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Section 2. Prescribing and Communicating the Enteral Nutrition Order

Background

In comparison with the greater risks associated with PN, the prescription of EN may seem benign, but patient harm can occur when EN practice recommendations are not followed. Adverse events related to EN have been reported at each step of the EN process. Examples of these events include enteral feeding tube malposition or misconnection, EN formula contamination, and bronchopulmonary aspiration.[1] Therefore, patient safety is a fundamental consideration in the EN prescribing process. Prescribers of EN need in-depth knowledge of protein and energy requirements, electrolyte and fluid balance, acid-base homeostasis, and GI anatomy and function. Prescribers of EN must also be knowledgeable in proper indications and contraindications to EN, proper care and selection of EADs intended for gastric or small bowel placement, and potential complications related to EN.[2–5]

Currently, EN orders may be inconsistently worded and executed due to the individualized prescribing habits of clinicians, variance between institutions, and inadequate prescriber education. Furthermore, many organizations still sanction prescribing EN via telephone, verbal, or handwritten orders. The use of standardized electronic EN orders can help address problems of incomplete, ambiguous, or incorrect EN orders. This section will provide guidance for healthcare organizations when developing policies and procedures to safely prescribe and communicate the EN order.

Question 2.1. How can the approach to prescribing EN be standardized to reduce EN-related errors?

Practice Recommendations

1. Use a standardized approach for prescribing EN to minimize complications associated with incomplete or ambiguous EN orders.
2. Develop and implement policies and procedures that address all aspects of the EN order process and competency assessments for healthcare professionals involved in the prescription of EN.

3. Apply a standardized model of prescribing for safe EN practice, with each organization using the insight of their prescribers to determine how best to apply the model. Consider including EN prescribing in ongoing professional practice evaluation (OPPE) and focused professional practice evaluation (FPPE).
4. Incorporate interdisciplinary teams as available within the organization, allowing each member to address relevant issues as it relates to the EN process.
5. Develop and implement a process for the primary healthcare team to assess, document, and communicate the therapeutic goals and monitoring of EN therapy. Following the process, the primary healthcare team can:
   a. Evaluate the patient to assess that EN administration is safe and indicated.
   b. Confirm that the patient has an appropriately placed EAD that is appropriate in regards to current clinical status.
   c. Review the nutrition assessment and nutrition recommendations as documented by nutrition support clinicians (see Section 1).
6. Describe specific methods of communication to be used among physicians, advanced practice providers, dietitians, pharmacists, and nurses involved with the prescription, order review, administration, and monitoring of EN.
7. Involve clinicians specializing in nutrition support in the design of a standardized EN order process that will meet the needs of the organization's specific patient population.
   a. Prescribe EN for all patients using standardized electronic EN orders (eg, computerized provider order entry [CPOE] systems).
   b. When CPOE systems are unavailable, prescribe EN with a standardized order template using an editable electronic document, saved as a PDF, which will remain part of the EHR.
   c. Avoid handwritten, telephone, and verbal EN orders because of the potential for transcription errors.
   d. Design electronic EN order sets with clear instructions that are easily understood by all healthcare professionals involved in the prescription of EN.
8. Design a transitional EN order template that assists with the transition from acute care to long-term care or home care settings (see Section 11). Using a well-designed standardized template will facilitate communication of the following:
   a. Patient identifiers, previous EN formula and water flushes, delivery site and access device, and administration method and rate
   b. Previously trended laboratory values and clinical assessments relevant to EN tolerance
   c. Contingency plans for transition to oral feedings or PN as circumstances may dictate

Rationale

Organizations need proper, accurate documentation of nutrition interventions that is available to all members of the healthcare team. This documentation can promote effective 2-way communication between prescribers of EN and those reviewing EN orders and subsequently monitoring the patient regarding appropriate energy and protein delivery, changes in therapy, medication interactions, EN tolerance, and other pertinent information.

