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**REVIEW**

# Efficacy and Challenges of Enteral Nutrition in Critically Ill Patients: Role of Nursing and Clinical Protocols

## Eficacia y Desafíos de la Nutrición Enteral en Pacientes Críticos: Rol de Enfermería y Protocolos Clínicos

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**ABSTRACT**

Introduction: Enteral nutrition (EN) was defined as a key strategy to prevent malnutrition and support the recovery of critically ill patients. This intervention allowed maintaining the functionality of the digestive tract and preserving the intestinal barrier, reducing septic complications and improving clinical outcomes. However, studies reported significant discrepancies between the volume of EN prescribed and the volume actually administered, which affected the necessary nutritional intake and compromised the effectiveness of the treatment.

Development: The administration of EN in critically ill patients depended on technological advances such as the use of small-bore catheters, infusion pumps and specialized nutritional formulas designed to meet individual needs. However, mechanical complications arose, such as catheter obstruction and ulceration; gastrointestinal complications, such as diarrhea and vomiting; and metabolic and psychological risks. These complications were exacerbated by failures in the implementation of adequate protocols and lack of continuous monitoring. The role of the nursing staff was decisive in the execution of care before, during and after NE administration, highlighting the importance of hygiene, correct patient positioning and the use of aseptic techniques. In addition, the need for constant training to optimize clinical practices was highlighted.

Conclusions: NE was consolidated as an effective intervention in the management of critically ill patients, although its success depended on correct planning, supervision and updating of health teams. The protocolization of procedures and continuous training of personnel were identified as fundamental pillars to maximize the benefits of this practice, reduce complications and guarantee better clinical and economic results.

**Keywords:** enteral nutrition; critical patients; nutritional complications; nursing protocols; clinical monitoring.

**RESUMEN**

Introducción: La nutrición enteral (NE) se definió como una estrategia clave para prevenir la malnutrición y apoyar la recuperación de pacientes en estado crítico. Esta intervención permitió mantener la funcionalidad del tracto digestivo y preservar la barrera intestinal, reduciendo complicaciones sépticas y mejorando los resultados clínicos. Sin embargo, estudios reportaron discrepancias significativas entre el volumen de NE prescrito y el efectivamente administrado, lo que afectó el aporte nutricional necesario y comprometió la efectividad del tratamiento.
Desarrollo: La administración de NE en pacientes críticos dependió de avances tecnológicos como el uso de sondas de pequeño calibre, bombas de infusión y fórmulas nutricionales especializadas, diseñadas para cubrir las necesidades individuales. No obstante, surgieron complicaciones mecánicas, como obstrucción de sondas y ulceraciones; complicaciones gastrointestinales, como diarrea y vómitos; y riesgos metabólicos y psicológicos. Estas complicaciones se vieron exacerbadas por fallas en la implementación de protocolos adecuados y la falta de monitoreo continuo. El rol del personal de enfermería fue determinante en la ejecución de cuidados antes, durante y después de la administración de NE, destacando la importancia de la higiene, la posición correcta del paciente y el uso de técnicas asépticas. Además, se resaltó la necesidad de capacitación constante para optimizar las prácticas clínicas.
Conclusiones: La NE se consolidó como una intervención eficaz en el manejo de pacientes críticos, aunque su éxito dependió de una correcta planificación, supervisión y actualización de los equipos de salud. La protocolización de procedimientos y la capacitación continua del personal se identificaron como pilares fundamentales para maximizar los beneficios de esta práctica, reducir complicaciones y garantizar mejores resultados clínicos y económicos.

**Palabras clave:** Nutrición enteral; pacientes críticos; complicaciones nutricionales; protocolos de enfermería; monitoreo clínico.

## INTRODUCTION

The patient in critical health condition has a response of increased catabolism, a situation that will represent an imbalance with the risk of malnutrition. Nutritional support will be essential to support the body against this metabolic stress and to avoid a deterioration of the immune response to the possibility of infectious complications during hospitalization in Intensive Care Units (ICU). This situation is the essential basis for making nutritional support a universal recommendation. Among the support options, enteral nutrition (EN) is the first choice because it maintains the physiological processes of digestive function; this maintenance reduces the risk of multiple organ failure due to septic complications since it avoids bacterial translocation by preserving the intestinal barrier (Torres Vega et al., 2008).

