to following the best practice for care with NET, nurses make use of nursing care systematization as a guiding principle in the organization of their work, enabling the operationalization of the nursing process (NP).

The NP "is a methodological instrument that guides the nursing professional care and documentation of the professional practice." Its objectives are to identify the main care needs, as well as to support the best interventions to promote, prevent, or recover the health of individuals, families, and communities. After identifying real or potential problems, nurses make use of standardized classifications or diagnostic nursing concepts<sup>(6)</sup> that will support the choice of care or appropriate interventions to achieve the results expected.

Among the most-used terminologies, the North American Nursing Diagnosis Association International (NANDA-I)<sup>(7)</sup> gathers the greatest number of diagnostic titles. Nursing diagnoses (ND) also contemplate individuals, families, and societies, covering a great number of biopsychological and spiritual needs. Implementing ND accurately is essential for successful care planning and organization.

In this context, there is a lack of studies with a focus on the use of ND for patients who use enteral nutrition, especially those who need feeding devices. After extensive review on this theme, it was evidenced that most studies show a prevalence of different ND in specific profiles of patients, in which those related to nutrition emerge among the most common diagnoses<sup>(8-10)</sup>. However, studies whose objective was to identify ND regarding the dimension nutrition<sup>(11-12)</sup> are limited to patients with exclusively oral feeding.

In addition, in records of nurses, ND and care regarding nutrition seem to be less common in the hospital where the present study was conducted, in which the terminology NANDA-I has been used for decades. In a study<sup>(12)</sup> that compared reports of surgical patients regarding their acceptance of oral diets with reports in medical records (evolution in medical records, nursing diagnoses, and prescriptions), less than 10% presented some ND related to nutrition and care prescription regarding their nutritional status.

There are gaps in the literature in providing support for safe practices, especially with regard to the adoption of appropriate nursing diagnoses and care adjusted to the needs of the profile of patients who are users of NET or other feeding devices. The ND included in the NANDA-I related to the nutritional needs or safety of patients who make use of feeding tubes seem to be little explored in daily care routines or clinical practice, as well as in the context of the study.

Therefore, the objective of the present study was to identify the frequency of nursing diagnoses and care regarding the placement and maintenance of nasoenteral tubes, implemented by healthcare nurses of an emergency service within the first 24 hours after the placement of the tube, and describe them.

## ● METHOD

This was a prospective cohort study carried out in the medical emergency service of a teaching hospital in Southern Brazil, from April to July 2015. In the hospital where the present study was

conducted, the nursing process is carried out in all sectors and is grounded in the diagnostic classification NANDA-I<sup>(7)</sup>. All patients admitted undergo anamnesis, assessment of identified or potential problems, implementation of ND, and care prescription.

The evaluation of patients occurs during all work shifts. However, the choice of nursing diagnoses and care prescription occur once a day, or when there is a need for inclusion/exclusion of ND due to a change in a patient's condition. The entire process is recorded in the electronic medical record, which enables investigation in a fast and safe way.

All adult patients (aged 18 years or older) who had an indication of NET placement for feeding, water, or medications at the time of data collection were followed up. Patients who required another type of enteral tube, that not inserted by the nostril, such as ostomies, and those who died within less than 24 hours after insertion of the tube were excluded.

The patients were followed up at the time of prescription of NET placement up to its effective use for therapy administration (diet, water, or medication) by a team of nurses and nursing students who were previously trained.

The patients' medical records were revised for identification of nursing diagnoses related to the dimensions Nutrition and Safety and Protection (this last for including the ND "risk of aspiration," in which enteral nutrition and enteral tubes are risk factors), in addition to care chosen by healthcare nurses within 24 hours after NET placement. The researchers did not interfere with the choice of ND. In addition, first observations, in which the effect of the presence of researchers could change the routine of implementation of ND, were carefully discarded from analysis.

Data collection occurred during all work shifts, as well as all weekdays and weekends. The researchers developed a data collection instrument based on publications with a focus on the work process of nurses, in addition to national and international guidelines of best practice in enteral nutrition. The instrument included patient data, the work process of the nursing team, and data regarding placement, maintenance, and administration of medical therapy through the tube. This instrument was tested prior to the beginning of data collection for possible adjustments.

Characteristics and distribution of variables were inspected for data analysis. Normality of continuous variables (number of ND and care) was tested by means of the Shapiro-Wilk test. The frequency of diagnosis and care was described by means of absolute value of numbers (ratio). Comparison of the amount of care in the group of patients with and without ND was tested by means of the Wilcoxon test. Comparison of the proportion of patients with care among those with and without ND was tested by means of a chi-square test with Yates' correction. The Statistical Package for the Social Sciences 20 (SPSS) was used for all data analysis.