The implementation of a standardized EN ordering process that includes an electronic order template can eliminate the possibility for inappropriate EN orders due to omissions, transcription errors, or illegible documentation. When all elements of the EN order are included during electronic prescription, the risk for errors related to verbal order clarification and transcription can be lessened. Standardized EN orders can also guide all EN prescribers within an institution to use the same terminology when referencing EN.[6,7] Other advantages of standardized orders can include preventing incomplete orders and improving efficiency for the prescriber and enhancing patient safety. When all elements of the EN order are included during electronic prescription, there is a reduced risk for errors.[6]

The adoption of EHRs can give nutrition support professionals an opportunity to implement standardized EN order processes. In a recent national survey of hospital pharmacy directors by the American Society of Health-System Pharmacists, 80.9% of hospitals that responded were using CPOEs for general medication orders.[8] However, the degree of customization within electronic systems is low. Nutrition support clinicians will need to work closely with information technology personnel (who can in turn reach out to vendor and application architects as needed) to request adequate decision support capability and proper documentation for those prescribing EN. In a survey of the American Society for Parenteral and Enteral Nutrition's membership regarding the safety and efficacy of nutrition documentation and nutrition-related ordering processes, Vanek[9] found that nutrition support practitioners do not highly rate their institutions' EHR systems and concluded that the growing adoption of EHRs and CPOE systems offers nutrition support practitioners the opportunity to ensure that nutrition and nutrition support content within their system is adequate and safe. Ammenwerth et al[10] conducted a systematic review to determine the effect of CPOE systems on general medication error and adverse drug events. Within the systematic review, 25 out of 27 studies addressed medication errors. Of those 25, 23 studies showed a relative risk reduction for medication errors of 13% to 99% after implementation of CPOE. Ammenwerth and colleagues also concluded that a transparent culture of safety within healthcare systems can increase proper reporting of medication errors, which will provide better data for future research.[11]

Documentation of nutrition interventions should be available to all members of the healthcare team. Proper documentation allows prescribers of EN to communicate EN tolerance,

EAD status, changes in therapy, and any other pertinent information to the rest of the healthcare team. This documentation should allow for communication between prescribers of EN and those reviewing EN orders for appropriate energy, protein, and fluid delivery; medication interactions; and EN tolerance.[11]

Malone et al[12] reported a case of a 65-year-old woman who was supposed to receive EN through a gastrostomy tube and fluid and electrolyte replacement via central venous catheter. However, she inadvertently received 160 mL of EN through her central line when it was mistaken for the gastrostomy tube. She subsequently required hydration, diuretic therapy, and prophylactic antibiotics, after which she recovered and was discharged from the acute care setting 8 days later. This case is an example of errors among healthcare providers in a patient with multiple access devices. Electronic EN orders can specifically indicate proper EN administration directions and may help eliminate errors related to orders that could expose patients to harm.[10]

The use of a complete EN order specifically designed to prescribe EN for home or transitional use will promote the continuity of a patient's care. The EN regimen can be optimized while the patient is in an inpatient setting, and the nutrition support clinician can reassess nutrition needs before discharge. A complete EN transition order will also allow the primary outpatient clinician to take over patient care and determine the appropriate frequency of laboratory monitoring, reassessment of nutrition needs, and confirmation of tube placement. EN transition orders can also assist with self-management of home enteral feedings in those who do not receive skilled nursing services. A complete order for discharge can allow for adequate education to be provided to patients being discharged to home with EN.[13]

Overall, a standardized approach to the EN prescription process that is administratively supported by the organization can ensure patient safety, assist the entire healthcare team, and help provide cost-effective nutrition therapy. Nutrition support clinicians must be engaged and held accountable for the development and implementation of policies and procedures related to the EN prescription process.

Questions 2.2 and 2.3. What are the *critical* (required) elements for a complete EN order? What are the *supplementary* (auxiliary) elements to the EN order that may improve patient safety?

