PRACTICE TOOL

Preventing Errors with Barcode Scanning for Enteral Nutrition

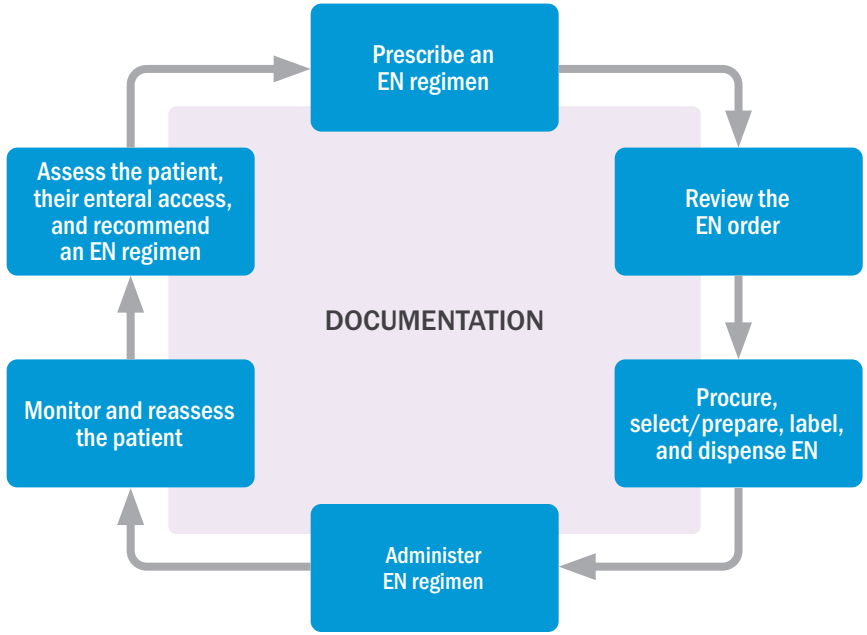
Enteral nutrition (EN) or tube feeding allows for the delivery of nutrients to those who cannot maintain adequate nutrition by oral intake alone. EN is provided to patients of all ages and in a variety of healthcare settings including home. However, medical errors and close calls related to EN can lead to actual and potential patient harm.

In support of Patient Safety Awareness Week, ASPEN provides this practice tool to educate clinicians about barcode scanning and the benefits of this technology to reduce errors associated with EN.

Potential Errors

Numerous factors can compromise the safety of EN administration, and these challenges exist for patients of all ages, from neonates to the elderly. Some patient populations may receive ready-to-use EN formulas while other populations may require EN feedings that must be prepared (such as from powder) or have components added to ready-to-use formulas to add calories, protein, or micronutrients. Within the EN use process (see Figure 1), errors may occur at many of the steps, particularly in ordering, preparing, and administering these feedings.[1] During the preparation process, (which includes procurement, selection, preparation, labeling, and dispensing), clinicians may inadvertently use the wrong, expired, or recalled products.[1-3] Further risks exist at the bedside, including administering EN to the wrong patient, at the wrong time, at the wrong rate, or via the wrong route as well as the possibility of using feedings that are expired or contain components that have been recalled. Such errors can have significant consequences for patient safety.

Figure 1. EN Use Process[1]



Adapted from Boullata JI, Carrera AL, Harvey L, et al. ASPEN safe practices for enteral nutrition therapy. JPEN J Parenter Enteral Nutr. 2017;41(1):15-103.

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Barcode Scanning

Barcode scanning technology is used in the healthcare setting to properly identify items such as medications, human milk (HM), or EN formulas. To minimize errors, scan both the barcode on the item and the patient's armband at the point of administration. This verifies what is being provided against the provider order in the patient's electronic health record. Barcode scanning of EN feedings can help hospitals prevent misadministration errors and adverse events that may occur if patients receive the wrong formula, modular or fortifier, or human milk, as well as an expired or recalled item.[4]

