

Sharp HealthCare Safety Training 2015

Module 3, Lesson 2 Always Events: Line and Tube Reconciliation and Guardrails Use

Our vision is to create a culture where patients and those who care for them are free from harm.

National Patient Safety Foundation (NPSF)

Learning Objectives

- Identify the importance of following standard processes to provide safe, highly reliable care.
- Discuss the elements required in the standard process for line reconciliation.
- Describe the importance of the new ENFit enteral system connectors to preventing dangerous misconnections.
- State when Alaris Guardrails should be used.
- Commit to performing these safe practices for every patient, every time.

Sharp's Key Safety Programs, Skills and Tools

- Just Culture
- Workforce Competence / Orientation / Annual Competency Programs
- TeamSTEPPS
- Patient and Care Partner Engagement Programs
- Learning and Reporting Systems to Identify Risks: RL Solutions
- Medication Safety Programs and Tools
- **Always Events Program and Tools**
- Lean Six Sigma (Robust Process Improvement)
- Change Acceleration Process (CAP) Tools
- Safe Use of Technology Tools
- Environmental Safety Programs

Always Events...Every Patient, Every Time

Sharp HealthCare has identified 7 critical patient safety practices that we expect to happen for every patient, every time. Our goal is to be a high reliability organization that *habitually* performs these 7 practices, which we refer to as Always Events.

This module addresses Line Reconciliation and Guardrails Use.

1. Patient Identification
2. Treatment/Procedure Verification
3. Six rights of medication administration
4. Alaris® Guardrails®
5. Line Reconciliation
6. Universal Protocol
7. Hand Hygiene



Infusion Errors

- IV Infusion errors have occurred at every Sharp entity.
- These errors, harmful or not, are considered serious events because of their potential to cause patient harm.
- Through review of our adverse events and near misses several common themes emerged:
 - Errors occurred with **hanging the correct solution/medication**
 - Errors occurred **during pump programming**
 - Error occurred in **connection of the line**

Infusion Errors

Examples include:

- A laboring patient was bolused with pitocin instead of LR
- A 20mEq KCl IVPB was infused wide-open because it was connected to a port below the pump rather than above it
- A wrong dose of chemotherapy was administered because an incorrect weight was entered on the patient
- Neosynephrine was changed from single-strength to double-strength, but the Alaris pump was not reprogrammed accordingly, delivering twice the intended dose

Dangerous Misconnection Errors

Examples include:

- An epidural set was inadvertently connected to IV tubing, resulting in patient death
- A non-invasive automatic B/P cuff tubing was erroneously connected to a saline-locked IV port by a family member after the patient ambulated to the bathroom. The patient received a fatal air embolism and died.
- An night shift RN inadvertently connected a small bore feeding tube to a central line port. The RN did not want to turn on the light to awaken the patient, and the line and tube were in next to one another. The patient died as a result of this error.

These errors are enabled because the connectors for many lines and tubes are compatible, enabling potentially deadly misconnections.

Incompatible connectors would have prevented these errors.

The Solution: Standard Work

Standard work is a written description of the safest, highest quality, and most efficient way to perform a process or task* and benefits include:

- Clearly defines specific steps
- Captures best, safest practice
- Reduces variation
- Increases consistency
- Applies to all settings
- Easy to recognize deviation from the norm
- Allows for cross-monitoring

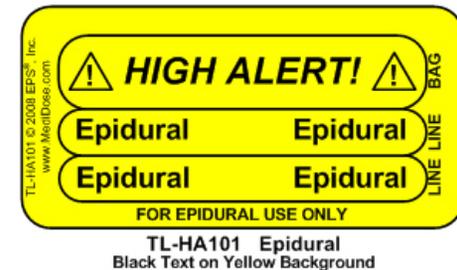
A Standard process for performing Line Reconciliation has been established, which includes the following 3 steps.

**Adapted from The Lean Handbook*

Line Reconciliation: It's for More Than IVs

What Needs to be Reconciled?

- **All solutions being administered to the patient through a line or tube.**
- This includes, but is not limited to:
 - IV drips, IVPB, IV Fluids, IV Contrast
 - PCA
 - Epidural
 - Bladder/Rectal Medication Instillation
 - Tube Feedings
 - Peripheral Nerve Blocks
- It is important to ***reconcile ALL lines and tubes to prevent a potentially harmful tubing misconnection.***
- A dangerous misconnection is enabled because many medical lines and tubes have a luer connection, enabling tubes and lines to be accidentally connected.



ENFit: Enteral System Design Changes are Coming!

International standards for unique connectors are being developed to prevent the potential for deadly misconnections.

The first standards are for Enteral Systems, which we will begin to implement in early 2015.

Look for information as to when products with these new connectors will be coming to your site.

