CLABSI STRATEGIES: Decreasing PICC Line Access and Indwelling Days in the Neonatal Intensive Care Unit

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Background

Central Line Associated Blood Stream Infection (CLABSI) is common in the neonatal intensive care unit (NICU) and is associated with significant morbidity and mortality. In October 2011, a CLABSI CQI using the insertion (IB) and maintenance (MB) bundles was initiated and resulted in decreased CLABSI rates. However, PICC lines days remained the same and is higher compared to MEDNAX clinical data warehouse (CDW). The development of evidence-based practice guidelines that decrease the utilization of peripherally inserted central catheters (PICC) can further prevent the development of CLABSI and maintain low rates in our NICU.

Methods

◆In October 2011 as part of Pediatrix's 100,000 Babies Campaign, initial steps were:

1. Mandatory education of NICU Staff
2. Identification of certified PICC team members
3. Provision of PICC carts
4. Availability and use of chlorhexidine/60% alcohol (Avagard) in every bedside and wash stations.
5. Implementation of insertion and maintenance bundles
6. CLABSI Summits- 2014, 2016

◆ August 2016 new guidelines implemented

1. Discontinue of PICC line@ 120ml/kg/day of feeds
2. Duration of IV access by changing IV medications to PO form @80 ml/kg/day

Methods

CLABSI BUNDLES

Central Line Insertion Checklist

Before the Procedure, did the Inserter:

Yes No* Perform hand hygiene before the procedure?
Yes No* Put on a cap, mask, sterile gown and sterile gloves?
Yes No* Prep the insertion site per protocol?
Yes No* Cover the patient and procedural field with a large sterile drape?

During the Procedure:

Yes No* Was a sterile field maintained at all times?
Yes No* Was an observer present?
Yes No* Did any staff within 3 feet of the sterile field wear a cap and mask?

***If "No" for any of the above:**

Yes No Was the procedure stopped (if non-emergent) and corrective action taken?

Any "No" responses, without corrective action taken, are considered ***"non-compliance with the central line insertion bundle"***

Date: Line Type(circle): UAC – UVC – PICC – PAL – Other:

Central Line Maintenance Bundle

Setting	Bundle Elements	Comments
During rounds	Daily assessment of the continuing need for a central line. Daily review of dressing integrity.	Consider removal when at ~120 mL/kg/d of feedings.
During IV tubing changes	Hand hygiene before the procedure. Use either "**sterile technique**" approach or "**aseptic technique**" approach for tubing changes. Use a standardized tubing configuration, minimize number of ports/connections.	**Sterile:** mask, hat, sterile gloves, sterile barrier; done with 2 staff members. **Aseptic:** clean barrier and clean gloves.
Port set-up and accessing	Use a "closed system". Hand hygiene before the procedure. Sterile prep: "**Scrub the Hub**" x 15 seconds and let dry before accessing the line. Use pre-filled flush syringes, if possible.	All ports capped, or use a manufactured, closed system. Use a standardized set-up and accessing procedure.

Treat line maintenance like a surgical procedure in the operating room

CENTRAL LINE MAINTENANCE RANDOM AUDIT

Hospital: _____

Name: _____ DOB: _____ MR: _____

PICC #: _____ Date Inserted: _____ Date Removed: _____
PICC #: _____ Date Inserted: _____ Date Removed: _____
Other central line: _____ Date Inserted: _____ Date Removed: _____
Feeds at 80 ml/kg/day (IV meds to PO) : ____ml Q3 hrs Date: _____ Feeds at 120 ml/k/d (d/c PICC): ____ ml Q3 hrs Date:_____

	DATE:	DATE:	DATE:	DATE:	DATE:	DATE:	DATE:	DATE:	DATE:	DATE:
1. Was appropriate hand washing and gloves used prior to accessing central line?	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No
2. Was the hub appropriately and vigorously scrubbed prior to accessing the central line?	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No
3. Was the dressing integrity evaluated and, if found to not be intact, were appropriate measures taken to address the issue?	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No
4. Was the central line discontinued when feeds established at 120ml/kg/day?	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No
5. Was the IV medication/s changed to PO form when feeds were established at 80 ml/kg/day?	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No	□Yes □No

