To change or not to change: Reducing CLABSI with 96 hour closed-system IV tubing changes

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Disclosures

The speakers have no conflict of interest or disclosures…

….other than we are from

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Objective

Describe IV tubing change practices that have aided in reducing CLABSI rates

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Historical Perspective

2002 CDC Guidelines

- Administration set change: No more frequently than 72 hrs.
- Blood and lipids sets: Every 24 hrs.
- Hang time for fluids: No recommendations except completing lipid containing solutions within 24 hrs.
- Dressing changes: Transparent every 72 hrs./prn; Gauze 48 hrs./prn No recommendation for use of CHG sponge but do not use in neonate less than 7 days or GA less than 26 wks.
- UVC: Up to 14 days

(O'Grady NP, Alexander M, Dellinger EP, et al.)

2011 CDC Guidelines

- Administration set change: No more frequently than 96 hrs., but at least every 7 days (if abtx lines or fluid enhance microbial growth)
- Blood and lipids: Every 24 hrs.
- Hang time for fluids: No recommendations except completing lipid containing solutions within 24 hrs.
- Dressing changes: Transparent every 7 days/prn; Gauze 48 hrs./prn; Use of CHG sponge for neonates greater than 2 months
- UVC: Up to 14 days

(O'Grady, Alexander, Burns, et al.)

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Historical Perspective

2011 Infusion Nurse Society

- Administration set change: no more frequently than 96 hrs.
- Hang time for fluids: No recommendations except completing lipid containing solutions within 24 hrs.
- Lipids sets: Every 24 hrs.

(Gorski, Eddins, et al.)

2016 Infusion Nurses Society

- Primary & secondary continuous infusions administration set change: No more frequently than 96 hrs.
- Intermittent administration sets: Every 24 hrs.
- PN Administration set change: Every 24 hrs. with each container
- Lipids sets: Every 12 hrs.

(Gorski, Hadaway, et al.)

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Historical Perspective

2014 A.S.P.E.N.

- Parenteral Nutrition tubing: Every 24 hrs.
- Lipids: Every 12 hrs.; for prolonged infusions (20-24 hours) daily dose should be divided with every 12 hrs. tubing & container change
- "*These recommendations are not intended to supersede the judgment of the healthcare professional based on the circumstances of the individual patient." (Ayers, 297)*

(Ayers)

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So where is the state of evidence today?

Confused? Impact?

- CDC guidelines pending …
- PN administration set recommendations by INS, 2016…
  - To change or not to change???

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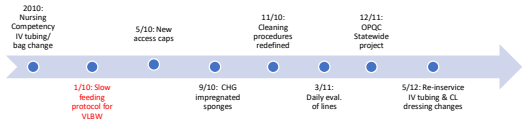
CLABSI in the NICU 2009-2012

	2009	2010	2011	2012
# CL Days	2630	3366	2813	5202
# CLABSI	14	17	4	10
Rate	5.32	5.05	1.42	1.92



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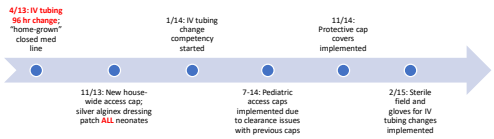
CLABSI in the NICU 2013-2015

	2013	2014	2015 (Jan-Jun)
# CL Days	5942	4479	2328
# CLABSI	8	6	10
Rate	1.35	1.33	4.39 *



* First half of year

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CLABSI Rate Spike Jan-June 2015

Immediate Interventions

- Fellow/NP training on CL dressing changes and insertion
- Re-implemented CL dressing change checklist
- Nurses changed to 15 sec scrub 15 sec dry time for scrub hub
- Procedural change for protective cap covers
- Implemented PICC line product to allow for shortening of line to prevent coiling of line under sterile dressing
- Rapid cycle weekly huddles re-implemented to evaluate process and root cause analysis if infection occurs