Practice Recommendations

1. Include the following **critical** elements in the standardized electronic EN order template (Figures 2 and 3):
   a. Patient information
      i. Identify patients by the following: patient name, date of birth/age, and medical record number.
      ii. Transmit patient-specific information relevant to the electronic EN order such as height/length and dosing weight and allergies (eg, food, medication).
   b. EN formula name
      i. Describe EN primarily via descriptive generic names (eg, "standard," "high protein") to minimize confusion for prescribers. The product trade name could also be included along with the organizationally defined generic term. For pediatric patients, add final kcal/oz.
   c. Delivery site (route) and EAD
      i. Include the administration route in the EN order based on the enteral tube's distal tip position (gastric or small bowel).
      ii. The specific EAD to be used (eg, nasogastric [NG], orogastric, gastrostomy, nasojejunal, orojejunal, jejunostomy, or gastro-jejunostomy).
   d. Administration method and rate
      i. Include the specific method of administration in the EN order (eg, continuous, bolus, intermittent feedings).
      ii. Define the volume and rate of administration of EN for each method of administration.
      iii. Order sets that include advancement can be populated with the standard advancement and held, to be released each day after the clinician examines the patient and reviews orders with the team.
2. Develop nurse-driven EN protocols for volume-based feeding as per institutional policy.
   a. Include the volume and frequency of water flushes.
   b. Provide suggested methods to advance the volume and/or rate toward goal.
3. Create and implement policies and procedures that promote all elements of the EN order to be completed whenever the EN order is modified or reordered.
4. Design electronic order sets with elements that promote patient safety.
   a. Use required fields within the EN order to prevent submission of the order until it is complete.
   b. Use menus to facilitate standardization of EN prescribing.
5. When EN is reordered, require that prescribers take accountability for the proper monitoring of the patient's clinical condition, EN tolerance, and metabolic status.
   a. Monitor patients with newly initiated EN, newly placed permanent EADs, critically ill patients, patients at risk for refeeding syndrome, patients with poor glycemic control, or patients recovering from recent surgery as they will require more frequent monitoring.
6. Design and implement policies and procedures that address **supplementary** EN orders within the CPOE. See Figure 4.

INPATIENT ENTERAL NUTRITION ORDER

Patient Name: _____ **Medical Record Number: _____** **Dosing Weight (kg): _____**
Room Number:_____ **Date of Birth: _____**
Allergies: _____

Total Energy kcal/day **Total Protein g/day** **Total Carbohydrate g/day** **Total Fat g/day_____**
_____ **_____** **_____** **Total Fluid mL/day_____**

ENTERAL NUTRITION FORMULA

- □ Standard
- □ Standard High protein
- □ Standard High Calorie
- □ Fiber Containing
- □ Carbohydrate controlled
- □ Elemental include peptide-based
- □ Immune modulating
- □ Renal – low electrolytes

DELIVERY SITE (ROUTE AND ACCESS)

Route:
- □ Gastric
- □ Small bowel

Access:
- □ Nasogastric
- □ Nasoduodenal
- □ Nasojejunal
- □ Orogastric
- □ Oroduodenal
- □ Orojejunal
- □ Gastrostomy
- □ Jejunostomy
- □ Transgastric G/J tube

ADMINISTRATION (Method and Rate)

Method:
- □ Continuous
- □ Intermittent
- □ Bolus

Rate:
- □ Initial _____ mL/h
- □ Advance by _____ mL/h every _____ h to goal of _____ mL/h
- □ Initial _____ mL feeding over _____ min _____ times daily
- □ Advance by _____ mL each day to goal of _____ mL feeding over _____ min _____ times daily
- □ Initial _____ mL bolus over _____ min _____ times daily
- □ Advance by _____ mL each day to goal of _____ mL bolus over _____ min _____ times daily

OTHER

- □ Flush feeding tube with _____ mL of water every _____ hours (minimum of 30 mL per flush)
- □ Elevate head of bed 30–45 degrees

Figure 2. Enteral nutrition order template (specific content can be customized per institution). G/J, gastrojejunostomy.

a. Confirm that the initial enteral feeding tube position is correct via proper radiographic imaging that visualizes the entire enteral feeding tube. The exception to this may be in pediatric and neonatal patients who require multiple tube placements due to the x-ray exposure (see Section 4).
b. Establish proper EAD flushing in supplementary orders (see Section 7). Develop protocols that call for proper flushing before and after medication administration, during continuous feedings, before and after intermittent feedings, and before and after gastric residual volume (GRV) measurements.
c. Address reassessment of the appropriateness of HOB elevation and ongoing monitoring for EN tolerance in policies and procedures.
d. Integrate EAD care and assessment into policies and procedures to assist with infection prevention

