

Nutrition

TO IMPROVE OUTCOMES

New Safety Standards to Prevent Patient Tubing Misconnections

With increasing patient acuity and technological advances in health care, a typical patient may be connected to several delivery systems at one time, including: medications, nutrition, lavage/irrigation, and fluid administration. The potential for tubing misconnection (wrong line to wrong infusion site) puts the patient at risk for serious and potentially fatal injury. Although errors with misconnection have been reported for more than 30 years, there is a new call for solutions to address this issue from governmental, professional, and patient safety groups (Pugliese, 2013). These agencies, along with trade organizations and medical product device manufacturers, are collaborating to develop better connection standards.

Tubing misconnections are well documented and well known, according to the Food and Drug Administration (FDA) (Vockley, 2011). Factors associated with tubing misconnections included the following risk points: 1) unsecured or loose line connections; 2) use of unintended adapters permitting wrong connection; 3) too many lines close together (spaghetti syndrome); and 4) look alike, unlabeled connectors.

Reported misconnections include:

- neuraxial (epidural) to vascular lines
- topical (wound management) to vascular
- urinary to vascular
- medical device (sequential compression devices, pneumatic blood pressure cuffs, oxygen tubing, syringe) to vascular
- respiratory (nebulizer or syringe) to vascular
- hemodialysis or peritoneal dialysis fluids to vascular
- enteral/oral to vascular, enteral/oral to hemodialysis
- intravenous to arterial
- Other connectors with the potential for connection error include abdominal catheters (t-tubes, wound drainage, etc.), Blakemore tubes, cantor tubes, chest tubes, cranial catheters, suction tubing, nephrostomy tubes, amnioinfusion catheter (intrauterine pressure) and drains.

Manufacturers and regulators are working to decrease the potential for harm by correcting connector compatibilities and creating a safety net to avoid misconnections. To

reduce the risk of small-bore connector hazards, a group of international organizations (including the FDA, Association for the Advancement of Medical Instrumentation [AAMI], International Standards Organization [ISO], and Centers for Medicare and Medicaid [CMS]) have developed standards that provide general requirements for liquids and gas connectors. They have also created a framework for testing that ensures incompatibility and non-interconnector fit of Luer vascular devices with enteral and other small bore connectors to eliminate misconnections. This standard was published in 2011, and the new enteral connectors reached the market in 2014.

New enteral tube feeding connectors are now available. You may be seeing these changes in your practice setting today. If your unit isn't using the new, safer connectors, ask your manager or clinical specialist why.

The change in manufacturing is not based on color. Nurses will not be able to assume that all purple connectors are enteral, for example. IV lines and ports may also be purple colored. The change is based upon connector size and compatibility. IV connectors, for example, should no longer Luer lock into any enteral device. The ability to connect IV and enteral devices should no longer be possible.

There are several things medical-surgical nurses can do to assure that safe care is provided during the transition of the connector standards and acquisition of the new and improved products:

Develop a risk assessment and action process. Brad Noé, Small-Bore Connector Committee Chair at AAMI, shares the following recommendations to reduce risk and promote a smooth transition (Vockley, 2011):

- Evaluate workarounds occurring in the clinical setting (workarounds indicate that the clinicians are doing something outside of intended use because what they have to work with is not functioning).
- Eliminate adapters (these are a signal that workarounds or modifying clinical practice to accomplish a task is an acceptable practice).
- Conduct safety audits (look at your practice within the safety guidelines).
- Create cross-functional clinical practice teams so that all stakeholders can have a role in decision-making process to ensure continuity of action across the supply chain and pipeline (for example, pharmacy should prepare oral medication in the oral syringe for administration).
- View reporting of misconnections or near misses as instructive and informational – versus reacting in a punitive or threatening way.

Although under standard and product design revision, enteral misconnections remain a hazard to patient safety in health care settings. We have an obligation to our patients to assure safe care. We must ensure that hospital leaders are aware of this potential risk and work with purchasing departments to encourage and demand alternate solutions for product connectors. Until this manufacturing change is completely implemented, nurses MUST put safety steps in place.

GEDSA, the Global Enteral Device Supplier Association, offers an informational program called “Stay Connected” to facilitate the transition to safer medical connectors. For more information, go to www.gedsa.org.

References

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Suggested Readings

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