Until then, we must rely on human vigilance to prevent these errors.

Enteral connector design

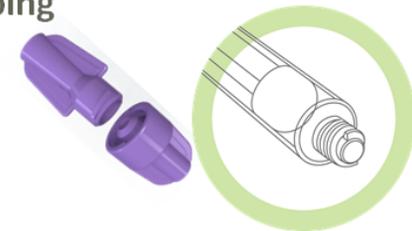
Reservoir connector

- Prevents inadvertent use of IV tubing as an administration set



Patient access

- Prevents inadvertent connection of enteral administration set to IV tubing



Line and Tubing Tracing

- Trace **ALL** tubes and lines from the patient to the point of origin:
 - before connecting or reconnecting any device or infusion
 - at any transition, such as to a new setting or service
 - as part of the hand-off process
- The process for reconciling IV lines is more specifically defined in the next several slides.

Line Reconciliation Process: When to Perform

Line Reconciliation is performed when:

- Starting an infusion
- Replacing an empty infusion (bag, syringe, etc.)
- Changing concentration (e.g. single to double strength)
- Receiving a patient from another care area
- Patient is not responding to treatment as expected
- There is uncertainty about any element of the process
- Jointly during any RN-RN handoff (not for breaks)

Note: Side by side & independent verification are still required on select high-risk medications.

Line Reconciliation Standard Work

Step 1

- A. Using your hand, physically trace the line from the solution through the pump, ensuring correct cartridge placement, on down to the patient.

- B. Verify fluids, medications & blood and enteral products against the order (e.g. IV drip, IVPB, IV fluid, PCA, Epidural, enteral)
 - a) Name of infusion/ medication
 - b) Concentration
 - c) Dose / rate



Time View	
<input checked="" type="checkbox"/> Scheduled	
<input checked="" type="checkbox"/> Unscheduled	
<input checked="" type="checkbox"/> PRN	
<input checked="" type="checkbox"/> Continuous Infusions	
<input checked="" type="checkbox"/> Future	
<input checked="" type="checkbox"/> Discontinued Scheduled	

Medications	6/28/2013 10:54 PDT
Continuous Infusions	
Sodium Chloride 0.45% 1,000 mL IV, 100 mL/hr, Start date = 06/28/13 10:53:00 PDT, Total volume [mL]: 1,000	Pending Not given within 1 day.
Administration Information	
Sodium Chloride 0.45%	

Examples of Risk When Medications / Fluids are Not Verified Correctly

Example #1: A wrong medication was hung because the RN did not verify the bag that the pharmacy tech delivered to the RN before it was hung. The infusion that was delivered was not the expected infusion, but rather a medication for a patient who was previously in the room but had transferred out of the unit.

Example #2: D5.45NS was hung instead of D5.9NS because the IV bag had been mis-stocked in the wrong box.



Line Reconciliation Standard Work

Step 2

Verify correct pump settings

- a. Correct profile on Alaris® pumps
- b. Med/ fluid Guardrail selection
(Guardrails are required for all fluids run on an Alaris pump)
- c. Concentration
- d. Patient weight for weight-based medications
- e. Dose/ rate



Examples of Risk When the Pump Programming is Not Verified

- **Example #1:** Milrinone was programmed at twice the ordered rate because the RN assumed that the concentration was single-strength rather than double-strength.
- **Example #2:** A double dose of magnesium was administered due to an error in pump programming that was not detected.



Line Reconciliation Process

Step 3

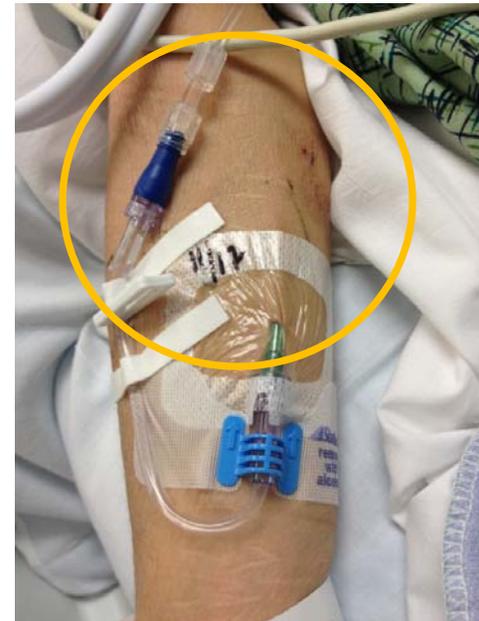
Verify that the connection is secured to the correct port.

Perform this process for each infusion, even those run on pumps other than Alaris.



Examples of Risk When the Connection is Not Confirmed

- A cardizem infusion was properly programmed and started but not delivered because the RN did not connect the infusion to the patient.
- A pre-op antibiotic was not delivered to the patient because the clamp was not opened.
- An infusion can be connected to the wrong line, resulting in a dangerous misconnection, such as connecting an epidural to an IV line.