- □ Start feedings of Human Breast Milk (HBM) at 1 mL q3h via NG tube (15 mL/kg/day, @ 10 kcal/kg).
- □ Continue for 3 days for trophic feedings.
- □ Increase feedings by 1 mL q3h per day on day 4, 5, and 6 of the feeding protocol until feeds on day 7 are at 75 mL/kg (5 mL q3h).
- □ On day 8 continue same feeding volume and begin fortification of feeds to 24 kcal/oz using human milk fortifier, 1 packet to 25 mL of human milk.
- □ On day 8 and thereafter the advancement continues at 1 mL q3h until the total volume is 160 mL/kg or 11 mL q3h on day 14. This will provide 160 mL/kg, @128 kcal/kg, @ 4.5 g/kg protein.
- □ Do not routinely check gastric residuals.
- □ Do not routinely flush NG tube.
- □ Continue daily weights.
- □ Obtain length measurements using (length board) and head circumference measurements (taking the average of three measurements) weekly.
- □ After reaching full-volume feedings, add vitamin D (400 International Units) and evaluate the baby for the need for additional elemental iron.

Figure 3. Example of neonatal enteral nutrition feeding protocol. NG, nasogastric.

SUPPLEMENTARY ORDERS

Auxiliary Orders:

- □ Assess gastric residual volume (GRV) every 6 hours or before each bolus/intermittent feeding

If GRV > 500 mL hold feeding for 2 hours and recheck GRV. If GRV recheck < 500 mL, restart feeding

- □ May give appropriate medications via enteral feeding tube, follow each medication by at least 15 mL water flush before and after medication as volume allowed (do not mix medications together or with EN formula)
- □ Consult Nutrition Support Team or Nutrition Support Clinician

Monitoring:

- □ Observe for signs of EN intolerance (include signs and symptoms of intolerance) every _____ hours
- □ Enteral feeding tube site care and assessment every _____ hours
- □ Obtain body weight every day, or every _____ days
- □ Strict fluid volume Ins/Outs
- □ Capillary blood glucose: per institutional protocol

Laboratory Orders:

- □ Comprehensive Metabolic Panel every day or every _____ days
- □ Serum Magnesium every day or every _____ days
- □ Serum Phosphorus every day or every _____ days

Figure 4. Suggested enteral nutrition (EN) supplementary orders (specific content can be customized per institution).

and allow for proper intervention if a complication occurs.

e. Ongoing monitoring includes laboratory monitoring, measurement of intake and output, weight measurements, physical assessment, and GI tolerance.

f. Identify the specific product for modular therapies along with the proper prescribed amounts and administration schedule.

g. State specific amounts of additional macronutrients per day with orders for modular nutrition therapies (eg, 12 g protein powder per day) along with directions for proper reconstitution and administration.

7. Make consultation to the nutrition support team or clinical nutrition service available for prescribers.
8. Determine the duration (time limits) of the EN order before it has to be renewed.

Rationale

The development of clearly defined policies and procedures regarding the required elements of the EN order helps the facility ensure that the orders are complete throughout the EN process and that the right patient receives the right product, in the right amount, via the right route at the right time. It is recommended that the essential elements of the EN order are made available for viewing by all healthcare professionals via proper electronic documentation in the EHR. Critical elements for a complete EN order must be addressed through a CPOE order or editable electronic document before supplementary elements can be acknowledged.[14] In a prospective study, Armada et al[15] evaluated the effect of the implementation of the CPOE system on the incidence of prescription errors and found that prescription errors decreased significantly from the error rate for handwritten of 44.8% to an error rate of 0.8% after CPOE implementation ($P < .001$). This prospective study demonstrates

the impact that healthcare technology can have on patient safety, and it helps nutrition support professionals justify the importance of nutrition-based software integration.[15] It is important when developing electronic EN ordering documents that institution specific and patient population customization is permitted (Figures 2 and 3).

