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Acute Care

ISMP Medication Safety Alert!®

Educating the Healthcare Community About Safe Medication Practices

ISMP Institute for Safe Medication Practices

An ECRI Company

Patient access to appropriately sized oral/enteral medication syringes is needed

Problem: Errors with enteral medication administration can lead to complications and patient harm. The most vulnerable patients include those with feeding tubes who receive enteral liquid medications, and pediatric patients who are prescribed oral liquid medication. We have previously written about these concerns, including in our November 17, 2022 article, Preventing Errors When Preparing and Administering Medications Via Enteral Feeding Tubes. Unfortunately, we continue to receive error reports involving patients who lack access to appropriate syringe types (i.e., oral slip tip or ENFit [oral/enteral]) and sizes for their prescribed volumes.

Drug manufacturers of both prescription and over-the-counter medications sometimes provide dosing devices (e.g., syringes, droppers) in the packaging that cannot be safely used for all possible dose volumes. In some cases, community pharmacies may fail to provide appropriately sized syringes due to limited device inventory. In addition, pharmacy staff may have insufficient training and education on how to determine the correct syringe size for the prescribed volume. Some practitioners may not confirm whether patients have access to dosing devices before discharge, or they may not realize they need to prescribe these devices so they can be provided when prescriptions are filled at the pharmacy. Even when patients receive a syringe, they may still administer incorrect doses due to confusion about measuring the correct volume, particularly when prescription labels do not include the metric volume and they are not shown how to measure a medication dose. Consider the following scenario.

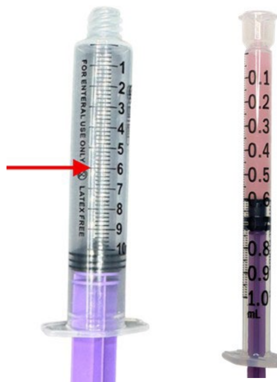

Figure 1. A patient nearly administered 6 mL of medication rather than 0.6 mL via their feeding tube, partially due to the fact that they were provided with a 10 mL ENFit syringe (left) rather than an appropriately sized 1 mL ENFit syringe (right). Photo provided courtesy of GEDSA (www.stayconnected.org).

*A patient was prescribed an enteral medication. The 0.6 mL dose was to be given via their feeding tube using a 10 mL ENFit syringe (**Figure 1**). The 10 mL ENFit syringe can accommodate doses in 0.2 mL increments. However, only the markings denoting full mL doses are labeled with numbers. The patient was confused about which markings to draw up the dose to since the syringe did not have a 0.6 mL labeled marking, but it did have a 6 mL labeled marking. In this case, a 1 mL ENFit syringe would have been much more appropriate for a 0.6 mL dose and would have eliminated the potential for a 10-fold overdose, but the pharmacy did not carry 1 mL ENFit syringes. The patient was not educated about how to prepare the dose using the markings on the 10 mL syringe and they were not provided the appropriate size syringe.*

Survey

To better understand safety concerns and barriers related to enteral medication administration, the Global Engineered Device Supplier Association (GEDSA), in partnership with The Oley Foundation, conducted an anonymous survey in 2025. The survey focused on feeding tube users'

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Warning! Enteral feeding tube declogging system uses a luer lock syringe. A nurse reported concerns with CLOG ZAPPER, an enteral feeding tube declogging system (made by Avanos) used to clear blockages from enteral feeding formulations. According to the instructions for use (IFU), the kit includes a 10 mL syringe with an enzyme-containing powder that must be mixed with 10 mL of water. The IFU instructs users to connect the syringe to the blue luer lock applicator and gently instill 2 to 5 mL of the solution into the feeding tube. The CLOG ZAPPER solution should remain in the tubing for 30 to 60 minutes to clear the feeding tube, and then the user should flush with 6 mL of water.

