# REDUCING CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTIONS (CLABSI) THROUGH IMPLEMENTATION OF CARE BUNDLE

**SUNWAY**MEDICAL CENTRE

Sunway City Kuala Lumpur

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### **BACKGROUND**

Central Line-Associated Bloodstream Infections (CLABSI) remain a formidable challenge in critical care, often resulting in significant patient morbidity, prolonged stays, and increased healthcare expenditure. At Sunway Medical Centre, surveillance data from March 2023 to February 2024 revealed an alarming CLABSI rate of 1.13 per 1,000 central line-days, prompting the urgent need for a robust, evidence-based intervention to mitigate infection risks and standardize line care practices.

### GOAL

To achieve a minimum 50% reduction in CLABSI rates within a 12-month period through the implementation of a comprehensive central line care bundle, while concurrently elevating staff adherence and competency.

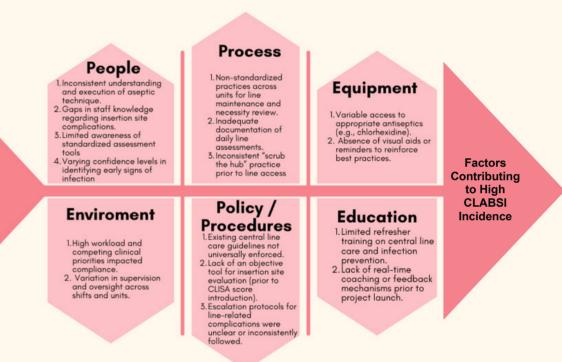


# Category Normal Appearance - Skin is flesh-coloured - No crythema, localised swelling, or drainage swelling, or drainage - Present - No localised swelling, or drainage - No localised swelling, or drainage - No localised swelling at the insertion site insertion site insertion site or seek of the insertion site of the insertion site or seek or seek of the insertion site or seek or seek of the insertion site or seek or

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v	ascular Catheter Care Bundle					Adm Doc					
٠.	ascular Catrieter Care Buridie			MRN							
A. I	Cindly fill up Section A and B upon vascular cathet	er insertion	1.	Non-ong o		Yeard No					
Inse	arted by										
Reason for insertion		Elective / Emergency / Replace malfunctioning catheter									
Hov	w many attempts										
Placement of catheter		Jugular (L/R)		Upper arm (L/R)	Subclavian (L/R)		Femoral (L/R)				
Dat	e & Time										
Гур	Type of line		JC .	Chemoport	PICC Other		s: e.g. UVC / UAC				
Nu	mber of lumens	1/2/3/4									
a. '	Fick ( √ ) the appropriate column										
After in section During Insection Prior to Insection	Performed by Inserter			Performed by Assistant							
		Yes	No		Yes	No					
	Assess patient (e.g., history, any invasive device in chest, time of last meal, previous chest x-rays, coagulation tests, APTT)			Signage on door or curtain to prevent entry of nonessential personnel							
	Provide patient and/or family education			Assistant present before starting procedure							
	Perform Time Out			Patient in Trendelenberg position for subclavian or internal jugular catheter placement, unless contra-indicated							
	Avoid the use of femoral vein whenever possible			Perform hand hygiene (prior insertion)							
	Perform hand hygiene (prior insertion)			Wear mask, cap, sterile gloves and gown within sterile field							
	Avoid the use of guidewire replacement technique if site or bloodstream infection suspected			Apply sterile semi-permeable / CHG dressing and document date and time of site dressing							
	Use full barrier precautions: wear mask, cap, sterile gown and gloves and place full-body drape over the patient										
	Apply CHG skin prep for 30 seconds using back and forth scrubbing motion (scrub for 2 minutes if moist skin site)										
	Sterile field maintained throughout the procedure										
	Ensure guidewire present and intact; guide- wire count completed										
	Catheter caps placed on all lumens										
	Clamps in place on all lumens										
	Document line placement in patient chart										
	Staff Name & Signature										
	Date & Time										

