

FEDERAL UNIVERSITY OF PARANÁ

**Support Manual to Quality Indicators  
in Home Enteral Nutrition  
(QUALIHEN)**

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## **Introduction**

An indicator identifies and calls attention to a subject or result that should be revised. Therefore, it aims to monitor the quality of the services offered when related to health, generating relevant information and supporting managerial analyzes (GRATERON, 1999; LUONGO et al, 2011). Getting acquainted with the reality of the service offered is indispensable to plan, organize, control and coordinate the actions and decisions, benefiting the patient that will access a standard quality control service (MALIK e SCHIESARI, 1998; LUONGO et al, 2011).

The present manual was developed with the objective of subsidizing the understanding and applicability of quality indicators in home enteral nutrition (HEN) therapy. To build the instrument with quality indicators (QUALIHEN), a data survey about the practices of home enteral nutrition therapy was performed.

That survey evolved two structured databases: the first counted on information of 1255 users who have already been on HEN in the city of Curitiba – PR and were evaluated and followed by nutritionists from the Basic Health Units (BHU) and the Municipal Secretary of Health (MSH) from 2005 to 2016, since the implementation of the Nutrition Assistance Program for People with Special Needs for Food-

The second database counted on information about 150 users who were evaluated in 2017 by the study group named Brazilian Home Enteral Nutrition (BHEN), as part of the project “Nutrition Assistance Program for People with Special Needs for Food (PAN): epidemiological, nutritional and economic -financial analyses, and hygienic-sanitary aspects of enteral formulas handled in households in Curitiba – PR”

After that database survey involving data associated with care practices, a data survey about the subject in the scientific literature was performed with the objective of using scientific evidence and relevant practices to prepare the items that composed the instrument. To do so, a systematic search of scientific papers about home enteral nutrition therapy was carried out on relevant databases such as PubMed, Scielo, Medline searching Portuguese and English words.

Once the data survey of the main points about the topic were carried out, the categories and items of the instrument were chosen according to the objective of the research. Aiming to be a support material, a manual to help in the application of the

instrument (QUALIHEN) with quality indicators was developed. The manual brings out some points that will help in understanding each item of the instrument.

The category A and its items are presented in a table with the following topics: strategic objective, justification, data source, frequency, responsible for information and responsible for decision making (Figure 1). The categories B and C present the following topics: strategic objective, justification, formula, unit of measurement, data source, frequency, goal, responsible for information and responsible for decision making, once those categories have a frequency calculation to know the goal compliance established in the indicator with the care provided in the service (Figure 2).

**A. CATEGORY OF THE INDICATOR**

**A.1. INDICATOR**

Strategic objective	Appoints what the indicator intends to demonstrate when used in the care practice.
Justification	Appoints the importance for the service to determine and understand the indicator in the care practice based on scientific literature.
	Demonstrates where determined information can be found (patients' chats, team manuals, etc)
Data source	The responsible for the indicator information is defined according to specific attributions of each profession or assigned to the team according to the purpose.
Frequency	
Responsible for information	
Responsible for decision-making	Indicates who is the responsible for decision-making about the information found in determined indicator

Figure 1: Layout of Indicators (QUALIHEN) belonging to category A

**B. CATEGORY OF THE INDICATOR**

**B.1. INDICATOR**

Strategic objective	
Justification	
Formula	Appoints the formula that should be used to calculate the goal for the indicators of the categories B and C.
Unit of measurement	Indicates the unit of measurement that should be considered in the result of the formula.
Data source	
Frequency	Defines the frequency in which the indicator must be applied in the service.
Goal	
Responsible for information	The suggested goal value indicates how close the result of the calculation and the information of the service must be so that the assistance is considered with quality. Besides, it indicates which items are likely to be restructured for the goal to be achieved. The values are based on scientific literature and professional experience in HEN field.
Responsible for decision-making	

Figure 2: Layout of Indicators (QUALIHEN) belonging to categories B and C

The goals proposed were defined according to the experience of nutritionists, doctors and nurses in care practice previously consulted in the construction phase. Both the instrument and the goals were inspired by quality indicators in nutrition therapy defined for hospital setting proposed by the task force of the *International Life Sciences Institute* - ILSI of Brazil. The acronyms, abbreviations and definitions of the terms used in this manual are presented below.

## **Abbreviations and acronyms**

QoL	Quality of life
RDC	Resolution of the Collegiate Board of Directors
FNS	Food and Nutrition Security
HEN	Home Enteral Nutrition
ENT	Enteral Nutrition Therapy
QUALIHEN	Quality Indicators in Home Enteral Nutrition

## Definitions

**Capable caregivers:** person with or without family bond that helps the user in his daily activities and in his care process. Capable refers to the ability in which the caregiver takes in, reproduces and keeps the care.

**Enteral preparations with foods:** it is a preparation with foods (cereals, legumes, meat, vegetables, fruits, dairy, eggs, sugar and oil) that needs a suitable combination of foods to be complete and nutritionally balanced.

**Mixed enteral diet:** it is composed by preparations with foods and added with nutrient modules of specific nutrients or commercial formulas.