Scanning for Enteral Formulas and Products

Routine practice of scanning all EN products during preparation and administration of tube feeding varies even though administering the wrong formula or product to a patient of any age, could have significant clinical impact, including allergic reactions, metabolic or electrolyte disturbances, or feeding intolerance.[3] Benefits of using barcode scanning systems with robust capabilities (such as those outlined in the checklist on the next page) can reduce preparation and feeding errors as well as improve efficiency and staff productivity by eliminating the need for two-person verification.[3]

Photo courtesy of Timeless Medical Systems

A Veteran Affairs Healthcare System study found that documentation of EN feedings improved because of scanning and concluded that the safety, documentation, and transparency for EN therapies was enhanced.[5] Organizations must ensure proper verification of EN products prior to preparation and administration, regardless of feeding components. Consider the following strategies.[4]

- Create a plan to use barcode scanning for EN and conduct a failure mode and effects analysis (FMEA) to identify risk points and evaluate workflow.
- Implement centralized preparation with dedicated human milk/formula technicians.
- Build standard EN orders.
- Implement barcode scanning and develop an escalation process for when products will not scan.
- Plan for recalls or shortages and notify clinicians and patients when they occur.
- Analyze barcode scanning data, report out to team members, and learn from errors.

Specific Issues for Neonates and Human Milk

Scanning HM at the time of administration is considered a best practice standard and reduces the risk of the infant receiving the wrong expressed milk which includes significant risks of passing along potential pathogens or medications/illicit drugs to the neonate. The Joint Commission recommends a reliable identification system to prevent such errors.[6] Barcode scanning systems that offer features beyond identifying the correct HM, such as calculating fortified HM recipes, tracking product lot numbers (for pasteurized donor human milk, human milk fortifiers, infant formulas, and all modulars), and verifying correct products to the provider order, can further improve patient safety.[3]

▶ ***See Checklist for Evaluating EN Safety Processes on the next page.***

Summary

Organizations should adopt automated systems to scan all enteral nutrition products including formulas, additives, modulars, and human milk to ensure the correct products are being used for the correct patient, the products are not expired or recalled, and the lot numbers are recorded. Such processes prevent adverse events and offer the ability to monitor near misses for ongoing quality improvement.

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Checklist for Evaluating Enteral Nutrition Safety Processes

Consider the following for each unit in your facility:[3, 7]

- ☐ Are facility-prepared EN feedings properly labeled with patient information, contents of the feeding, and expiration date/time?
- ☐ Is EN scanned before administration to ensure the product or prepared feeding matches the provider order?
- ☐ Does the scanning system automatically calculate the EN recipe based on the provider order without manual entry, preventing calculation and/or transcription errors?
- ☐ For facility-prepared feedings, are EN ingredients (formulas, modulars, additives) all scanned at the time of preparation to prevent the use of the wrong, expired, or recalled products?
- ☐ Is there a method for tracking lot numbers of all enteral products in the event of a future recall?
- ☐ Is there a method of scanning any EN product samples that are sent home with a patient at discharge to ensure the correct product is provided and lot numbers are tracked in the event of a future recall?
- ☐ Does the scanning system prevent expired and recalled products from being used during EN preparation or feeding?
- ☐ Does the scanning system allow the hospital to respond to recalls by running a report for recalled products to identify the location of these items in inventory, patients who had been administered a recalled product, and recalled items sent home as samples?
- ☐ Is there a process in place to use recall tracking data for patient follow-up and retention of records as outlined by The Joint Commission and the U.S. Food and Drug Administration?
- ☐ For infant populations, are all human milk bottles scanned at the time of preparation, when portioning into smaller doses, at feeding, and when discharging bottles home to ensure all bottles belong to the correct patient?
- ☐ For infant populations, are you able to scan all pasteurized donor human milk (DHM) and human milk fortifiers (including human milk based fortifiers) to confirm the products match the provider order and to track lot numbers in the event of a future recall?
- ☐ Does the scanning system offer product inventory tracking for EN products, DHM, fortifiers, and additives to prevent under-ordering or over-ordering?
- ☐ Does the scanning system track inventory of HM including expiration and storage location to ensure all HM is collected and sent with the patient at the time of discharge?

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