According to the reporting organization, in 2025, Avanos changed the presentation of the syringe containing the CLOG ZAPPER powder from an oral slip tip (**Figure 1**) to a luer lock connection (**Figure 2**, page 2), but the nurse was not aware of the change. The nurse reported that the tip of the current (luer lock) syringe provided in the CLOG ZAPPER kit did not fit securely to the clear connector that comes attached to the applicator. This resulted in a significant amount of the enzyme powder solution spilling over the edges of the applicator (instead of going into the feeding tube).

Figure 1. Avanos previously dispensed an oral slip tip syringe with the CLOG ZAPPER kit, such as the ones shown.

In order to get the new luer lock syringe to connect to the blue luer lock applicator, the practitioner must remove the clear connector, which was designed to connect to an oral

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experiences with medication administration and product accessibility in the home setting. Survey results follow.

Respondent Profile

From March through August 2025, 412 patients and parents of children with feeding tubes shared their experiences with medication administration. Most (92%) respondents were from the United States, representing 43 states. Additional responses were also received from Canada (6%), the United Kingdom (<1%), Australia (<1%), and South Africa (<1%). Respondents represented a wide age range—from parents/caregivers of infants to older adults.

Feeding Tube and ENFit Use

Most (97%) respondents administered medications through feeding tubes. Respondents administered either both enteral liquid and crushed medication (76%), or only enteral liquid (18%), or only crushed medication (3%). Most (83%) of the respondents access their feeding tube using an ENFit connector.

Supply Source

Nearly two-thirds (60%) of respondents indicated that they had asked their community pharmacy for oral/enteral medication syringes and bottle adapters. When asked where they obtained their oral/enteral medication syringes, 45% received them from their durable medical equipment (DME)/feeding tube supplier. Some respondents (21%) obtained supplies from hospital staff or through discharge planning during hospitalization. One in five (20%) obtained syringes from online websites. Only 7% of respondents were able to obtain syringes from a hospital outpatient pharmacy or clinic, and 5% from a community pharmacy. Some (2%) reported getting syringes through donations, via a Facebook group, or from a tractor supply company; highlighting patients' desperate need for access to these devices.

Syringe Size and Medication Volume

When asked to select what size oral/enteral medication syringes they used (select all that apply), 66% indicated they used 10 to 12 mL syringes, and 54% used 5 to 6 mL syringes to administer medications through feeding tubes. This was followed by 60 mL syringes (50%), then 2.5 to 3 mL syringes (34%), 20 mL syringes (29%), 1 mL syringes (25%), 35 mL syringes (19%), and 0.5 mL syringes (7%). Others (2%) were unsure what size they used. Despite half of the respondents reporting that they used a 60 mL syringe for medication administration, only 11% of respondents reported having medication doses that exceeded 20 mL. Almost one-third (31%) of respondents who had medication dose volumes of less than 6 mL reported using a 60 mL syringe to administer their dose.

Product Accessibility

More than half (55%) of feeding tube users reported difficulty in obtaining medication syringes. When asked which size syringes were the most difficult to obtain, the 10 to 12 mL size was identified as most difficult (19%), followed by 5 to 6 mL (15%), 2.5 to 3 mL (14%), 1 mL (13%), and 20 mL (13%). Some respondents (2%) reported that all sizes were hard to obtain. Nearly three-quarters (74%) of feeding tube users reported having difficulty obtaining medication bottle adapters, with 33% of respondents indicating they needed to purchase them online. Most (75%) had to pay out of pocket for their medication syringes and bottle adapters. Of those, 61% struggled to afford these supplies.