Thus, NE administered promptly and adequately prevents malnutrition and improves immunocompetence. On the other hand, malnutrition in hospitalized patients is associated with adverse clinical outcomes, such as prolongation of mechanical ventilation time, increased incidence of infections (as mentioned above), increased hospital stay, and increased mortality rate. However, despite the available evidence, patients do not always receive adequate EN. According to Barrita et al. (2019), international publications show discrepancies in the administration of EN, especially in critical care units. According to these studies, the difference in criteria lies in the volume of nutrition infused about the volume prescribed, and this discrepancy is associated with interruptions of EN due to gastrointestinal

intolerances. In addition, inconsistencies have been found between the infused volume recorded on the infusion pump and that documented on the patient's balance sheet.

In a study entitled "Enteral nutrition in the critically ill patient: How much is administered?" Barrett et al. (2019) evaluated the difference between the prescribed volume and the infused volume of EN in critically ill patients in the intensive care Unit and Coronary Unit of a university hospital in the Autonomous City of Buenos Aires (Federal Capital). A descriptive, prospective study was carried out for 4 months, collecting data from all patients over 18 years of age who received exclusive EN and were selected by consecutive sampling by convenience and excluding patients receiving oral or parenteral nutrition or in imminent death. They decided to study each day of EN and referred to them as patient days. They found a statistically significant difference between prescribed and infused volume, accounting for only 76%. In 1 out of every 3 days of EN in critically ill patients, the volume infused is inadequate with insufficient caloric and protein intake. The authors recommended the protocolization of monitoring and documentation of the volume of NE administered (according to the infusion pump) and the use of protocols for adjusting the infusion rate.

Overall objective.

To analyze the efficacy, challenges, and best practices associated with enteral nutrition in critically ill patients, highlighting the role of nursing staff and the importance of implementing protocols to optimize clinical outcomes and reduce complications.

## DEVELOPMENT

Enteral nutrition

EN is defined by Jibaja Bellido (2014) as the nutritional intervention technique by which all or most of the caloric, protein, and micronutrient requirements are provided orally. This intake can be performed with or without the patient's active participation, requiring a tube placed in the gastrointestinal tract, usually known as an NG tube. EN is one of the most developed disciplines in medicine today due to the improved knowledge of the pathophysiological processes of malnutrition and the technological advances that allow increasingly appropriate medical supplies to be made available. Thus, the recommendation of EN became a practice of first choice in malnourished patients and patients at risk of malnutrition when the intestine is in a minimum functionality that prevents it from meeting the total caloric-protein requirements. Thus, the practice of NE allowed the convergence between new findings obtained in nutritional research and a corresponding technological advance. New developments in materials for enteric access with the availability of small caliber flexible probes, the introduction of infusion pumps, and the design of a wide variety of enteral formulas allow an almost individualized selection that adapts to the characteristics of each patient and his or her pathology. This scientific-technological evolution requires an accompaniment in the nursing domain of the necessary knowledge and technical expertise to guarantee the achievement of the prescribed treatment objective.

The Ministry of Health of Argentina (MSA, 2013) determined the creation of the Food Departments as "the unit responsible for planning and supervising the acquisition, preparation, storage, and distribution of adequate food to inpatients and outpatients, as well as the staff authorized to perform meals within the institution, ensuring hygienic, microbiological and nutritional quality." Thus, the department's purpose is to collaborate to recover the patient's state of health and rehabilitation through adequate calories and nutrients, considering a rational administration of resources. The MSA establishes that the Food Department will establish an initial nutritional diagnosis by considering the patient's pathology and history, as well as his or her age, height, and anatomical circumferences. The diagnosis will determine the caloric value required by the patient, the type of formula to be administered, and its modality in order to establish a report to the Medical Clinic, will add the dietary indication to the patient's treatment and inform the Nursing Department of the type of food and the modality to be administered.