**Guideline:** information that defines and regulates a pathway to be followed. A guideline has as conceptualization instructions or indications at times that a plan or even an action must be done.

**Technical datasheet:** form that brings specifications of the preparations. The technical datasheet includes data such as prescription, presentation standard, components, nutritional facts, amount per serving, cost and other pertinent information.

**Commercial enteral formula:** powder for reconstitution, semi-finished liquids or ready-to-use preparations with nutritional composition defined chemically and processed industrially.

**Continuing education in health:** political-pedagogical strategy that brings needs of the work process in health and incorporates education, health care, system management and social participation and control in the daily work, with the purpose of modifying this context.

**Multiprofessional team in nutrition therapy:** group formally constituted by at least one professional from each category listed below: doctor, nutritionist, nurse and pharmacist. It may include professionals from other categories that have specific training for nutrition therapy practice.

**Manager:** person who plans, controls, organizes and leads in an efficient and effective manner the financial resources, human resources and materials with the objective of achieving the defined goals in an organization, project or development, using technical and conceptual methods.

**Goal:** specific determined targets to achieve and objective that has been established. It involves numerical data in its expression.

**Nutrition therapy:** therapeutic actions used with the aim of recovering or keeping the nutritional status of the patient. It can happen through enteral, parenteral or even oral route.

**Enteral nutrition therapy:** therapeutic actions used with the aim of recovering or keeping the nutritional status of the patient by using enteral nutrition (EN).

## A. INDICATORS OF INITIAL EVALUATION FOR SITUATIONAL SCREENING

### A.1 Does the service have any record or control of the number of users on HEN?

Strategic objective	To control the number of individuals on HEN for a proper articulation of actions.
Justification	Once planning is an essential tool for HEN, it is necessary a data documentation that can look on important information such as: number of people on HEN assisted by health staff per year; number of hospital admissions per year, number of treatment discontinuation per year (discharge, death, address change).
Data source	Control manuals from the multiprofessional team responsible for HEN
Frequency	Annual
Responsible for information	Multiprofessional team
Responsible for decision-making	Manager responsible for HEN
Reference	Schieferdecker, M.E.M. <i>et al.</i> , 2013

### A.2 Does the service have an organization for supplying/dispensing nutritional formulas and supplies to HEN?

Strategic objective	To check the necessity of organizing the delivery and dispensing of industrialized formulas and supplies to HEN at a municipal level.
Justification	Faced the necessity to ensure the assistance of HEN users' real needs, as well as the adequate use of public resources, it is necessary to implement a process of regulation, supervision, control and evaluation of commercial formulas supply and supplies, being these: bottles, gravity feeding sets, syringes and enteral feeding tubes.
Data source	Registration of the implementation of the suppling / dispensing sector.
Frequency	Annual
Responsible for information	Manager responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Dinenage, S. <i>et al.</i> , 2015

### A.3 Does the city estimate of costs with HEN?

Strategic objective	To know the resource value that should be allocated to HEN in the municipality.
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Justification	The HEN's input cost estimate is critical to ensure the public resources are used correctly. The budget planning allows the organization of purchase bidding processes in a transparent manner, thus ensuring the acquisition of products with the best cost benefit for HEN continuity.
Data source	Municipal budget spreadsheets
Frequency	Annual
Responsible for information	Manager responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Dinenage, S. <i>et al.</i> , 2015

#### **A.4 Is there any money destined for costing the enteral nutrition in the municipality?**

Strategic objective	To verify the existence of specific budget to be destined for enteral nutrition
Justification	In Brazil, there is no specific funding for HEN. Also, the cost of therapy usually is not paid by the state and, therefore, it ends up being funded entirely by the municipality of the user. Therefore, municipalities should plan and include expenses with HEN in their budget planning.
Data source	Municipality budget planning
Frequency	Annual
Responsible for information	Manager responsible for HEN
Responsible for decision-making	Sector responsible for the budget of the city.
Reference	Souza, L.R.M.; Will, K.L., 2017

#### **A.5 Is there a multiprofessional team in the service according to the current resolution? (RDC n° 503 of May 27, 2021 – Brazilian resolution)**

Strategic objective	To verify the existence of a multiprofessional team responsible for HEN in accordance with the current legislation.
Justification	The RDC N° 503 resolution, of May 27, 2021, brings as a minimum requirement the presence of a multiprofessional team to be working with HEN. This team must be formed by at least one professional from the following categories: physician, nutritionist, nurse and pharmacist, and it may include professionals from other categories, as long as they are qualified and with specific training for the practice of nutrition therapy. In addition, it is responsibility of the multiprofessional

	team to establish and plan technical-administrative guidelines that should conduct the activities, as well as to ensure the fulfillment of the duties of each team member.
Data source	Human resource management
Frequency	Annual
Responsible for information	Manager responsible for HEN
Responsible for decision-making	Manager responsible for health care assistance.
Reference	Brasil, 2021