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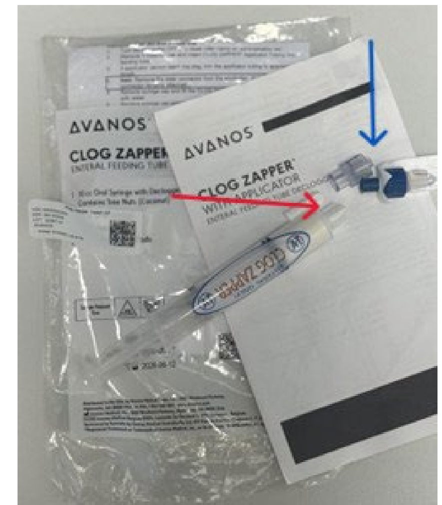
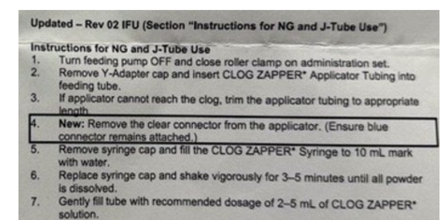


Figure 2. The new CLOG ZAPPER syringe provided in the kit has a luer tip instead of a slip tip (red arrow). The practitioner must remove the clear connector from the blue applicator (blue arrow) and attach the luer lock syringe containing the enzyme solution.

slip tip syringe. When connecting the luer lock syringe with the clear connector, the pieces did not fit securely, causing the solution to leak. Avanos includes an addendum inside the CLOG ZAPPER kit, instructing users to remove the clear connector from the applicator (**Figure 3**). However, practitioners may be unaware of this change or forget to remove the connector. Besides the risk of leaking, the more serious concern is that the luer lock syringe format could lead to misconnections; practitioners could connect the luer lock syringe containing the non-sterile enzyme solution directly to a patient's intravenous (IV) tubing.



Updated – Rev 02 IFU (Section "Instructions for NG and J-Tube Use")

Instructions for NG and J-Tube Use

1. Turn feeding pump OFF and close roller clamp on administration set.
2. Remove Y-Adapter cap and insert CLOG ZAPPER* Applicator Tubing into feeding tube.
3. If applicator cannot reach the clog, trim the applicator tubing to appropriate length.
4. **New:** Remove the clear connector from the applicator. (Ensure blue connector remains attached.)
5. Remove syringe cap and fill the CLOG ZAPPER* Syringe to 10 mL mark with water.
6. Replace syringe cap and shake vigorously for 3–5 minutes until all powder is dissolved.
7. Gently fill tube with recommended dosage of 2–5 mL of CLOG ZAPPER* solution.

Figure 3. An addendum to the CLOG ZAPPER IFU instructs users to remove the clear connector from the applicator, but this step was missed by the nurse who reported this event.

ISMP has previously warned about the risk of tubing misconnections and wrong route administration errors when non-parenteral medications are dispensed in luer lock syringes. The CLOG ZAPPER syringe displays "I.V." in a circle with a

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Product Use

Respondents reported needing a median of 4 medication bottle adapters per month (corresponding to the reported median of 4 enteral liquid medication prescriptions per month), with most indicating a range between 2 and 10 per month. Respondents reported needing about 30 medication syringes per month, with most indicating they typically needed 10 to 40 syringes monthly. Respondents reported an average of about 7 oral liquid medication administrations per day, with most indicating a range of 2 to 6 daily doses. Although most syringes are not US Food and Drug Administration (FDA)-approved for reuse, respondents reported that they use syringes an average of 32 times before they are discarded. Notably, 19% reported using syringes until product failure (e.g., when they can no longer read the markings on the syringe).

Safe Practice Recommendations: The survey results revealed that patients and parents/caregivers of patients with feeding tubes are not consistently provided with access to appropriate devices or education about how to administer their enteral medications. For any patients who receive enteral medications, organizations should consider the following recommendations:

Complete an FMEA. Convene key stakeholders to complete a failure mode and effects analysis (FMEA) that identifies safety concerns and determines mitigation strategies for patients who require oral/enteral syringes for medication administration. Assess where patients obtain the supplies (e.g., syringes, bottle adapters) they need, product availability and access issues, and the risk of incorrect doses due to inappropriate syringe size selection for the medication volume.