The results of the study were presented following recommendations suggested by the Strengthening the Reporting of Observational studies in Epidemiology (STROBE)<sup>(13)</sup> and respected the guidelines and regulatory norms of studies involving human beings<sup>(14)</sup>. Because this was an observational study, there was no interference on the part of the researchers in care routines or in the choice of ND and care. The ethical and methodological aspects of the study were approved by a research ethics committee under protocol no. 976.105.

## ● RESULTS

One-hundred and fifty tube placements were carried out in 115 patients. Of all patients, 15.4% (n=18) inadvertently removed the tube once or more than once during their hospitalization in the emergency service, which required replacement. In addition, 55 (48%) received an indication for using the tube 24 hours after admission in the emergency service. The mean age of the patients was 65±17.2 years. Other characteristics and reasons for indication of NET are described in Table 1.

Table 1 - Characteristics of patients who used a nasoenteral tube in an emergency service. Porto Alegre, Rio Grande do Sul, Brazil, 2016

Characteristics	N (%)
Male gender	60 (52.7)
Reason for the admission in the service	
Neurological problems	56 (48.7)
Respiratory problems	26 (22.6)
Gastrointestinal problems	22 (19.1)
Other	11 (9.6)
Reasons for NET* indication	
Sensory impairment	60 (40)
Loss of appetite or dysphagia	57 (38)
Invasive or non-invasive MV	22 (14.7)
Malnutrition	6 (4)
Other	5 (3.3)

Source: research data, 2016.

NET – nasoenteral tube; MV – mechanical ventilation

\*The reasons for indication of tube placement were accounted for by the total of insertions (n=150), because some patients who required replacement had, according to medical records, different reasons for indication from the initial reason

Only in 20.7% (n=31) of the insertions was some ND found related to the placement, maintenance of the nasoenteral tube, or enteral nutritional therapy (ENT) implemented 24 hours after the placement of the tube. In insertions with ND, “imbalanced nutrition: less than the body requirements” was the most common diagnosis (71%, n=22) (Table 2).

Table 2 - Nursing diagnoses prescribed within 24 hours after insertion of a nasoenteral tube in patients of an emergency service. Porto Alegre, Rio Grande do Sul, Brazil, 2016.

Nursing diagnoses	N (%)
Imbalanced nutrition: less than the body requirements	22 (71)
Impaired swallowing	5 (16.1)
Feeding self-care deficit	4 (12.9)

Source: research data, 2016.

Of 150 insertions, there was a care prescription in 64 (42.7%). A single instance of care related to nutrition (62.5%, n=40) was often prescribed, followed by two instances of care (21.9%, n=14), and three or more instances of care (15.6%; n=10). The most prescribed care, isolated or combined, was “implementing care with NET” (Table 3).

Table 3 - Nursing care prescribed within 24 hours after insertion of a nasoenteral tube in patients of an emergency service. Porto Alegre, Rio Grande do Sul, Brazil, 2016 (continues)

Description of nursing care	N (%)
Implementing care with NET	41(39.9)
Communicating acceptance of diet	18 (17.8)
Observing acceptance of diet	14 (13.6)

Evaluating condition to swallow	7 (6.8)
Recording aspect and volume of vomit	6 (5.8)
Encouraging dietary intake	6 (5.8)
Checking weight	3 (2.9)
Giving guidance with regard to NPO status	2 (1.9)
Encouraging adherence to dietary control	2 (1.9)
Respecting limitations of the patient with nutrition	1 (0.9)
Giving guidance on the importance of dietary intake	1 (0.9)
Recording acceptance of diet	1 (0.9)
Staying with the patient during meals	1 (0.9)
<b>Total</b>	<b>103 (100)</b>

Source: research data, 2016.  
NET – nasoenteral tube; NPO – nothing by mouth

The median number of instances of care prescribed was higher when there was ND prescription related to nutrition (2; IQR: 1-3 versus 0; IQR: 0-1;  $p < 0.001$ ). Similarly, the proportion of care was higher in the presence of diagnoses (87.1% versus 31.1%;  $p < 0.001$ ). It is worth mentioning that there was care prescription to patients without established diagnoses ( $n=37$ ). The opposite, presence of ND without care prescribed, was also observed ( $n=4$ ) (Chart 1).

