

A journey to chase CLABSI reduction: an achievable goal

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Disclosures

- I do not have an affiliation (financial or otherwise) with a pharmaceutical, medical device, or communications and event planning company.
- I have no involvement with a commercial company and I do not have any conflict of interest

Introduction

- Central Line Associated Blood Stream Infections (CLABSI)
 - most preventable HAIs
- High CLABSI rates for 6 years
 - 116 beds - tertiary cardiology hospital
- In 2015-2016, more observed infections than expected
 - increased SIR rates above the NHSN SIR (0.0994)
- Comprehensive analysis
 - contributing factors: insertion or maintenance related
 - Interventions - focused on the identified significant risk factors

Major Routes of Central Venous Catheter Microbial Contamination

- Extraluminal**
 - contamination of patient skin organisms
 - in place for less than 10 days
 - insertion related infection
- Intraluminal**
 - contamination of the catheter or hub by hand or devices during manipulation of IV system
 - associated with more prolonged CVC dwell time
 - in place for more than 10 days
 - maintenance related infection

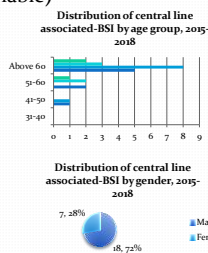


Source: The Joint Commission. Preventing Central Line-Associated Bloodstream Infections: A Global Challenge, a Global Perspective. Oak Brook, IL: Joint Commission Resources, May 2012. [Online] Available at https://www.jointcommission.org/assets/1/8/CLABSI_Monograph.pdf (Accessed 24/04/19)

Risk Factors for CLABSI

Intrinsic Risk Factors (non-modifiable)

- Age
- Underlying diseases or conditions
 - Cardiovascular diseases
- Gender
 - Male



The Joint Commission. Preventing Central Line-Associated Bloodstream Infections: Useful Tools, An International Perspective. Nov 20, 2013. [Online] <http://www.jointcommission.org/CLABSIToolkit>. [Accessed 24/04/2019].

Risk Factors for CLABSI

Extrinsic Risk Factors (modifiable risk factors)

- Prolonged hospitalization before insertion of CVC
- Insertion circumstance – emergency versus elective
- Skill of inserter – general versus specialized
- Catheter lumens - multiple CVCs
- Lack of maximal sterile barriers
- Femoral or internal jugular access sites rather than subclavian
- Heavy microbial colonization at the insertion site
 - High density of skin flora at the base of the neck in internal jugular CVCs
- Duration of catheter use

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Interventions

- Comprehensive gap analysis of risk factors
 - Literature review for new evidence-based practices
- STOP CLABSI Project – quality improvement initiative
 - Multidisciplinary team
- Proactive approach of CLABSI Task Force Team
- Education and training of doctors and nurses about hand hygiene, aseptic technique, central line insertion and maintenance bundle
- Enhance hand hygiene practices and CLABSI preventive measures
- Real time notification of infections and feedback to concerned units
- Gap/SWOT analysis by CLABSI task force team

Interventions of Modifiable Risk Factors

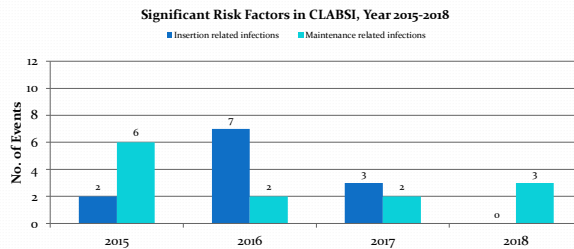
Characteristic	Change in Practice	
	2016	2017-2018
Insertion Circumstances	ED femoral lines is removed and changed once patient is stable Use of ultrasound guided insertion	Use of femoral line insertion is discouraged. Use of ultrasound guided insertion
Skill of inserter	General (fellow & resident)	Specialized (trained fellow/specialist)
Insertion site	Jugular, PICC	Jugular, PICC,
Lack of maximal sterile barrier	Full maximal barrier	Full maximal barrier
Catheter lumens	Multilumen	Multilumen, PICC Permanent cath for dialysis more 2 weeks

Interventions of Modifiable Risk Factors

Characteristic	Change in Practice	
	2016	2017-2018
Needless connectors	Mechanical valve versus split septum	Split septum
Scrub the hub	Alcohol, CHG 2% vs alcoholic caps	Alcoholic caps
Daily skin cleansing or bath	Chlorhexidine 2% wipes	Chlorhexidine 2%wipes
Heavy microbial colonization at the insertion site	Ventilator placed on the opposite side of the CVC insertion site	Ventilator placed on the opposite side of the CVC insertion site
Duration of use	Daily reminder to doctors	Daily notification to consultant & fellow Daily review of Physician Champion

Results

- After education and training of staff and implementation of CLABSI preventive measures:

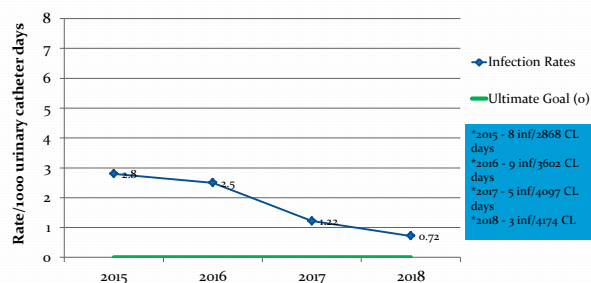


CLABSI Standardized Infection Ratio (SIR)

	2015	2016	2017	2018
Observed CLABSI	8	9	5	3
Expected CLABSI	2.49	3.15	3.35	3.44
Annual Rate	2.8	2.5	1.22	0.72
HH SIR	3.2	2.85	1.49	0.87
NHSN Nat'l SIR (0.994)	0.994	0.994	0.994	0.994

- If the SIR > 1.0, then more HAIs were observed than predicted
- If the SIR < 1.0, then fewer HAIs were observed than predicted
- Is the SIR = 1.0, then the same number of HAIs were observed as predicted

Facility-wide Annual CLABSI Rates, Year 2015-2018



Lesson Learned

- Physicians' acceptance and accountability can make a difference.
- The implementation of multidimensional approach of CLABSI interventions based on the identified risk factors is crucial in preventing infections.
- Real time notification of possible CLABSI event promotes staff engagement and proactive approach to prevent CLABSI.
- Staff dedication, commitment, process ownership, culture change, teamwork and strong leadership support make an enormous change in reducing and achieving zero CLABSI.

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Thank you!

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