Standardize syringe size. Healthcare organizations and community pharmacies should develop guidelines to ensure that appropriately sized oral/enteral syringes are available and used for dose preparation. When dispensing medications for administration in oral/enteral syringes, use electronic systems (e.g., electronic health record [EHR], pharmacy dispensing system) to determine appropriate syringe size based on dose volume. Dispense a syringe that most closely matches the prescribed dose volume, which should be part of the final pharmacist product check. Refer to resources such as the NCPDP recommendations for standardizing dosing in metric units (mL) on prescription container labels of oral liquid medications, version 2.0, Table 2. Guidance on Selecting Most Appropriate Dosing Device to Measure Volume of Prescribed Dose.

Plan for ENFit conversion. Organizations that have not yet transitioned should prioritize converting to ENFit devices as soon as possible. Partner with device vendors to identify needed products based on the organization's patient population. Create a list of current legacy products and complete a crosswalk to identify new products that will be needed. After identifying potentially needed products, obtain samples including all syringe sizes and product variations such as ENFit bottle adapters in different diameters. GEDSA offers educational tool kits with ENFit device samples which are available for a nominal fee.

Maintain an adequate supply of devices. Purchase, store, and maintain an adequate supply of ENFit devices in all patient care areas where oral/enteral medications are prepared or administered. Pharmacy should verify that syringes are in stock and readily available during monthly unit inspection. Community pharmacies should maintain an adequate supply of syringes to provide to patients.

Educate practitioners. Educate practitioners about the organizational guidelines and the importance of proper syringe size selection to prevent dosing errors. Use huddles and newsletters to communicate the rationale for using ENFit devices as a forcing function to prevent misconnections and wrong route drug administration errors. During orientation, emphasize that parenteral syringes should never be used to prepare or administer oral liquid medications and reinforce this regularly. Ensure pharmacists understand the need to provide patients with syringes that are the appropriate size and type for measuring a dose of enteral liquid medications.

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line through it (**Figure 2**, page 2), intending to warn practitioners that this should not be administered IV. However, practitioners may easily overlook this warning, and the luer lock design allows for this inappropriate connection. The IFU also instructs users to "Keep APPLICATOR and SYRINGE together with patient if procedure must be repeated." Storing the syringe in a patient's room creates a significant risk in the hospital setting.

The hospital reported that Avanos indicated that the luer lock connector was an intentional modification design change to their product and that they were not planning to change the connector type. We have reached out to Avanos to recommend changing to an ENFit (enteral/oral) syringe and applicator connector to prevent inadvertent IV administration. If your organization uses this product, immediately inform staff of this risk. Ensure practitioners understand the risk of misconnection when using a luer lock syringe for a non-parenteral medication and emphasize why they should never store this syringe at the bedside. Educate practitioners about the addendum and the need to remove the clear connector from the blue applicator before use to prevent leakage.

Tranexamic acid premixed IV bags may be packaged within an overwrap labeled as magnesium sulfate. On March 24, 2026, Amneal issued a recall of one lot number (AH250162) of magnesium sulfate 4 g/100 mL bags (NDC 70121-1720-3). According to the recall, a magnesium sulfate overwrap was found to contain an intravenous (IV) bag of tranexamic acid 1,000 mg/100 mL.

Delay in receiving magnesium therapy in pregnant individuals with preeclampsia or eclampsia could cause serious harm due to the potential to develop seizures. For pregnant individuals in preterm labor, delay of treatment could result in long-term morbidity for the preterm neonate due to complications of prematurity. If tranexamic acid is inadvertently administered, it could result in adverse events, including blood clotting, seizures, hypersensitivity reactions, visual disturbances, and dizziness.