The goals proposed for this departmental unit of the institutions propose (MSA, 2013):

- Offer an attractive, varied and nutritionally balanced menu, always in consideration of the quality-availability axis and accessible cost.
- Guarantee the food supply based on adequate purchasing and storage processes; and the application of cleanliness and hygiene control techniques in the different areas involved so that the distribution can maintain the organoleptic and hygienic quality.
- To guarantee the preparation and distribution of the indicated food to hospitalized patients.
- Train and update the personnel involved.

The recommendations for the administration of EN include those cases in which oral feeding is not possible or is insufficient even though the gastrointestinal tract is functionally fit in its partial or total function. They may also include those in which the patient cannot take oral feeding, as occurs in central neurological diseases (stroke, infectious, degenerative, tumor lesions of the central nervous system, spinal cord lesions with quadriplegia, polyneuritis), and muscular and skeletal disorders. Other situations occur in traumas of the face and mouth or in conditions of the upper digestive tract that partially or occlude the passage of nutrients, as occurs in oropharyngeal neoplasms, esophagus, stomach, duodenum, pancreas, or biliary tract. They are also recommended when functional swallowing disorders and fistulas of the upper digestive tract are present. NE by tube can be performed using natural orifices of entry, such as the case of the nose and mouth, or surgically created orifices, such as osteomas (Jibaja Bellido, 2014).

Regarding the benefits of achieving the goals proposed for the feeding departments, Arizmendi et al. (2012) state that many studies support that hospital costs can increase by up to 75% if poorly nourished patients are compared to well-nourished patients as a consequence of the prolongation of the hospital stay and the increase in resources used for the treatment of associated complications. The costs would decrease significantly when an appropriate nutritional regimen, including oral diet, enteral nutrition, parenteral nutrition, or nutritional supplements, is initiated. Despite this situation being confirmed, the authors point out a series of established hospital practices unsuitable for applying an adequate nutritional protocol:

- Failure to record height and weight on admission.
- Lack of weight follow-up during the hospital stay.
- Frequent fasting situations for different reasons related to the treatment or to the patient.
- Administration of saline or glucose serum as the only nutritional intake.
- Lack of control of the patient's intake, poorly scheduled, presented and distributed meals.
- Lack of knowledge to establish the type and route of nutrition.
- Delay in initiating adequate nutritional support.

Probes, complications and formulas

To obtain an access route to the digestive tract in EN Rabat-Restrepo and Campos-Martín (2009) present two techniques. Non-invasive techniques include placing nasogastric, nasoduodenal, or nasojejunal probes via the transnasal route. In contrast, invasive techniques involve surgically constructing communications between the lumen of the digestive tract and the exterior (gastrostomy and jejunostomy). The choice of ostomies is considered an expected NE time of more than 4 to 6 weeks. As for naso-enteral feeding tubes, they refer to any tube used in the transnasal route that will present a situation of the distal end depending on the assessment of the state of altered gastric emptying and gastroesophageal reflux, situations which can favor episodes of broncho-aspiration. Taking into account where the distal end of the tube is placed, it will be referred to as nasogastric, nasoduodenal, or nasojejunal.

According to Jibaja Bellido (2014), the main characteristics of feeding tubes are as follows:

1. They are made of soft, flexible and low tissue reactive material such as polyurethanes or silicones. Both softness and low reactivity help prevent oropharyngeal and esophageal abrasions and ulcerations and occasional perforations.

2. Their diameters are thin (between 8 to 12 French) reducing irritative lesions, discomfort and gastroesophageal reflux; in any case, the choice of the catheter lumen will be conditioned to the viscosity of the formula to be administered.

3. They have radiopaque markings to be able to visualize or verify their position with radiological controls.

4. They are provided with connectors compatible with the infusion lines that have different characteristics from the venous connectors in order to minimize the risk of inadequate administration.