The appropriate initiation and advancement of an EN regimen depend on the patient condition as well as the administration method and EAD type. Continuous EN administration via enteral feeding pump with small-volume, frequent water flushes is preferred in the critically ill, those at risk for intolerance, and for small bowel feedings. Directions for continuous EN administration identify the proper initial administration rate and can contain supplementary orders addressing timing of rate advancement to goal infusion volume. Bolus and intermittent methods of EN administration via syringe, regulated drip enteral feeding bag, or enteral feeding pump are preferred in patients who have proven tolerance with continuous EN administration and those who will transition out of the acute care setting with EN. Directions for bolus and intermittent EN administration document the proper number of feedings per day along with initial proper volume of EN administration rate and volume and frequency of water flushes. Bolus and intermittent feeding orders can also contain supplementary orders that give directions for volume advancement and goal EN volume.

The implementation of enteral feeding protocols may improve energy, protein, and fluid delivery to ICU patients who experience interruptions in EN delivery due to unavoidable procedures (reintubation/extubation, bedside procedures involving the GI tract or airway, and imaging studies).[16,17] The administration of large volumes of EN to compensate for EN that was missed during procedures can place patients at risk for intolerance of EN.[18–21] If enteral feeding protocols are going to be implemented, healthcare organizations should utilize multidisciplinary teams to determine if these protocols are beneficial for that institution's patient population and how to build this into the order entry process. See Figure 3 for an infant EN protocol.

Supplementary orders (see Figure 4) assist with adequate energy and protein delivery, maintain patient safety, and assist clinical staff with therapeutic monitoring of EN therapy. Although supplementary orders are not essential, they complement the EN order with additional guidance to better communicate and standardize EN for a patient. Supplemental orders will be based on institutional policies that advocate for the proper care of the enterally fed patient within the practice variations at each organization. These orders can also permit prescribers to consult an institution's nutrition support service to assist with management of EN. Supplementary orders address the use of adjunct modular therapies, which can allow clinicians to enhance macronutrient contents of an EN prescription.

Critical and supplementary elements of the EN order facilitate proper and safe EN prescription and administration. Nutrition support clinicians can help institutions determine and develop any supplementary orders that would benefit their patient population. Continued review of institutional policies and procedures along with national clinical guidelines and practice recommendations will allow institutions to continue to improve the EN process.

Question 2.4. What is the safest way to describe EN formulas?

Practice Recommendations

1. Set policies and procedures on how EN formulas will be described throughout the healthcare organization, including in electronic order sets, patient-specific EN labels, and all other references to EN (eg, for product inventory, purchasing, healthcare provider documentation).
2. Describe EN primarily via descriptive generic names (eg, "standard," "high protein") to minimize confusion for prescribers. The product trade name could also be included along with the organizationally defined generic term.
3. Develop a patient-specific EN label template to reflect all the critical elements of the EN order.

Rationale

The EN prescription should be a patient-specific therapy that is prescribed, reviewed, prepared, and administered, with a process optimized for patient safety. The use of CPOE has been shown to reduce the opportunity for medication errors due to illegible orders, transcription errors, and prescriber error.[22] The use of electronic order sets in CPOE can positively assist prescribers when obtaining patient-specific and EN formula information. However, with constantly evolving medication trade names and EN formula brand names and product labeling, there is opportunity for transcription error when acting on an EN order, especially if it is handwritten. EN formula-specific information should be easily accessible to prescribers to allow for the delivery of adequate protein and energy, electrolytes, and fluid and to ensure proper EN formula prescription. Disease-specific formulas should be selected using clinical judgment with knowledgeable clinicians weighing efficacy, tolerance, cost, and clinical evidence (from randomized clinical trials).[14]

Determine descriptive generic names to be used to describe EN formulas throughout the entire healthcare system. The use of generic names to describe EN is encouraged because healthcare organizations often change EN formularies and because EN formularies will vary among the acute, chronic, and home care settings. Brand names for EN can be confused when other formula or medications have similar names. When institutions change EN formularies, it is important that clinicians have easy access to formulary changes and a "formulary card" or "conversion chart" with new EN formulas, old EN formulas, and modular products available. For example, an EN formula that

contains nonhydrolyzed macronutrients that is intended for those with normal digestive function can be generically identified as "standard." An EN formula that contains hydrolyzed macronutrients, which could be used for those with malabsorptive disorders, can be generically identified as "peptide-based" or "elemental." An EN formula that contains a higher percentage of calories from fat along with a higher fiber content to assist with glycemic control can be generically identified as "carbohydrate controlled."