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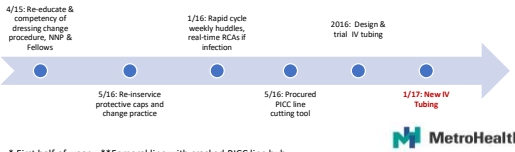
CLABSI in the NICU 2015-2017

January 2017: New IV Tubing with Closed-System Flush Medication Line Implemented

	2015 (July-Dec)	2016	2017 (Jan-July)
# CL Days	2739	4828	3502
# CLABSI	3	3	2**
Rate	1.09	0.62	0.57*



* First half of year **Femoral line with cracked PICC line hub

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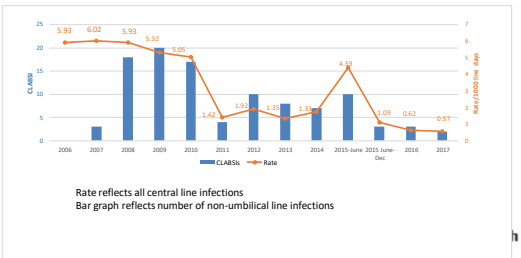
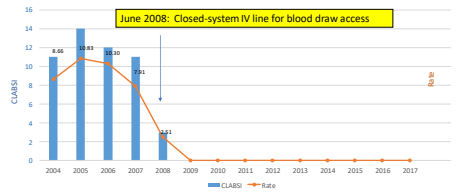
CLABSI: Our journey through the years



Rate reflects all central line infections
Bar graph reflects number of non-umbilical line infections

Umbilical Line Infections 2004-2017
Our journey through the years



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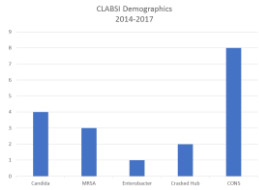
Root Cause Analysis:
Real-time evaluation of CLABSI

- Presented at House-wide HAI meetings every month



Candida
- Infections were in infants less than 700g and on steroids. We now treat with prophylactic fluconazole twice weekly for these infants.

MRSA
- Infections occurred when PICC lines needed to be placed on babies that were already positive for MRSA.

Enterobacter
- Infection occurred in an infant that had an intestinal perforation.

Cracked hub
- Infections occurred within 48 hours of the discovery of the cracked hub.

CONS
- 5 of the 8 infections occurred 1-12 days after insertion, we determined that this was a result of improper insertion and dressing change techniques.

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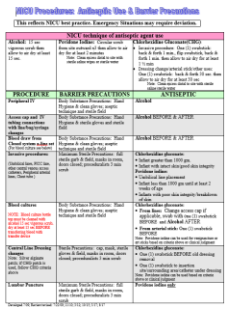

MetroHealth Strategies:

- Hand Hygiene, including Initial Scrub
- Developed Antiseptic & Barrier Precaution table to assist/remind
- Maximize use of UVCs
- Dedicated dressing change team
- Initial use of CHG impregnated sponge use judiciously
- Changed to silver alginate to accommodate all populations
- Sterile/Aseptic IV tubing changes
- Alcohol protective caps
- Closed-system IV Tubing design with closed-system flush on med line
- Real-time RCAs

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Areas for further investigation:

- "Identify infections that are likely to be preventable through additional improvements in central line insertion and maintenance." (Sadfar, p.482-483)
- Differentiating primary vs. secondary infection and addressing mucosal translation
- Continue to evaluate evidence of parenteral nutrition administration set hang time recommendations

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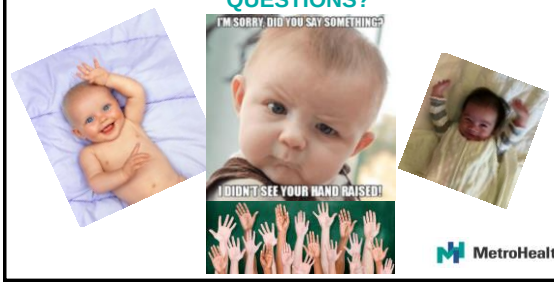
Thank You from the "North Coast"
QUESTIONS?



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