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Plan for discharge and outpatient care. Assess all steps in the continuum of care to identify patient supply needs. For organizations that send prescriptions to community pharmacies for dispensing, determine what products the pharmacies provide to ensure appropriate patient support. When community pharmacies carry both legacy oral syringes and ENFit syringes, and have EHR access, the pharmacist should use the EHR to confirm the route of administration and the appropriate device that should be used. Based on federal and state laws, identify which devices require prescriptions, and build order sets for oral liquid medication orders that prompt prescribers to order appropriate quantities and sizes of ENFit syringes. For more information about available ENFit devices, refer to: ENFit Product and Supply Resources.

Use metric dosing and devices. The ISMP Targeted Medication Safety Best Practices for Community Pharmacy Best Practice 4 recommends that community pharmacies standardize to the use of the milliliter (mL) unit of measure when dispensing and measuring oral liquid medications. Eliminate the use of "teaspoonful," "tablespoonful," and other nonmetric units of measurement. Purchase and dispense ENFit liquid dosing devices that only display the metric scale.

Educate patients. Educate patients, including those with feeding tubes, about needed devices and safe medication administration practices. Prior to hospital discharge, and when dispensing medications at community pharmacies, staff should confirm the route of administration to ensure patients receive the correct size bottle adapters and syringes for the prescribed volume. Dispense an appropriate metric-only dosing device that most closely matches the prescribed dose volume needed to administer one dose. Community pharmacists should consider marking the syringe to indicate the volume of the prescribed dose or affixing an auxiliary label indicating where to measure the dose. Use the teach-back method to verify that patients and/or caregivers can correctly measure and administer medications. Ensure pharmacists provide patients with educational material on reading syringe markings and measuring prescribed doses.

Report errors. Report close calls and errors involving enteral medication preparation and feeding tube administration internally as well as to device manufacturers, ISMP, and the FDA.

Additional Educational Resources:

GEDSA provides several resources on their website, including the following:

- Procedure for Home Care Settings: Preparing and Administering Medications Using ENFit
- ENFit: Administering Medication in In-Patient Settings
- ENFit: Administering Medication in Home Care Settings
- ENFit Pharmacy Resource Guide

The American Society for Parenteral and Enteral Nutrition (ASPEN), in collaboration with the University of Rochester Medical Center, released an online educational program, Medications Via Enteral Feeding Tubes: An ASPEN Video Series, designed to enhance safety and efficiency when giving medications via enteral feeding tubes—from system-level processes to bedside administration.

To subscribe: www.ismp.org/ext/1367

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Check your inventory, and if an infusion bag overwrap labeled as magnesium sulfate 4 g/100 mL with lot number AH250162 is found, sequester the product and return it to Amneal. Educate staff to read the infusion bag label prior to barcode scanning and administration, and to be vigilant when checking the actual infusion bag for Amneal's magnesium sulfate, regardless of the lot. The best practice is to scan the barcode directly on an infusion bag (not the overwrap) prior to administration. Report issues to ISMP, the US Food and Drug Administration (FDA), and the manufacturer.

Special Announcements

Survey on new Best Practices

ISMP is conducting a brief survey to obtain a baseline measurement of the current level of implementation of the three new Best Practice statements for hospitals. Please complete our survey by **April 23, 2026**.

Just Culture Scholarship Winners

ISMP has awarded 2026 **Judy Smetzer Just Culture Champion Scholarships** to three healthcare leaders from St. Joseph Hospital (Nashua, NH), Clinic Pharmacy (Dickinson, ND), and Allegheny Health Network (Pittsburgh, PA).

The scholarships are offered in cooperation with The Just Culture Company, and include enrollment in The Just Culture Certification Course that helps practitioners advance fair accountability and system improvement, a one-year license to The Just Culture Conduct Course, and access to The Just Culture Assessment Tool (JCAT). This year six partial winners also were chosen in recognition of their outstanding applications and will receive a one-year license to attend The Just Culture Conduct Course, a 30-day license to the JCAT, and a 50% discount on The Just Culture Certification Course.

For a list of winner, visit here. For more about the scholarship benefits, candidate requirements, and application process, visit here.