Develop policies and procedures regarding patient-specific EN formula labels that can be affixed to EN formula administration containers. Develop patient-specific EN formula labels that contain all of the elements in the same sequence as the original EN order. Determine if patient-specific EN formula labels present all nutrients or only macronutrients and select micronutrients.

Question 2.5. How often should the EN order be reviewed for renewal in the acute care, chronic care, and home care settings?

Practice Recommendations

1. Determine an institution-specific or organization-specific policy for the frequency of EN order review and renewal based on the level of care provided by the institution (acute care vs subacute care vs long-term care vs home care).
2. Complete all elements of the EN order when the EN order is modified or reordered.
3. Review orders daily in conjunction with monitoring daily in unstable patients (eg, critically ill patients, postsurgical patients, patients with poor glycemic control, patients with unstable fluid and electrolyte status, and patients at risk for refeeding syndrome).
4. Review orders daily for neonatology and critical pediatric patients. Stable pediatric patients may need less frequent review.
5. Reduce monitoring of EN orders to every 2–7 days (1–3 times per week) in stable adult hospitalized patients.
6. Monitor patients in the long-term care or home setting who have demonstrated to be stable on an EN prescription with no signs of intolerance every 1–4 weeks. Less frequent review and reordering may be appropriate in select patients on long-term EN in keeping with regulatory requirements.

Rationale

Even though EN may seem to be a benign therapy, there are complications and adverse events related to the EN process. Policies and procedures addressing the timeframe for the renewal of the EN order will help facilities have the best EN order system based on the patient's current condition.

By monitoring the patient and reviewing the EN orders at appropriate frequencies, clinicians can provide nutrition support that is safe, able to detect any clinical or metabolic complications, and assess the extent to which nutrition goals have been reached. Unlike PN, which may require frequent adjustments, the EN regimen may not require therapeutic interventions as frequently. Often, the EN order is best reviewed and renewed when a patient changes levels of care or when the patient on EN is discharged to home or a long-term care facility.

Existing literature does not address the ideal frequency for reviewing EN orders. Therefore, practitioners must rely on expert clinical experience and consensus opinion to provide clinical practice guidelines. The ideal timeframe for EN order review and renewal may vary based on the healthcare setting and the acuity of the patient population. Patients newly initiated on EN will need more frequent monitoring than those whose tolerance of EN has been established. Special attention is also given to high-risk patients, such as those who are clinically unstable (eg, patients with preexisting metabolic abnormalities, critically ill patients, or postoperative patients) and those at risk for refeeding syndrome. The frequency of order review usually decreases as patients stabilize and transition to lower levels of care. In long-term care settings, time intervals between order renewals may be subject to regulatory standards.

Each healthcare organization can establish its own policy regarding the frequency of the EN order review and renewal. Clinicians with expertise in the area of nutrition support, preferably from multiple disciplines, are key players to engage in policy development. To ensure patient safety and assess the effectiveness of nutrition interventions, organizations will want to monitor compliance with policies.

Question 2.6. What educational programs and systematic changes can be implemented to prescribers of EN to improve EN ordering and reduce errors?

Practice Recommendations

1. Provide education regarding safe practices for EN prescribing and monitoring to all clinicians that prescribe EN.
2. Provide ongoing rigorous education about safe EN prescribing practices to improve communication and monitoring. Educational initiatives can include healthcare team in-services, pocket cards, and regular audits with reporting results at institutional quality improvement meetings.
3. Integrate education regarding safety in EN into the core curriculum for healthcare students and trainees. A multidisciplinary team of clinicians with expertise in the area of nutrition support can conduct this education.
4. Provide in-depth and rigorous educational content on safety issues to all clinicians who will care for patients receiving EN in the acute, chronic, and home care

settings and those who are training to specialize in nutrition support care.