Chart 1 - Number of insertions with or without nursing diagnoses and, with or without related care after placement of the nasoenteral tube in patients of an emergency service. Porto Alegre, Rio Grande do Sul, Brazil, 2016

<b>ND \ Care</b>	<b>With ND</b>	<b>Without ND</b>	<b>Total</b>
<b>With care</b>	27	37	64
<b>Without care</b>	4	82	86
<b>Total</b>	31	119	150

Source: research data, 2016.  
ND – nursing diagnosis

## ● DISCUSSION

Nursing diagnoses and care related to placement, maintenance of the nasoenteral tube, or enteral nutritional therapy were little implemented in the care routine of the emergency service. In the presence of ND, there was more care prescription. However, these stages of the nursing process, which should be linked, still occur separately.

Specific studies on NP regarding care with nasoenteral tube or ENT, especially for patients admitted to emergency services, are not found in the literature as a whole, a fact that hinders a comparison of the findings of the present study. A single study<sup>(11)</sup> with the aim of identifying the implementation of ND in the dimension of nutrition, according to NANDA-I Taxonomy II, was carried out with elderly people in the context of primary health care. The most common diagnosis among the 52 elderly people was “imbalanced nutrition: less than the body requirements” (32.7%). In spite of the large proportion of patients with dysphagia (19.2%) and incomplete dentition (96.2%), the ND “impaired swallowing” was established for only 19.2% of the patients. Similarly, in the present study, the ND “imbalanced nutrition: less than the body requirements” was the most common diagnosis, while “impaired swallowing” was less implicated.

In a retrospective study<sup>(8)</sup> in the context of care for elderly people hospitalized in inpatient care units, 1,665 nursing records were evaluated, in which, similarly, the ND “imbalanced nutrition: less than the body requirements” emerged as the second most prescribed diagnosis, preceded by “self-care deficit for bath/hygiene.” In the present study, loss of appetite was the most common etiology for ND related to nutrition. It is worth mentioning that, although the study has evaluated a large number of records, the use of feeding tubes was not reported.

In this respect, it is possible to notice that the ND identified in the present study and other studies abovementioned<sup>(8,11)</sup> are strongly associated with the reasons for indication of tube placement (sensory impairment, loss of appetite, malnutrition, and dysphagia). However, they are little discriminatory of the specific needs of patients who already make use of NET, considering that their implementation occurred in a small percentage of insertions. Particularly in this context, the applicability of ND, which must be a clear connection between the needs of patients and different care required to meet them<sup>(15)</sup>, becomes impaired by defining characteristics and risk factors not sufficiently discriminatory for the adoption of the most accurate ND.

When the nursing process is evaluated in the context of emergencies and urgencies, care provided in emerging risk situations is a priority. Establishing ND able to guide care under these conditions is also a priority. In a study<sup>(16)</sup> that evaluated the most-used ND in emergencies, consensus among experts showed that 57.1% of them referred to the dimension Safety and Protection, followed by Activity and Rest (28.6%), and the dimension Elimination and Exchange (14.3%). In those ND of the dimension Safety and Protection, the “risk of aspiration” was not mentioned, although all experts had experience with direct care for patients or experience in teaching and research on the theme. Nursing diagnoses regarding nutrition were not mentioned. This condition may be partially explained by the priority attributed to demands other than ENT through tubes.

Nonetheless, it is necessary that other care needs that emerge with the evolution of patients, even after stabilization of the most acute condition, are identified by means of ND that guide the establishment of specific care for each patient<sup>(16)</sup>. Therefore, almost half of the patients in the present study had an indication for the use of a tube after 24 hours of stay in the emergency service, suggesting that their immediate demands had already been met and that they remained in the emergency service waiting for hospitalization or hospital discharge. Even so, the implementation of related ND was not expressive, as already mentioned.

In the emergency service where the present study was conducted, the work of nurses is directed by NP, with features in the medical record system for the record of all stages of the process. Nevertheless, the implementation of ND and care for NET users is still less common, which is not a feature of the institution where the present study was conducted. In a retrospective study<sup>(17)</sup> that identified the ND implemented to elderly people hospitalized in clinical, surgical, and emergency care hospitalization units, “imbalanced nutrition: less than the body requirements” was implemented in 54% of the participants, whereas “risk of infection” and “risk for falls” were the most prevalent diagnoses (100% and 75%, respectively).