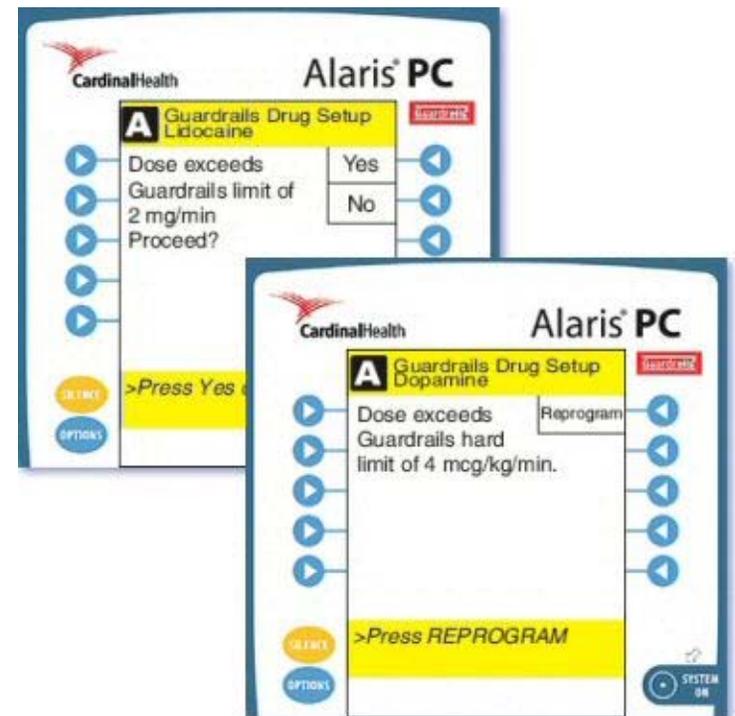


Use of Alaris Guardrails

Alaris® pumps support patient safety through:

- Standardized drug libraries
- Standardized profiles for different care levels
- “Soft” and “Hard” stop alerts

Using Guardrails for every patient, every time for solutions that are run on Alaris pumps, **even for fluids without additives** (e.g. NS, LR), reduces errors in pump programming.



Use Guardrails for Every Infusion, Every Time

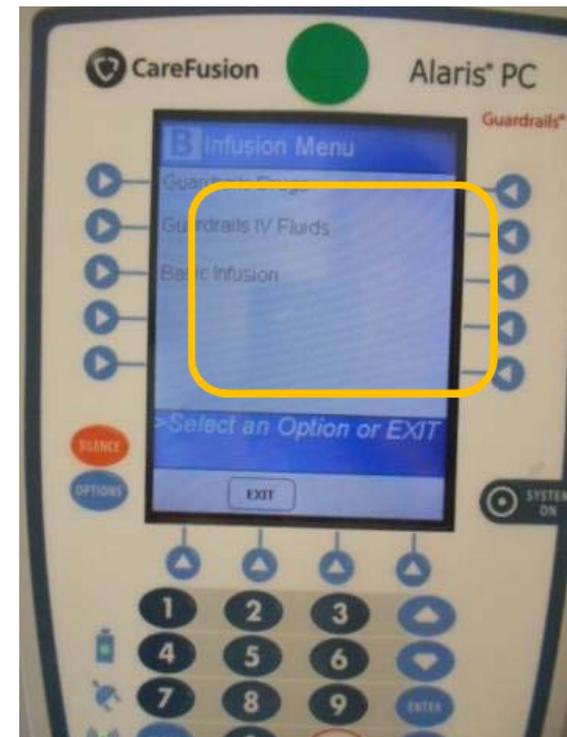
Why is it necessary to use Guardrails with IV fluids?

How does it improve safety?

- Using Guardrails **for every infusion run on an Alaris pump** allows the practice to be hardwired.
- It takes the guess work out of deciding if an infusion requires Guardrails or if it doesn't.
- It allows units that use medication infusions infrequently to become comfortable with using Guardrails.

Example of Risk Created When Guardrails are Not Used

- A patient received a larger dose than ordered of heparin because of an error in the rate of the infusion. The error was not caught because the infusion was not programmed using Alaris® Guardrails.



Summary

Line / Tube Reconciliation is a process that requires:

A. Placing your hand on each infusion and *physically tracing* the line from the solution, through the pump and into the patient. (it is a tactile and visual process)

B. Reconciling the accuracy of the solution and pump settings against a primary source (e.g. MAR, order).

1. Verify fluids, meds & blood and enteral products against order
2. Verify correct pump settings
3. Verify the connection is secured to the correct route

**Line Reconciliation and Guardrails are Always Events,
...every patient, every time!**