5. Evaluate or design a physical environment for EN prescribing by assessing needs that may affect the performance of EN prescribers to safely communicate the EN order for transcription, interpretation, and review in the following 5 factors outlined by the United States Pharmacopeial Convention, USP General Chapter <1066>:
   a. Characteristics of the individual prescriber can vary in responses to physical environment. Therefore, adaptation to the physical environment to meet individual needs will optimize accuracy of all prescribers of EN.
   b. Tasks performed and workloads: Prescribers presented with large workloads often find workarounds and overrides that could place patient safety at risk.
   c. Tools and technology used to perform tasks: With the constant evolution of technology within healthcare, the tools and technologies implemented in healthcare systems must be user-friendly, easily accessible, and optimized to each institution's needs.
   d. Compliance of the physical environment in relation to USP General Chapter <1066>: Sensory interference from noise, light, interruptions, or poorly constructed work environments can adversely impact the ability of clinicians to safely prescribe EN.
   e. Organizational support: Offer support that helps address new and ongoing concerns related to the safe communication and transcription of the EN order.
6. Avoid verbal and telephone prescriptions except for communication between prescriber and nutrition support clinician to clarify the EN order that may result in order revision.

Rationale

Research is limited regarding whether educational programs about safe EN prescribing practices affect patient outcomes. However, studies have shown that patient care with multidisciplinary teams increases communication among healthcare professionals, which in turn contributes to higher rates of patient safety,[23] and this finding suggests that educational techniques that improve communication among members of the EN team may be warranted. Further research on the impact of the education of EN prescribers on the incidence of EN-related errors and inappropriate prescribing is needed.[23]

The implementation of education programs has been associated with safer practices for prescribing medication.[24] Elements of safe EN prescribing are appropriate topics for the core didactic curricula in professional programs (medical, pharmacy, advanced practice nursing, nutrition, and physician assistants). Safe practices for prescribing EN can also be integrated into the clinical training for professional programs, residencies, and specialty/fellowship programs for those who may be involved in the prescribing of EN.[7]

The process of prescribing EN requires an environment that is productive for each prescriber of EN and an environment that is designed with consideration of the following: prescriber characteristics, workload of prescribers and those implementing orders, technology available, and organizational support. The October 2010 bulletin by the USP, titled "Physical Environments That Promote Safe Medication Use," establishes work environment standards to reduce the risk of medication errors. This bulletin gives nutrition support professionals a resource to incorporate safe EN prescribing practices into policies and procedures for clinical practice.[25]

Question 2.7. What are the essential elements of safe communication and transcription of the EN order?

Practice Recommendations

1. Create policies and procedures that minimize the need for order transcription, therefore limiting transcription errors and increasing safe communication within the EN order process.
2. Use EHR communication technology to avoid transcription during the EN order process.
3. Institute and follow policies and procedures to encourage that transcribed orders are independently double-checked for completeness and accuracy before EN review and preparation.
   a. Whenever possible, avoid multiple transcriptions of EN order data.
   b. If manual data transcription is completely unavoidable, document any transcribed data that undergoes a double-check process and make it available for quality improvement audits.
4. Review and compare EN orders to the most current recommendations when reassessing patients. Whenever there are unexplained discrepancies between the order and the recommendations, communicate with the healthcare team according to institutional policies to ensure that recommendations were understood.
5. Develop protocols/algorithms to serve as communication tools and guides to safe EN practice for the healthcare organization. These may include guidance about the following:
   a. Initiation of EN prior to completion of nutrition assessment by the dietitian or other nutrition support clinician
   b. Approach to feeding through various EADs
   c. Water-flushing protocols, especially if using automated systems

d. Medications that can be given via EADs and if tube feedings need to be held (see Section 8)

Rationale

An incomplete order, missing data, required transcription step, or inadequate verbal communication between prescribers and those ultimately implementing the EN order increases the risk for errors that can adversely affect patient care. The use of technology can assist with the provision of safe EN therapy. The development of standardized EN order forms can facilitate consistent prescription of complete EN orders without the need for interpretation or transcription. As EN prescribers adopt the use of standardized orders, the process of standardized independent double-checks with stepwise checklists becomes easier as orders are prescribed and communicated to other staff in a consistent manner. To have an effective process, 2 clinicians must independently review the EN order prior to preparation and labeling. The use of independent double-checks should not be overused as to cause fatigue for healthcare providers, but they should assist with addressing potential breakdowns found in the EN process. Independent double-checks must be used in conjunction with other safety measures, and education should be provided to reiterate the importance of independent double-checks to healthcare staff.[26]