#### **A.6 Are the professionals trained in HEN periodically?**

Strategic objective	To identify the need for training periodically to specialize and improve HEN service.
Justification	The basic professional qualification alone is not able to address the particularities of EN at home. Therefore, in order to achieve effectiveness in the service provided, the constant training is necessary.
Data source	Human resource management
Frequency	Annual
Responsible for information	Responsible for the permanent education of HEN professionals.
Responsible for decision-making	Manager responsible for HEN
Reference	Dinenage, S. <i>et al.</i> , 2015

#### **A.7 Does the service have necessary equipment to carry out the anthropometric evaluation properly? (scale, stadiometer or tape measure, adipometer)**

Strategic objective	To check the necessity of buying / replacing materials needed for anthropometric evaluation of users on HEN properly.
Justification	For the prescription and monitoring of HEN it is necessary to perform nutritional assessment systematically. Considering the large number of individuals bedridden on HEN, it is necessary that the assessment is carried out correctly, being these dependent on adequate and calibrated equipment.
Data source	Multiprofessional team responsible for HEN
Frequency	Annual
Responsible for information	Multiprofessional team responsible for HEN

Responsible for decision-making	Manager responsible for HEN
Reference	Writing Group of the Nutrition Care Process/Standardized Language Committee, 2008

**Does the service have a protocol for:**

**A.8 Defined criteria to indicate the HEN?**

Strategic objective	To establish a protocol with defined criteria to indicate the HEN.
Justification	The following are indicators for EN: insufficient oral intake (supplying less than 60% of the energetic recommendation) and specifications related to the underlying disease and the clinical stability of the user. Likewise, to indicate HEN minimum conditions are required at home such as: hygiene, adequate area for handling and storage of the enteral nutrition, treated water, electric light and adequate cooling. With clear and objective indications established, it is possible to use the resources rationally (products and inputs destined to HEN) and adapt it to the established route.
Data source	Work manuals from the multiprofessional healthcare team responsible for HEN
Frequency	Annual
Responsible for information	Multiprofessional healthcare team responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Gramlich, L., 2008 Cawsey, S.I.; Soo, J.; Gramlich, L.M., 2010

**A.9 Specifications for nutrition assessment of individuals on HEN?**

Strategic objective	To establish protocol with the standardized techniques for performing the nutritional assessment of individuals on HEN
Justification	The nutritional assessment aims to identify possible nutritional changes in people, as well as following their evolution, besides enabling the planning and the monitoring of the dietetic intervention according to people's necessities. The nutritional assessment can be performed through objective and subjective data including person's global history, anthropometry, laboratory evaluation and physical examination. The frequency of nutritional assessment of users on HEN should be assessed by the team according to the clinical conditions of the individual. Periodic visits should happen with a minimum frequency of three months.

Data source	Work manuals from the multiprofessional team responsible for HEN
Frequency	Annual
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Brasil, 2015

**A.10 Specifications for food and nutrition security (FNS) assessment that include periodicity of achievement in users on HEN?**

Strategic objective	To standardize the evaluation of food and nutrition security of the individuals on HEN in the service.
Justification	According to the Brazilian federal law 11.346 / 2006 in art. 3 and 4, the Food and Nutrition Security (FNS) is defined as the right of all to regular and permanent access to quality food in enough quantity, without compromising access to other essential needs. It covers the promotion of health, nutrition and food for the population, including specific population groups. Therefore, knowing the home reality, such as access, acquisition and availability of food and financial resources is fundamental. Doing so, it is possible to articulate intersectoral actions when necessary, with the purpose of guaranteeing for the user his right to adequate food without the rest of the family being unassisted, since FNS level interferes in the nutritional status of the patient negatively. Socioeconomic and cultural, clinical-nutritional and hygienic-sanitary data can be considered to evaluate FNS. Because HEN affects the degree of SAN, it is critical that its evaluation are performed periodically with a minimum interval of three months.
Data source	Work manuals from the multiprofessional healthcare team
Frequency	Annual
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Multiprofessional team responsible for HEN
Reference	Brasil, 2006

**A.11 Specifications that include the periodicity for conducting quality of life evaluation of individuals on HEN?**

Strategic objective	To standardize in the service the periodic accomplishment of the quality of life assessment of users on HEN.
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Justification	HEN users usually already have a history of surgical procedures, changes and adaptations in their daily routine, which are due to underlying diseases / sequels or specific situations, besides the progression of the underlying disease, which leads to negative impact on their quality of life (QoL). Therefore, knowing the quality of life of the users is fundamental, once strategies can be adopted to provide a better quality of life, thus impacting the clinical outcome positively. The use of specific instruments helps in determination of the QoL. Currently there is no specific instrument validated for HEN, but the use of a QOL instrument for specific diseases can help. The frequency of its use in the service can be determined according to the number of visits to the user. However, its monthly use is suggested, since the QoL can be altered according to the challenges faced.
Data source	Work manuals from the multiprofessional team responsible for HEN
Frequency	Annual
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Ojo, O. <i>et al.</i> , 2019

