## National Quality Improvement Conference

# Reducing the Rate of Central Line Associated Blood Stream Infections in the ICUs

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### Problem Statement

- Central Line Associated Bloodstream Infection (CLABSI) is associated with increased morbidity, hospital length of stay and healthcare costs.
- In the TTSH Intensive Care Units (ICUs), implementation of full barrier precautions and a line maintenance bundle since Year 2016 and 2017 has helped to bring down CLABSI rates in the hospital. The effect of these interventions plateaued, and there were likely to be other factors which drive the CLABSI rate.

Potential Solutions						
Root Causes	Interventions Roll Out at Pilot Site (Ward 6B MICU)	Time Period				
Lack of prompt to review CVL	<ul> <li>a) Empower nurses to prompt review of lines &gt; 14 days</li> <li>b) Documentation of daily line review</li> </ul>	Aug 2021 to Nov 2022				
Rotating MOs & Variability in Full Barrier Precaution Practices	<ul> <li>a) STOP CLABSI Poster</li> <li>b) On-the-Floor Supervision by Trained Seniors</li> <li>c) Just-in-time Onboarding of MOs</li> <li>d) CVC PPE Poster</li> </ul>	Sep 2021 to Jan 2022				
Inconsistent monitoring of practices	a) Central Line Insertion Audit b) Central Line Maintenance Audit c) Performance Feedback & Learning	Feb 2022				
Inadequate data sharing and dissemination.	CLABSI chart on display in tea room	Sep 2022				
Tackle high risk patients	Octenisan Wipes	Dec 2021				
Q3 2021 Q1	Spread Plan 2023 Q2 2023 Q3 2023	Q4 2023				
Pilot Site Spread Ward 6B Wa (MICU) (C	d Site #1 Spread Site #2 Spread Site #3 Spread Site #3 Spread Site #2 Spread Site #3 Spread Site	oread Site #4 Nard 3E/3F (OICU)				

In Year 2021, interventions to address these factors were implemented in one ICU as the pilot site and if found to be effective were spread to other ICUs.

### **Project Aim**

To reduce all ICUs Central Line Associated Bloodstream Infection (CLABSI) rate by 50% in 3 years\*

\*All ICUs Central Line Associated Bloodstream Infection (CLABSI) rate: 1.66 (median of all ICU CLABSI rates of Year 2020) -> 0.83 (ie. 50% reduction in 3 Years)

#### Lessons Learnt

#### **Outcomes & Impacts**

#### TTSH Hospital Overall CLABSI Rate

Year	2020	2021	2022	2023
rear				(up to Aug)
Annual	1 0 7	2.05	1 00	1 07
CLABSI Rate	1.82	2.05	1.00	1.07
No. of	14	10	1 Г	-
CLABSI Case		18	12	5

A significant reduction in CLABSI infections over the course of the project.

- The approach to containment of CLABSI rates is multidisciplinary. Staff need to feel that they have some skin in the game.
- Cases of CLABSI were painstakingly analyzed and a root cause analysis was undertaken to identify factors which led to the occurrence of the case.
- The results of the audits and CLABSI rates were regularly announced at nursing roll calls and department meetings, which lead to increased staff engagement and buy in.

#### CLABSI Rates (in all ICUs) with Interventions (Year 2020 to Sep 2023)

	Median 2020 <b>1.66</b>	Median 2021 <b>2.50</b>	Median 2022 <b>1.56</b>	Median 2023 (as of Aug) 0.71
		Aug '21: Nurse Prompt Doctor to Review CVL > 14 Days Sep '21: STOP CLABSI Poster Oct '21: On-the-Floor Supervision by Trained Seniors Dec '21: Octenisan Wipes	Jan '22: Onboarding MOs (orientation talk every quarterly) and CVC PPE Poster Feb '22: Central Line Insertion and Maintenance Audit as well as Performance Feedback & Learning	Jan-Mar '23: Roll out interventions to Ward 6A (CICU) Apr-Jun '23: Roll out interventions to Ward 3B (SICU)
8 - 7 - 6 - 5 - 5 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7		۸ ۹	Sep '22: Display CLABSI Chart Oct '22: Review data (lines on femoral & CVL > 14 Days) Nov '22: Documentation of daily line review	Differential Time to Positivity (DTP) document in all ICUs Jul-Sep '23: Roll out interventions to Ward 3A (NICU)
	Jan-20 Feb-20 Mar-20 May-20 Jun-20 Jul-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20 Dec-20	Jan-21 Feb-21 Mar-21 Apr-21 Jul-21 Jul-22 Jul-22 Aug-21 Sep-21 Oct-21 Nov-21 Dec-21	Jan-22 Feb-22 Mar-22 Apr-22 Jul-22 Jul-22 Sep-22 Sep-22 Sep-22 Oct-22 Dec-22	Jan-23 Feb-23 Mar-23 Apr-23 May-23 Jun-23 Jul-23 Aug-23 Sep-23
	CLABSI rate (in all ICU	s) —2020 median —202	1 median —2022 median	-2023 median
	CLABSI Rate = Number of Centra Source: QMIS	al Line Associated Bloodstream Inf	ections (CLABSI) cases / Number o	f Central Line Days