Multidisciplinary teams can assist with the facilitation of open communication between members of the healthcare disciplines. Teamwork between disciplines can also improve relationships between departments within the healthcare system, and this communication can lead disciplines to better understand the demand on other disciplines. This open communication can improve the EN process by increasing team members' knowledge and facilitate learning about problems. The relationships built with the use of multidisciplinary teams can also ease the communication between providers when clarifying or optimizing an EN regimen. Communication between teams can also lead to identification of a problem, finding the root cause of the problem, and development of a team-based multidisciplinary action plan.[27]

Evidence-based EN protocols/algorithms developed by nutrition support professionals serve as a guide for safe, standardized EN practice and communication. Their use has been shown to minimize the use of inappropriate EN, increase EN days, increase the percentage of prescribed calories delivered, and reduce hospital stays and mortality. In order for protocols/algorithms to be used in practice, ongoing and rigorous education and monitoring are needed.

Topics for Future Research

- Documentation of errors related to EN prescribing
- The impact of electronic EN orders on the accuracy, monitoring, and safety of EN therapy
- The effect of standardized orders on adequate protein and energy delivery
- Error rates related to incomplete, ambiguous, or incorrect EN orders
- Error rates associated with use of standardized EN orders vs error rates with the use of telephone, verbal, or handwritten EN orders
- Outcomes research regarding how the frequency of monitoring of EN orders affects the achievement of patient safety and nutrition goals
- The impact of education programs and annual competency assessment on errors related to EN ordering and patient safety measures
- The use of a standardized EN home transition order form in the continuity of care for patients discharged home with EN

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Section 3. Review of the Enteral Nutrition Order

Background

A dedicated review of the EN order by a nutrition support professional ensures that the order contains all the critical elements for a complete EN order and that it meets the specific patient's energy, protein, micronutrient, and fluid needs. This review is conducted independently from the EN recommendation and the EN prescription. Safety issues in the EN order review can involve the correct patient identification; the appropriateness of the prescribed EN formula for the patient; dosing, administration, and monitoring instructions; free water flushes; the EAD; concurrent medications and potential drug-nutrient interactions; the EN infusion site; and the effect of EN on the patient's electrolyte, acid-base, and fluid balances. Healthcare organizations must have policies and procedures that address the EN review process for nutrition support professionals and determine how interventions will be communicated to the primary team.

Question 3.1. What are the best mechanisms and practices for independent EN order review for safe and optimal EN preparation and delivery?

Practice Recommendations

1. Develop and implement policies and procedures at the healthcare organizational level that address the independent review of the EN order by a knowledgeable healthcare provider and the documentation of the review process for safety and clinical audits.
2. Prescribe EN using standardized electronic order templates (ie, CPOE system) that transmit the complete EN order.
    a. In the absence of a CPOE system with standardized templates, prescribe EN with a standardized order template that is maintained as an editable electronic document with each patient-specific order saved as a pdf in the EHR, and implement best practices to avoid transcription errors from handwritten or telephone orders.
    b. Enter EN order data in a standardized format, and transmit any supplemental orders in standard units. Include order instructions that are clear to those reviewing or administering EN.
    c. Make nutrition assessment and nutrition recommendations available in the EHR.
3. Include the EN order in the patient's electronic medication profile to allow a pharmacist to review the EN order and patient medication profile. The pharmacist will assess:
    a. The appropriateness of the medication route of administration
    b. The compatibility of medication with enteral formulas
    c. Methods to optimize the medication regimen
4. Evaluate the following elements as part of the clinician's independent review of the EN order:
    a. Patient allergies
    b. Proper dosing weight
    c. Current clinical status and nutrition needs
    d. Indication for therapy
    e. Appropriate energy, protein, micronutrient, and fluid delivery
5. Develop clear policies and procedures for the healthcare organization to address the clarification of EN orders if any of the following occur:
    a. Order elements are missing.
    b. Clinical dosing does not meet recommendations.
    c. Administration is inconsistent with guidelines or may be associated with incompatibilities.
6. Document any order clarification or change to the EN order within the facilities' EHR or, in the absence of