#### **A.12 Standardized nutrition recommendations according to national and international guidelines in HEN?**

Strategic objective	To standardize in the service the prescribed nutrition recommendations according to the recommended for the major diseases.
Justification	According to the main national and international guidelines for EN, there are specific nutritional recommendations updated periodically related to the following diseases: dementias and other neurological diseases, cancer, renal diseases, gastrointestinal diseases and immunological diseases. It is necessary to adopt these guidelines in an individualized way to the nutritional needs of each user.
Data source	Work manuals from the multiprofessional team responsible for HEN
Frequency	Annual
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Martin, K.; Gardner, G., 2017

**A.13 General guidance model to prepare each enteral nutrition (food choices, dilution, temperature, packaging, hygienization)?**

Strategic objective	To standardize in the service general guidelines to prepare the enteral nutrition, industrialized, mixed or with foods, thus avoiding divergences of guidelines at the same level of assistance.
Justification	An adequate general guidance allows an environment free of microbiological contaminations at all stages of HEN, thus reducing the risk of associated complications when manipulated incorrectly, in addition to ensuring the correct nutritional composition of the diet offered. Therefore, the formula / diet should be innocuous and adequate nutritionally.
Data source	Work manuals from the multiprofessional team responsible for HEN
Frequency	Annual
Responsible for information	Nutritionist responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Brasil, 2015

**A. 14 Guidance model to administrate each formula (volume, stability, fluidity and dripping)?**

Strategic objective	To standardize in the service guidelines to administrate each prescribed enteral nutrition according to local conditions, this way avoiding divergences at the same level of assistance.
Justification	According to the restrictions caused by the diseases related to nutritional recommendations, the volume, stability, fluidity and dripping of the diet should be adjusted. In addition, some other factors differ according to the enteral nutrition category adopted: industrialized, mixed or with food. It is necessary, therefore, the adoption of a model of orientation for each situation.
Data source	Work manuals from the multiprofessional team responsible for HEN
Frequency	Annual
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Multiprofessional team responsible for HEN
Reference	Kreymann, K.G. <i>et al.</i> , 2006 Ciosak, S. L. <i>et al.</i> , 2011

### A.15 Technical data sheet when enteral nutrition with foods is prescribed?

Strategic objective	To standardize in the service the use of technical data sheets when handmade diets with foods are prescribed, in order to avoid divergences in the same level of assistance.
Justification	During the preparation of handmade enteral diets with foods, the lack of standardization of home measures, procedures and cooking time may alter the nutritional composition that is expected, which can influence the users' nutritional status. Therefore, technical data sheets are an integral part of the dietary prescription.
Data source	Work manuals from the multiprofessional team responsible for HEN
Frequency	Annual
Responsible for information	Nutritionist responsible for HEN
Responsible for decision-making	Nutritionist responsible for HEN
Reference	Santos, V.F.N.; Bottoni, A.; Morais, T.B., 2013

### A.16 Specifications for training caregivers/relatives and individuals on HEN including periodicity and standardization?

Strategic objective	To standardize in the service specific trainings for caregivers / users on HEN, in order to avoid complications resulting from incorrect management of the therapy.
Justification	The training starts at the hospital or at the health service and keeps happening at home. The guidelines need to be clear, objective and appropriate to the caregivers/relatives' education. Training avoids mistakes and offers greater security to caregiver / family member to perform the activities that were agreed upon when the therapeutic care plan was established. The greater the involvement and the orientations with the team, the lower complications happen in the care process.
Data source	Work manuals from the multiprofessional healthcare team
Frequency	Annual
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Multiprofessional team responsible for HEN
Reference	Gillick, M.R., 2013

### A.17 Specifications for monitoring the individuals on HEN?

Strategic objective	To standardize in the service specifications for monitoring individuals on HEN.
Justification	Monitoring is the observation and documentation of the activities involved in the care of individuals on HEN. It can be complemented with the use of specific forms which include parameters such as clinical data, enteral feeding set check, enteral nutrition administration, gastrointestinal function, complications and quality of life. Those actions aim to reduce complications and promote a proper maintenance of the care and the nutritional status of the user.
Data source	Work manuals from the multiprofessional team responsible for HEN.
Frequency	Annual
Responsible for information	Multiprofessional team responsible for HEN.
Responsible for decision-making	Multiprofessional team responsible for HEN.
Reference	Brasil, 2015

#### **A.18 Forecast number of home visits according to the necessity of each user on HEN?**

Strategic objective	To check if there is a minimum number of visits and establish the standardization of the number of visits according to the HEN user's needs.
Justification	The frequency of home visits should be defined by the team according to the severity of the patient's illness and his nutritional status, as well as whether there is or not difficulties to follow guidelines / interventions.
Data source	Work manuals from the multiprofessional team responsible for HEN
Frequency	Annual
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Multiprofessional team responsible for HEN
Reference	Estrela, K.C.A. <i>et al.</i> , 2017