1. R 2. R	flacement of administration set: accommendations from the Centers for Disease Control and Prevention (I accommendations from the Infusion Nurse Society's 2911 Infusion Nursin accommendations from APSIC Guide for Prevention of Central-Line Associations	g Standard			ABSI) 2015														
	Types of administration set		Frequency of changing																
Courtinous IV Fluid administration set  Blood Transfussion administration set  TPN administration set			Not more than 72 fours interval  Every 4 hours or completion of each pret of blood  Every 24 hours																
											Propofol administration set		A dedicated administration set should be used and should be replaced every 12 hours when the vial is changed						
										Intermittent Infusion administration set (antibiotics)			Replace set every 24 hours.						
C. F	III in box with "Y" if Yes and "N" if No																		
	Line/ catheter day																		
	Date & Time																		
	Perform hand hygiene before and after touch catheter																		
Observation	Daily review to assess whether each central line is still needed. Please indicate CLISA scoring (refer to CLISA score)																		
	Daily Chlorhexidine preparation/ Octenisan bathing for patients aged over 2 months																		
	Scrub the hub with friction immediately prior to each use with 70% alcohol																		
	Observe for any damp, loosened, soiled dressing. If any, immediately replace dressing																		
	Replace administration sets as per recommendation (refer to the above table)							Т											
	Staff Name & Signature																		

# **ROOT CAUSE ANALYSIS**

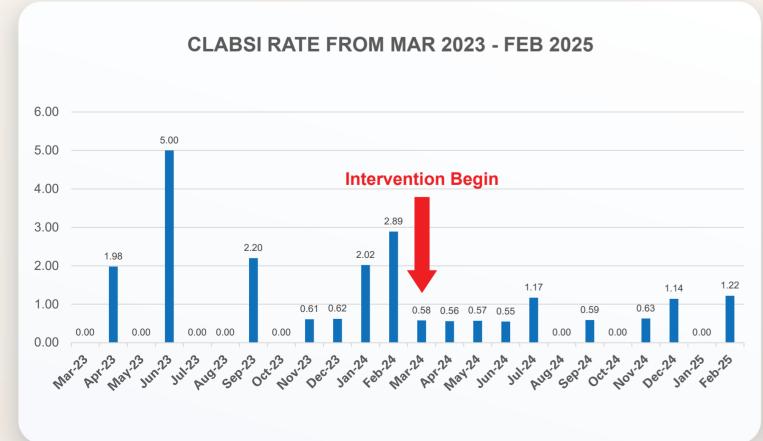


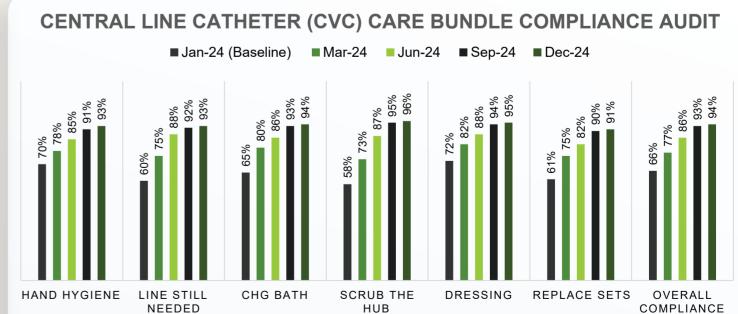
# **ACTIVITY**

Beginning in March 2024, a multidisciplinary quality improvement initiative was deployed, emphasizing the rigorous enforcement of central line care bundle elements—maximal sterile barrier precautions, strict hand hygiene, 2% chlorhexidine skin antisepsis, meticulous hub disinfection, daily assessment of line necessity, and maintenance of a clean, intact dressing. The Central Line Insertion Site Assessment (CLISA) score was integrated into daily workflows to support early detection of line-related complications. Structured staff education, real-time coaching, and continuous compliance audits were carried out to ensure fidelity and sustainability.

# **RESULT**

Post-implementation analysis demonstrated a 48% reduction in CLABSI rates, declining from 1.13 to 0.59 per 1,000 central line-days over the span of March 2024 to February 2025. Compliance with care bundle protocols improved significantly, from a baseline of 66% to 94% by the end of the implementation period. Enhanced staff engagement and clinical vigilance were evident through improved audit performance and positive feedback, reinforcing the safety culture within the Sunway Medical Centre.





At baseline in January, overall compliance was 66%, with lower scores in "Scrub the Hub" and "Line Still Needed." After implementing the care bundle, compliance increased month by month. By June, overall compliance reached 86%, and by December, it improved further to 94%, with all bundle elements scoring above 90%.

# **CLOSING ARGUMENT**

This initiative underscores the profound impact of systematic, evidence-based interventions in reducing preventable bloodstream infections in high-risk environments. The marked decline in CLABSI incidence reflects the success of strong clinical governance, interprofessional collaboration, and continuous performance monitoring. This model offers a scalable and sustainable approach to infection prevention that aligns with global patient safety priorities.