Like any invasive procedure, NE by catheter presents the risk of complications. According to Motta (2016) the two complications with the highest morbidity and mortality are infectious: pneumonia due to bronchoaspiration and peritonitis due to leakage of digestive contents into the patient's abdomen. A particularly serious complication could arise from an error in the administration of a parenteral NE formula, although this error has been minimized by the inclusion of safe connections compatible only for the enteral route, as mentioned above.

Other complications classified by Motta (2016) present:

o Mechanical complications.

There is accidental removal of the tube, or obstruction of the tube; nasopharyngeal discomfort or discomfort due to the presence of the tube; decubitus lesions in the nares, esophageal ulceration or stenosis, tracheoesophageal fistula.

o Gastrointestinal complications.

Increased gastric residue, diarrhea (5 or more liquid stools in 24 hours), constipation (absence of stools for more than 3 days from the onset of EN), abdominal distention and vomiting may occur.

o Metabolic complications.

Manifestations of hypoglycemia, hyperglycemia, electrolyte disturbances, dehydration and volume overload.

o Infectious complications.

In addition to pneumonia due to bronchoaspiration and peritonitis due to leakage of digestive contents into the abdomen, sinusitis and otitis media may occur.

o Psychological complications.

There is a difficulty in adapting to the treatment, mainly due to the inability to taste food, the alteration of personal image, and the discomfort that the presence of the tube may represent.

Rabat-Restrepo and Campos-Martín (2009) present a complement to this classification and state, within the mechanical complications, that nasal and pharyngeal erosions can be caused by poor choice of gauge and lack of flexibility of the catheter. This situation can be solved by using smaller diameter gauges and corroborating the good flexibility of the catheter. It is necessary to check the catheter's position daily and plan skin and mucosal care with careful assessment and hygiene of the nares and mouth. This care will also prevent infectious complications such as sinusitis and otitis media. When the complication of mechanical origin is due to aspiration, it means the presence of food or digestive juice. It will be prevented by placing the patient in a semi-Fowler's position (semi-sitting with an angle of the back of the bed between 30 and 45 degrees) while receiving EN and up to 30 minutes after it is finished. At the same time, periodic assessment of gastric residual volume is desirable. Other mechanical complications may occur when the formula is too lumpy or when patency is not maintained; tube cleanings and unblocking maneuvers are vital to keep the tube permeable.

The causes of gastrointestinal complications such as nausea and vomiting can originate from different causes such as inadequate patient position during administration, gastric retention, hyperosmolar diet, rapid infusion, excess fat in the formulation, lactose intolerance, odor, and taste of the formula. Each case will have a different response, such as keeping the bed head incorporated 30º-45º, repositioning the tube more distal, reformulating infusions, and decreasing the infusion rate. Constipation, as a

complication, is usually caused by a lack of fluid intake, a diet without fiber, prolonged rest, or a response to some prescribed drugs (ILari, 2005).

Commercially prepared enteral formulas were developed to replace traditional diets and be applied in specific situations. According to Jibaja Bellido (2014), they present a series of advantages, such as measuring the amount of nutrients, accurately dosing the portions, and favoring quality, hygiene, storage, and distribution. However, these types of preparations have drawbacks that are difficult to resolve, such as their cost, alteration of the intestinal flora, and complications such as diarrhea.

The MSA (2013) presents a classification of nutritional formulas according to a series of criteria. Regarding their contribution to the diet, a complete formula presents an amount of macro and micronutrients that allow it to be a single nutritional source. In contrast, supplements present some nutrients that complement the oral diet in those patients with a specific need. Modular formulas have isolated nutrients that can be combined according to the need to constitute modular diets.

Regarding protein intake, standard polymeric formulas are nutritionally complete and balanced, made of casein and soy protein, and combined with complex carbohydrates and fats. Moreover, they are lactose and gluten-free and are designed to be used as the sole source of nutrition for long periods. A second type of protein formula is oligomeric, peptide, or semi-elemental, which has a high content of proteins hydrolyzed to peptides, simple carbohydrates, and fat and is lactose-free. Finally, elemental protein formulas contain a high content of free amino acids.