#### **A.19 Specifics for dealing with complications associated with HEN?**

Strategic objective	To verify the existence and to establish the standardization of recommendations for family / caregivers and users on HEN about the management of symptoms related to the therapy.
Justification	The correct approach in the management of symptoms

	related to HEN is fundamental. Scientific evidence demonstrates that the use of protocols based on guidelines have a positive effect, such as reduction of readmission rates. When identified risk factors or symptoms, it is possible to act effectively, such as doing dietary fiber adequacy in case of diarrhea and constipation.
Data source	Work manuals from the healthcare team
Frequency	Annual
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Multiprofessional team responsible for HEN
Reference	Blumenstein, I.; Shastri, Y.M.; Stein, J., 2014

#### **A.20 Guidelines for management of complications with enteral feeding tubes (obstruction, displacement, inadvertent exit)?**

Strategic objective	To verify the existence and to establish the standardization of recommendations for family / caregivers and users on HEN about the management of enteral feeding set complications.
Justification	According to the World Health Organization, procedures such as replacement of the catheter results in unnecessary damage to the patient. In a study conducted in Canada has shown that 56% of the enteral tube complications happened at home in a year could have been avoided. Therefore, guiding the familiar/ caregiver and user, when possible, about the correct management of enteral tube feedings reduces the exposure to risks such as bronchoaspiration, discomfort, prolonged fasting, stress, in addition to reducing the morbimortality rate.
Data source	Work manuals from the multiprofessional team
Frequency	Annual
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Multiprofessional team responsible for HEN
Reference	World Health Organization <i>et al.</i> , 2009 Sears, N. <i>et al.</i> , 2013

#### **A.21 Defined criteria to indicate swallowing assessment?**

Strategic objective	To verify the existence and to establish a standardization to indicate swallowing assessment in users on HEN.
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Justification	Enteral nutrition is indicated when it is not possible to reach 60% of nutritional needs through oral route. In case of impaired swallowing, enteral nutrition is indicated promptly. Defined criteria for indicating and performing swallowing assessment are necessary so that it can be performed periodically to confirm the actual need of using the HEN service.
Data source	Work manuals from the multiprofessional team
Frequency	Annual
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Multiprofessional team responsible for HEN
Reference	Gramlich, L. <i>et al.</i> , 2018

#### A.22 Defined criteria to discharge from HEN?

Strategic objective	To check the existence and to establish a standardization of discharge criteria from HEN in the service.
Justification	The care process of HEN must have specific objectives and an appropriate plan of action to achieve the expected results. The evaluation of these criteria is performed at the monitoring and the reassessment stages of HEN. By achieving the goals, the discharge from the therapy can happen safely.
Data source	Work manuals from the multiprofessional team
Frequency	Annual
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Multiprofessional team responsible for HEN
Reference	Writing Group of the Nutrition Care Process/Standardized Language Committee, 2008

### B.QUALITY SERVICE INDICATORS

#### B.1 Were the nutrition care goals planned and recorded in 100%of the individuals on HEN?

Strategic objective	To check whether there are planning and recording of nutritional care goals in the patients' charts on HEN.
Justification	Establishing nutritional care goals allows the professional to evaluate and plan actions to solve the problems detected in the nutritional assessment and during the treatment.

Formula	$\frac{\text{No. of users in which planning and registration of nutritional care goals were performed}}{\text{Total No. of users assisted in the period}} \times 100$
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	100%
Responsible for information	Nutritionist
Responsible for decision-making	Manager responsible for HEN
Reference	ASBRAN, 2014

**B.2 Was the monitoring record of the pre-established nutritional care goals performed in 75% of the visits?**

Strategic objective	To check the monitoring record of nutrition care goals pre-established in the appointments.
Justification	The monitoring record of nutrition care goals aims to evaluate the response to the intervention and redefine new diagnoses and objectives. To do so, the professional should determine the progress, review the nutritional status and perform a systematic comparison with the initial evaluation. The follow-up frequency should be estimated according to the diagnosis and purpose of the nutrition intervention.
Formula	$\frac{\text{No. of appointments with registration and monitoring of nutritional care goals}}{\text{Total No. of appointments in the period}} \times 100$
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	75%
Responsible for information	Nutritionist
Responsible for decision-making	Manager responsible for HEN
Reference	ASBRAN, 2014

**B.3 Was the guidance to caregivers/patients about the preparation of the enteral nutrition performed in 100% of individuals on HEN?**

Strategic objective	To quantify the orientations performed to caregivers / families and users on HEN about the preparation of the enteral nutrition.
Justification	The preparation of the enteral nutrition involves activities such as: choice, purchase and storage of formulas / foods; conditioning temperature; dilution and correct conservation, hygiene of materials and utensils used during the preparation. The professional should explain the instructions to caregiver / patient in a clear and empathetic way in order to optimize the nutritional therapy.
Formula	$\frac{\text{No. of users in which the instructions for preparation the EN was performed}}{\text{Total No. of users assisted in the period}} \times 100$
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	100%
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Brasil, 2015