Results

Figure 1. Improving compliance with the use of insertion and maintenance bundles

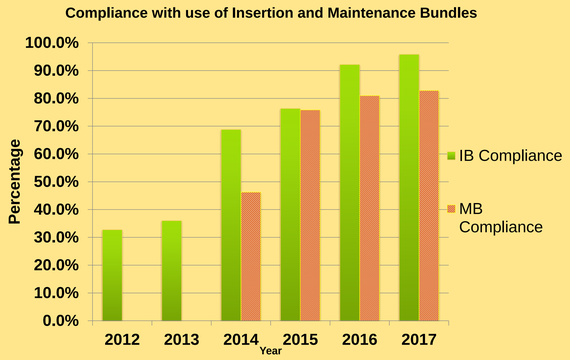


Figure 2. Low and inconsistent compliance to discontinue PICC at 120 ml/k/day of feeds

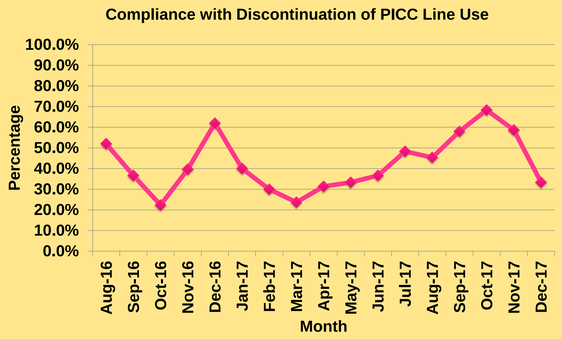
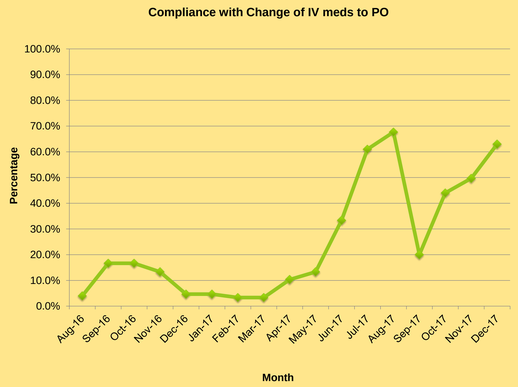


Figure 3: Low but improving compliance to change IV medication to PO form at 80 ml/k/day of feeds

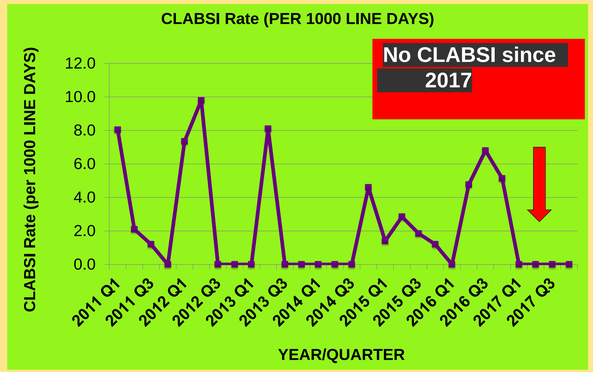


Results

Figure 4: Duration of PICC Use

	IMPLEMENTATION July 2015 - July 2016	POST IMPLEMENTATION August 2016 - December 2017
Number of PICCs	499	397
Duration (Days)	17.4	16.6

Figure 5:Decreased CLABSI Rates until zero in 2017



Conclusion

The proposed guidelines to decrease PICC access and line duration, in conjunction with the use of proven CLABSI prevention bundles helped achieved the desired zero CLABSI rate. CLABSI can be prevented. Zero rate is not impossible and must be the only goal.

References

CDC, (2016, January). Blood stream infection events. Central line associated bloodstream infection and non-centrally line associated blood stream infection. *Device Associated Module BSI*, 4-1- 4-32. Retrieved from www.cdc.com

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