Regarding caloric intake, the formulas are distinguished as hyper, iso, and hypocaloric according to the contribution of higher, equal, or lower (respectively) amounts of calories at the value of 1 kCal/ml. Diets with fiber intake contain 10 to 20 grams/1000 kcal in variable percentages of soluble and insoluble fiber. The formula called Fruit Oligo Saccharides (FOS) improves the intestinal flora and reduces constipation. Finally, general diets, or diets for general use, are those designed to cover the needs of a wide variety of patients, while special diets, or diets for specific use, respond to the specific needs determined by a situation or pathology, where it is necessary to act as a food source and as an influential factor in the modification of the evolutionary course of the disease and its prognosis; for example, are the formulations for patients with renal problems, with glucose intolerance, with respiratory failure, or for critical patients, with metabolic stress and immunomodulation (MSA, 2013).

Enteral nutrition practices

An NGNS, by definition, is a paranasal tube placed in the stomach that allows interventions inside the stomach and can be inserted into the small intestine to allow enteric feeding. As seen, the paranasal gastric and enteric paranasal definitions refer to the entry point of the tube and the ultimate location of the distal end. In practice, this distinction is uncommon, with the generic name SNG given to all nasal entry tubes.

According to González Muñoz (2019), nasogastric intubation allows decompression of the stomach in different circumstances; for example, to remove contents in obstructions, ileus, or atony; to prevent aspiration of blood and clots in patients with digestive bleeding, to obtain samples of gastric contents, to remove ingested toxic substances and to administer contrast substances for studies. Nasoenteric intubation is the route of choice to administer formulas in EN, but gastric feeding, when possible, maintains the functionality of choice in many situations.

To perform the procedure, the patient should be seated upright with the neck slightly flexed; an alternative position is left lateral decubitus when the first choice position is impossible. A special situation is when the patient is endotracheally intubated, which will determine a nasoenteric intubation in the supine position. The operator performs a sterile gloving with prior hand washing and is protected with a gown and goggles after explaining the procedure to the conscious patient to calm him and obtain his cooperation. The patient's chest is protected with a clean compress. Air entry through the nostrils is assessed by occluding one and the other alternatively (the patient can refer to where he/she perceives better entry), and possible intranasal obstructions to be removed are looked for. Once the entrance nares

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are selected, topical anesthesia of both nares and pharynx is performed according to the modality of the service. Waiting for the latency of the anesthetic is a good moment to measure the approximate distance of catheter entry, which will be estimated by the total distance from the earlobe to the xiphoid appendix passing through the angle of the mandible plus 15 cm. The lubricated end of the probe slides along the floor of the nasal cavity to cross the turbinates above until a slight resistance is felt, marking the arrival at the nasopharynx. Swallowing of the end of the probe is achieved by the patient swallowing small sips of water using a straw. Swallowing of the tube is verified to ensure the patient can speak and breathe comfortably; otherwise, endotracheal advancement is indicated. The advance through the esophagus to the stomach is determined when gastric content can be aspirated or when air inflow by syringe can be auscultated. The tube is fixed to the nasal entry with hypoallergenic tape tails placed in opposite directions around the tube. The patient is placed in a semi-Fowler position, and the end of the tube is connected to a low-intensity suction system. When the catheter is to reach the bowel, the procedure is verified radiologically. Once the catheter is secured and connected to the infusion line, three methods of infusing the NE formula are recognized: infusion pump, gravity drip, or syringe. As can be expected, this choice will depend on the patient's clinical situation and therapeutic needs, which will determine whether a continuous infusion for 24 hours, a continuous infusion only during the day or night, or a diurnal intermittent infusion simulating normal intake schedules will be decided (Malik, 2023).

As part of the evolution of EN practices, Rabat-Restrepo and Campos-Martin (2009) describe how the development of EN infusion lines has impacted the tolerance and efficacy of tube nutrition. These lines allow adequate pump administration, and there is sufficient availability to follow the recommendation of infusion line replacement every 12 to 24 hours in the hospital setting. Pump nutrition is a precise continuous infusion system that has solved the disadvantages of administering the diet using gravity systems that did not ensure the infusion of the programmed amount and, in addition, have a higher incidence rate of intolerance. Another advantage of pump infusion is the existence of a wide variety of equipment with specific characteristics and infusion lines.