**B.4 Was the individualized dietary prescription performed in 100% of individuals on HEN?**

Strategic objective	To quantify the number of individualized dietary prescriptions for HEN users.
Justification	Considering the dietary prescription a unique activity of the nutritionist, it must be individualized and based on the clinical, biochemical, anthropometric and dietary data of the patient, besides being adequate to the evolution of the patient's pathophysiological state and the administration route of the diet. The prescription should contain information regarding consistency, quantity and fractionation, in addition to respecting the clinical, individual, socioeconomic, cultural and religious conditions of the user.
Formula	$\frac{\text{No. of users in which individualized prescription was performed}}{\text{Total No. of users assisted in the period}} \times 100$

	<i>Total No. of users assisted in the period</i>
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	100%
Responsible for information	Nutritionist
Responsible for decision-making	Manager responsible for HEN
Reference	CFN, 2003

**B.5 Was the food and nutrition security assessment performed in 75% of individuals on HEN?**

Strategic objective	To measure the number of food and nutrition security assessments of HEN users.
Justification	The investigation of food and nutrition security situation of individuals and family involves knowing the cultural and socioeconomic past and current history, besides the conditions and eating habits of the users. These data allow professionals to adapt the nutritional care plan to better meet users' needs, depending on the reality of each family.
Formula	$\frac{\text{No. of users in which FNS assessment was performed}}{\text{Total No. of users assisted in the period}} \times 100$
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	75%
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Volkert, D. <i>et al</i> , 2006 Mazur, C.E. <i>et al.</i> , 2014

**B.6 Was the anthropometric assessment performed and recorded in 80% of users on HEN?**

Strategic objective	To measure the number of anthropometric assessments performed on HEN users.
Justification	Anthropometry provides important data for evaluation, dietary intervention and monitoring of nutritional status of individuals and, together with other parameters, the nutrition diagnosis is established. The anthropometric measurement is a noninvasive low-cost method that uses accessible equipment, in addition to its ease and reliability in obtaining results.
Formula	$\frac{\text{No. of users in which anthropometric evaluation was performed}}{\text{Total No. of users assisted in the period}} \times 100$
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	80%
Responsible for information	Nutritionist
Responsible for decision-making	Manager responsible for HEN
Reference	Brasil, 2015

**B.7 Was the assessment of the dietary adequacy performed and recorded in 100% of the visits (infused x needs)?**

Strategic objective	To measure the number of dietary adequacy of users on HEN.
Justification	The professional should evaluate the dietary intake through different methods, evaluating its adequacy according to what is being offered and what is being taken by the user. It should be considered all nutrition routes of the user.
Formula	$\frac{\text{No. of visits in which dietary adequacy assessment was performed}}{\text{Total No. of visits performed in the period}} \times 100$
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	100%

Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Responsible for decision-making	Simões, S.A.R. <i>et al.</i> , 2017

**B.8 Was the monitoring of enteral nutrition administration, in terms of time and mode, performed in 50% of the visits?**

Strategic objective	To quantify the monitoring and the administration of enteral nutrition in users on HEN.
Justification	Monitoring infusion characteristics of enteral nutrition is necessary to evaluate the acceptance of the prescribed volume, adequate fractionation, prevent gastrointestinal symptoms and ensure a more effective nutritional therapy.
Formula	$\frac{\text{No. of visits in which monitoring of enteral nutrition infusion was performed}}{\text{Total No. of visits performed in the period}} \times 100$
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	50%
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Brasil, 2015

**B.9 Was the hydration status assessment performed and recorded in 100% of the visits?**

Strategic objective	To measure the number of visits that hydration status assessments are performed.
Justification	The adequate supply of fluids offered between the intervals of administration of enteral nutrition and its complementation plays a fundamental role in preventing dehydration or hyperhydration. Therefore, it is necessary for the professional to properly evaluate the state of hydration of users on HEN.
Formula	$\frac{\text{No. of visits in which hydration status assessment was performed}}{\text{Total No. of visits performed in the period}} \times 100$

Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	100%
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Coppini, L. Z. <i>et al.</i> , 2011

**B.10 Were the evaluation and the recording in the medical chart of gastrointestinal functioning performed in 100% of the visits?**

Strategic objective	To measure the quantity of visits in which both checking and recording of gastrointestinal functioning are performed.
Justification	Observing and recording gastrointestinal functioning consists of evaluating data such as nausea, vomiting, abdominal distension, frequency and consistency of evacuations. This follow-up is fundamental for evaluating the acceptance of enteral nutrition.
Formula	$\frac{\text{No. of visits in which checking of gastrointestinal functioning was recorded in medical chart}}{\text{Total No. of visits performed in the period}} \times 100$ <p>number of visits in which x 100 / total number of visits performed in the period</p>
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	100%
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Brasil, 2015