In the evaluation of nursing care, although admittedly any possibility of ND and care that could have interface with the use of the nasoenteral tube, ENT, or risk of aspiration, the percentage of prescribed care was also low. The proportion of patients with only one instance of care established stands out. Although “implementing care with NET” was the most common nursing care, other actions related to the maintenance and use of tubes are recommended in the literature<sup>(4-5,18)</sup>.

Prioritizing the safety of users of feeding devices, the American Society for Parenteral and Enteral Nutrition (ASPEN) published recommendations for safe practice in ENT, reinforcing other basic care, such as hand hygiene before the manipulation of diets and tubes, prescription and labelling checking, maintenance of the headboard in a raised position, and revision of connections<sup>(18)</sup>.

In a study<sup>(19)</sup> that evaluated the knowledge of nursing teams (nurses, technicians, and aides) with regard to enteral nutrition and the conformity of their actions in care practice, discrepancies were found. Of the 21 professionals who participated in the study, only 56% reported the importance of keeping headboards in a raised position during the administration of diets; however, all professionals maintained this care. Nevertheless, no professional established communication with patients or

not informing them about the installation of the diet; 83% did not undertake any test to check the positioning of the tube; no professional carried out hand hygiene before manipulating and installing the diet; and only 28% maintained some record regarding the ENT or maintenance of the tube.

In the present study, agreement between the implementation of ND and care regarding nutrition or NET use and its effective undertaking by nurses and nursing technicians was not evaluated. However, the accurate prescription of ND and choice of appropriate care for this profile of patients are believed to contribute to the improvement of the quality and safety of care provided to users of feeding devices.

In this respect, the present study also evaluated the association between the presence of ND regarding nutrition or use of feeding devices and care prescription. It is worth mentioning that, although more prescribed care for patients with ND was found, patients with diagnoses and without specific nursing care and vice versa were also identified.

Even if the purpose of the NP consists of a facilitating instrument able to direct care<sup>(20)</sup>, inconsistencies or incompleteness among its stages are still identified. The same occurs in other institutions, as shown in a retrospective study<sup>(21)</sup> carried out in a medium-sized hospital in the state of Rio Grande do Sul. The authors identified the absence of ND when revising medical records. However, other stages of the process (medical history, physical examination, care prescription, and evolution in medical records) were present in most records evaluated.

Finally, from the clinical perspective, it is worth mentioning that the diagnosis "risk of aspiration" was not implicated within 24 hours after NET placement, because the presence of this device and need for enteral nutrition are risk factors described in the NANDA-I Taxonomy II<sup>(7)</sup>.

A study<sup>(22)</sup> carried out in an adult intensive care unit of a hospital in Northeastern Brazil evaluated the presence of the ND "risk of aspiration" and its risk factors. Of the 86 patients selected, half presented the diagnosis; in these, the authors identified 17 risk factors of the possible 22. In only eight was an association shown between the presence of ND and the risk factor in question: gastrointestinal tube ( $p=0.000$ ) and tube feeding ( $p=0.000$ ) were among them. In addition to these two, the risk factors impaired swallowing ( $p=0.000$ ), reduced level of consciousness ( $p=0.000$ ), presence of intratracheal tube ( $p=0,000$ ), secondary events related to the treatment ( $p=0.001$ ), delayed gastric emptying ( $p=0.006$ ), and increased gastric residue ( $p=0.006$ ) were also associated with the ND. In the population of the present study, in addition to the use of NET (as an inclusion factor), characteristics such as sensory impairment, dysphagia, and mechanical ventilation (invasive and non-invasive) were observed, present in most indications of feeding devices. These conditions, even isolated from the NET use, would justify the adoption of a ND of risk.

As a possible limitation of the present study, the number of reports and accomplishments in a single service may restrict the generalization of the data. Nevertheless, it was the first to present a prospective design of follow-up of patients in the entire process between indication and NET use in emergency service.

## ● CONCLUSION

The use of a nasoenteral tube for administration of therapy requires a different kind of care. However, the implementation of nursing diagnoses and related care is still low in emergency services. The ND prescribed 24 hours after insertion of the NET were "imbalanced nutrition: less than the body requirements", "impaired swallowing," and "feeding self-care deficit" However, the most prevalent care was "implementing care with NET."

A relationship was also found between the presence of ND and the largest number of cases of implemented care, showing the importance of the choice of accurate diagnoses so that care planning is more comprehensive. In addition, the ND "risk of aspiration" must be explored by healthcare nurses, because it may help in the prevention of one of the most feared complications for patients who use feeding tubes: aspiration.

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