Regarding the form of NE administration, Mesejo Arizmendi et al. (2012) argue that intermittent administration is the most similar to usual nutrition. However, its limitation is that the patient's digestive tract must be healthy and have a normal gastric emptying time. In gravity administration, 3 or 4 infusion periods per day of 3 or 4 hours each are usually used and coincide with the disadvantages already mentioned due to the difficulty of regulating the drip adequately, generating problems due to a defect or excess in the infusion rate. In addition, the benefits of continuous pump administration have also been mentioned, to which it can be added that it is the method of first choice in hospitalized patients when high volumes must be perfused, when very fine probes or very dense formulas are used, and when the patient's clinical condition is severe. Administration can be continuous for 24 hours or 16 to 18 hours daily. In the case of intermittent infusion, it is recommended in conscious patients and with an access route in the stomach. Syringe administration is usually limited to the need for bolus administration, which is used in very particular situations since it presents the complications inherent to a very rapid administration. The recommended infusion rate is 20 ml/minute and has more application in patients in home hospitalization.

In summary, continuous administration by an infusion pump is better tolerated and causes fewer gastrointestinal complications because it reduces gastric distension and the risk of aspiration; it also reduces the risk of diarrhea and facilitates the absorption of nutrients.

Role of nursing in enteral nutrition

In line with the statements of Durán de Villalobos, it is recognized that disciplinary growth requires the construction of knowledge that can be the basis of a well-founded and autonomous professional practice. This construction seems to be the way to solve the deficit of conceptual systematization that has been attributed to nursing activity for a long time. However, the impulse nurses have generated in the professionalization of their work, achieving advances in the academic, scientific, and technological

dimensions cannot be denied. The predominantly technical character of nursing has been re-signified with critical reflection on how to achieve an approach to the possibility of describing and analyzing phenomena related to care (Jibaja Bellido, 2014). Advances in NE constitute a new professional development opportunity that demands incorporating new knowledge and technical domains.

NE by tube, in addition to the revised knowledge, involves nursing practices before, during, and after administering the feeding. A protocol for "Enteral Nutrition Nursing Care" proposed by Motta (2016), based on a level of recommendations from scientific evidence, proposes protocolized nursing actions as a starting point for improving the quality of care in an EN service:

1. Perform pre- and post-procedure hand hygiene as the most effective method for infection prevention and control.
2. Place the patient in a seated or semi-Fowler position (torso incorporated at an angle of 30-45º) during the administration of NE and between half an hour and one hour after the administration of NE.
3. Maintain oral hygiene by brushing with fluoride paste twice a day with a toothbrush or with gauze and alcohol-free mouthwash.
4. Irrigate the tube with sterile water before and after administration of NE or medications.
5. Store the formulas in a clean and dark place, with temperature between 15 - 25º C, avoiding extreme temperatures and manipulation.
6. Handling of formulas or reconstitution from powdered preparations should be performed by trained personnel, in clean environments and using aseptic techniques. Reconstitution water should be sterile or purified.
7. Probe care includes:

a. Daily cleaning, rinsing and drying with gauze, water and liquid soap of the external part of the catheter.

b. Daily cleaning, rinsing and drying with gauze, water and liquid soap of the cap and the entrance hole of the catheter, removing any remaining formula.

c. Keep the probe connector cap closed when not in use.

d. Rotate nasogastric tubes on themselves daily to prevent pressure sores.

e. Use hypoallergenic tapes for fixation of the probes and maintain hygiene and hydration of the skin and nostrils at least once a day and perform daily change of fixation.

f. Prevention of catheter obstruction considering choice of appropriate gauge and viscosity of formula; flushing of the catheter with warm water by perfusing30 ml before and after formula infusion.

8. Administer drugs separately from the formula, crushed into fine powder and mixed with sterile water, except for delayed release or enteric coated presentations.