**C. EFFECTIVENESS INDICATORS OF HOME ENTERAL NUTRITION THERAPY (HEN)**

**C.1 Has 90% of users on HEN achieved > 75% of their energy needs?**

Strategic objective	To measure the frequency in which HEN users receive more than 75% of their energy needs.
Justification	During the administration of the enteral diet, both industrialized and with foods, differences are observed regarding the nutritional prescription and value infused. Regarding diets with foods, the energy adequacy may correspond to less than 50% of the prescribed values, resulting in imprecise administration of the nutrients. The same problem can occur with industrialized diets due to incorrect dilution. This was observed by Stefanello and Poll (2014), in which only 44.4% of patients were receiving adequate energy. Implementing protocols stating enteral nutrition step-by-step is an effective strategy to ensure that the prescribed value is being infused.
Formula	$\frac{\text{No. of users that achieved } >75\% \text{ of their energy needs}}{\text{Total No. of users assisted in the period}} \times 100$
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual 90%
Goal	90%
Responsible for information	Nutritionist responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Simões, S.A.R. <i>et al.</i> , 2017

### C.2 Has 90% of users on HEN achieved > 75% of their protein needs?

Strategic objective	To quantify the frequency of users on HEN who achieve minimum protein requirements.
Justification	Depletion is common in hospitalized patients, and it is essential to act effectively when EN is initiated, especially when the treatment keeps at home. A variation from 50% to 116% in the energetic-protein supply was observed in researches including patients on HEN. These variations may have repercussions on the nutritional status of the patient, thus the protein adequacy of the enteral preparations should be evaluated and monitored, once it favors malnutrition and increases morbidity and mortality rates consequently.
Formula	$\frac{\text{No. of users that achieved } >75\% \text{ of their protein needs}}{\text{Total No. of users assisted in the period}} \times 100$

	<i>Total No. of users assisted in the period</i>
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	90%
Responsible for information	Nutritionist responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Sant'Ana, I.E.S.; Mendonça, S.S.; Marshall, N.G., 2012

### C.3 Were gastrointestinal complications verified in <50% of the visits of users on HEN?

Strategic objective	To measure the presence of gastrointestinal complications in users on HEN.
Justification	The gastrointestinal complications of EN, such as nausea, vomiting, diarrhea, constipation, abdominal distention may interfere the adequate supply of nutrients, resulting in a negative energy balance. This can lead to malnutrition and interfere with the treatment response, increasing morbidity rates and more serious complications, as well as rehospitalization. Thus, it is important to analyze the frequency of patients with gastrointestinal complications. Strategies such as evaluation of utensil hygiene, mode of infusion and use of low-osmol enteral formulations may contribute to the reduction of gastrointestinal complications.
Formula	$\frac{\text{No. of visits that users presented gastrointestinal complications}}{\text{Total No. of users assisted in the period}} \times 100$
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	< 50%
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Simões, S.A.R. <i>et al.</i> , 2017

#### C.4 Were pulmonary complications verified in <50% of users on HEN?

Strategic objective	To measure the presence of pulmonary complications in users on HEN.
Justification	One of the most frequent and serious complications of enteral nutritional therapy is aspiration pneumonia, which occurs due to bronchoaspiration. Neurological patients constitute a group at high risk due to deficiency of the protective reflex mechanism. Besides that, bronchoaspiration may be caused by migration of the enteral tube after the initial passage, improper positioning of the subject during diet administration, and inadequate positioning of the enteral tube.
Formula	$\frac{\text{No. of users that presented some gastrointestinal complications}}{\text{Total No. of users assisted in the period}} \times 100$
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	< 50%
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Martins, A.S.; de Rezende, N.A.; da Gama Torres, H.O., 2012

#### C.5 Were mechanical complications verified in <50% of users on HEN?

Strategic objective	To detect the presence of mechanical complications in users on HEN.
Justification	Inadvertent exit, obstruction of the enteral tube and tissue injuries are examples of mechanical complications. In addition to triggering unnecessary discomforts to the user, it compromises the dietary adequacy / supply of enteral nutrition, besides adding additional costs both for treatment of injuries and replacement of equipment.
Formula	$\frac{\text{No. of users that presented some mechanical complications}}{\text{Total No. of users assisted in the period}} \times 100$
Unit of measurement	Percentage
Data source	Users' charts on HEN

Frequency	Annual
Goal	< 50%
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Strollo, B.P.; McClave, S.A.; Miller, K.R., 2017 Figueredo, L.P., 2011

### C.6 Were capable caregivers verified in 75% of users on HEN?

Strategic objective	To measure the frequency of users who have caregivers with abilities for management and continuity of the care and the therapy.
Justification	The caregiver can be a person with or without family bond who helps the user in his daily activities and in the care process. All guidance and training process should be performed in a clear way, so that the caregiver develops abilities to act in the steps of hygiene, manipulation and storage of the diet. In addition, the caregiver can perform monitoring, acceptance, administration, and take care of the enteral tube sets, thus reducing possible complications.
Formula	$\frac{\text{No. of users that have capable caregivers}}{\text{Total No. of users assisted in the period}} \times 100$
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	75%
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Multiprofessional team responsible for HEN
Reference	Brasil, 2015

### C.7 Was there a successful healing of pressure lesions in 50% of HEN users who presented this complication?

Strategic objective	To verify the frequency of success of pressure injury healing in users on HEN
Justification	Pressure ulcer is a public health problem impacting patient, family and society. Malnutrition favors the development of these lesions. In a study in Italy, about 34% of patients who started EN present lesions due to their physiological condition. The supply of specific

	nutrients such as vitamin A, C, E, zinc, copper and selenium, contributes positively to the stages of pressure injury, favoring the healing process.
Formula	$\frac{\text{No. of users who achieved healing successfully}}{\text{Total No. of users with this injury in the period}} \times 100$
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	50%
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Blanc, G. et al., 2015; Paccagnella, A. et al, 2008

**C.8 Was the dietary prescription performed in 75% of HEN users taking into account preexisting home conditions?**

Strategic objective	To verify if the dietary prescription is being performed according to preexisting conditions at the user's home on HEN.
Justification	In order to establish the HEN, the household must ensure the patient is able to perform the therapy in such a way that his health is not compromised, having a good hygienic-sanitary condition and necessary equipment to preparation and storage of the diet. To guarantee the user's health, the dietary prescription must be adapted to the reality of his residence, considering several options to ensure that the nutritional needs of the patient are being reached in a safe way. In a study conducted by Naves and Tronchin (2018), it was observed that 33.3% of the households had a need for structural and sanitary adjustments, such as water network, sewage and physical plant to improve the quality and safety care at home.
Formula	$\frac{\text{No. of users who have dietary prescription considering household conditions}}{\text{Total No. of users on HEN assisted in the period}} \times 100$
Unit of measurement	Percentage

Data source	Users' charts on HEN
Frequency	Annual
Goal	75%
Responsible for information	Nutritionist responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Naves L.K.;Tronchin, D.M.R., 2018

**C.9 Was the dietary prescription adequate with the FNS in 75% of the users on HEN?**

Strategic objective	To measure the frequency of users who have their dietary prescription according to the degree of food and nutrition security they present.
Justification	The FNS impairment at home is due to difficulties regarding food and the need for financial resources, lack of basic inputs, food / formula to maintain enteral nutrition. In many cases the family ends up depriving itself to ensure the acquisition and adequate supply of enteral nutrition to the user.
Formula	$\frac{\text{No. of users who presented adequate dietary prescription with FNS}}{\text{Total No. of users on HEN assisted in the period}} \times 100$
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	75%
Responsible for information	Nutritionist responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Mazur, C.E. <i>et al.</i> , 2014

**C.10 Are the individuals on HEN followed at home on a regular basis as defined in the care protocol in 80% of the cases?**

Strategic objective	To check if the systematic follow-up of the users on HEN is being performed according to the protocol of assistance adopted by the service.
Justification	Each user has individualized nutritional prescription and treatment. Keeping the regularity of the visits is

	essential for maintenance of home care. The service should have a following-up protocol which are described the objectives and the periodicity of visits according to the user's needs. Therefore, the protocol must be followed strictly, in order to avoid complications and identify possible changes that need a different feed route, for instance.
Formula	$\frac{\text{No. of users followed at home according to defined protocol}}{\text{Total No. of users on HEN assisted in the period}} \times 100$
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	80%
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Arvanitakis, M. <i>et al.</i> , 2017

**C.11 Does the receiving supplies to the HEN (bottles, gravity feeding sets) occur for 100% of individuals on HEN?**

Strategic objective	To measure and to verify the delivery of essential supplies for HEN, since continuity of therapy depends on those materials.
Justification	Many HEN users do not have enough income to afford the cost of bottles, gravity feeding sets, and the lack of these materials can prejudice the adequate supply of enteral nutrition through tube feeding and increase the risk of malnutrition. Failure to provide sufficient basic supplies may favor their reuse, which reduces the sanitary control required, resulting in possible complications and food insecurity. Therefore, the free supply of materials helps in the success of HEN and ensures its proper administration.
Formula	$\frac{\text{No. of users on HEN receiving supplies}}{\text{Total No. of users on HEN assisted in the period}} \times 100$
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	100%

Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Brasil, 2013

### C.12 Does the supply of commercial formulas happen in <50% of cases?

Strategic objective	To check the frequency of delivery of industrialized formulas to HEN users.
Justification	When established the HEN, there are criteria for selecting the most appropriate formula. These include clinical data such as digestive and absorptive capacity, nutritional status and metabolic status of the patient, in addition to necessary information such as energy density; presence or absence of specific nutrients such as fibers, vitamins or minerals. Some specific clinical situations faced such as the need for hydrolyzed nutrients, the diet with food does not supply the real needs of the user and there is the recommendation of commercial formulas. Besides, the socioeconomic evaluation and the hygienic sanitary condition of the home are primordial for that recommendation, once these conditions may affect handling, storage and administration of the formula / diet directly.
Formula	$\frac{\text{No. of users on HEN that receive industrialized formulas}}{\text{Total No. of users on HEN assisted in the period}} \times 100$
Unit of measurement	Percentage
Data source	Users' charts on HEN
Frequency	Annual
Goal	Less than 50%
Responsible for information	Multiprofessional team responsible for HEN
Responsible for decision-making	Manager responsible for HEN
Reference	Brasil, 2015 Gramlich, L. <i>et al.</i> , 2018

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