Other considerations provided by Rabat-Restrepo and Campos-Martín (2009) include:

- The verification of gastric residual with aspiration of gastric contents before the first intake of the day and every 6 to 8 hours. When the residue is greater than 150 ml, it is recommended to suspend the infusion and recheck after one hour without feeding, resuming nutrition at half the prescribed rate. Administration will be suspended if the content is not reduced.
- Checking the correct rate of administration.
- Cleaning of the tube after each feeding, medication, after aspiration of gastric residues, and every 6 hours in cases of continuous administration.
- When the intake is delayed for any reason, the infusion rate should not be increased.
- Record in detail: daily weight, total formulation administered in 24 hours, (actual dietary intake), total daily fluid intake by tube, enteral and parenteral routes, daily diuresis control, stool (number, type, volume), vomiting (number, type, volume) and other losses (drains, fistulas and gastric residue).
- Assessment of abdominal pain or distension.

Regarding the efficacy of EN, there is no debate on the correct absorption and metabolic utilization of the substrates administered by this route. Comparisons with parenteral nutrition (PN) are favorable to

EN in terms of lower complications and costs. The evolution of gastrointestinal tract approach techniques (radioscopic, laparoscopic and surgical) allows the use of this treatment modality in patients who would otherwise be destined to total parenteral nutrition. On the other hand, the use of the technique requires trained professionals and a permanent monitoring activity (Rabat-Restrepo & Campos-Martín, 2009).

## CONCLUSIONS

A comprehensive analysis of enteral nutrition (EN) in critically ill patients shows its fundamental role as a therapeutic intervention in hospital settings, particularly in Intensive Care Units (ICU). Its adequate administration not only prevents malnutrition but also contributes to improving immunocompetence, significantly reducing infectious complications, hospital stays, and mortality rates. Despite technological and scientific advances, current clinical practice still faces significant challenges related to implementing and monitoring EN.

EN is presented as the first therapeutic option in patients with minimal intestinal functionality, as it preserves physiological digestive processes, maintains the intestinal barrier, and decreases the risk of bacterial translocation and septic complications. However, studies have shown a worrisome discrepancy between the volume of NE prescribed and administered in critical patients, reaching, in some cases, only 76% of the prescribed volume. These inconsistencies, linked to interruptions due to gastrointestinal intolerances and deficiencies in recording and monitoring, negatively affect patients' caloric and protein intake.

Advances in NE administration materials and techniques, such as using small-caliber probes and infusion pumps, have allowed greater personalization of treatment and improved patient tolerance. However, these technical improvements require a high level of training and constant updating by healthcare personnel, especially nurses, who play a key role in managing and monitoring EN; nursing activities before, during, and after the administration of EN are fundamental to guaranteeing the effectiveness of the treatment and preventing mechanical, gastrointestinal, metabolic, infectious, and psychological complications.

In this context, the role of the nursing staff is central to implementing protocols that standardize care, improve the quality of care, and minimize risks. Specific recommendations include hand hygiene, correct positioning of the patient, maintenance of oral hygiene, adequate irrigation of the catheter, and storage and handling of formulas in optimal conditions. In addition, continuous monitoring of key indicators such as gastric residual, infusion rate, body weight, and patient water balance is essential to the efficacy of the intervention.

Likewise, the creation and strengthening of Feeding Departments, as established by the Argentine Ministry of Health, reinforces the need for a comprehensive and multidisciplinary approach to ensure adequate initial nutritional diagnosis and ongoing follow-up. Staff training and standardization of feeding practices emerge as key tools to optimize clinical and economic outcomes associated with using EN.

In conclusion, although EN has been consolidated as an indispensable intervention in managing critically ill patients, its effective implementation requires overcoming operational, technical, and educational barriers. The protocolization of monitoring and continuous training of health care personnel is essential to ensure that the potential benefits of EN translate into better outcomes for patients and the health care system in general. The strengthening of the nursing role and the incorporation of advanced technologies constitute significant opportunities to improve the quality of nutritional care in critical hospital settings.

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## FINANCING

None.

## CONFLICT OF INTEREST

None.