

**ANNEXURES/ Online supplement**

Figure 1a- Process flow chart for central line insertion

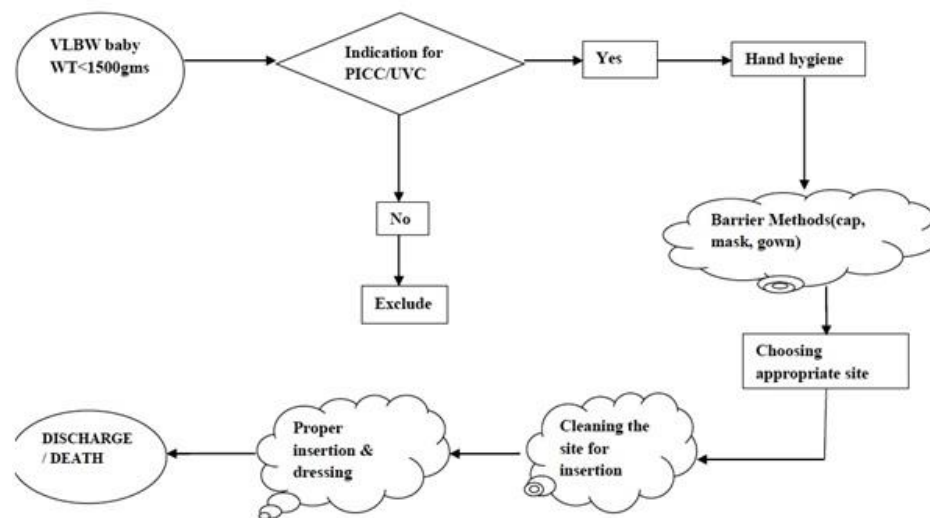


Figure 1b- Process flow chart for central line maintenance

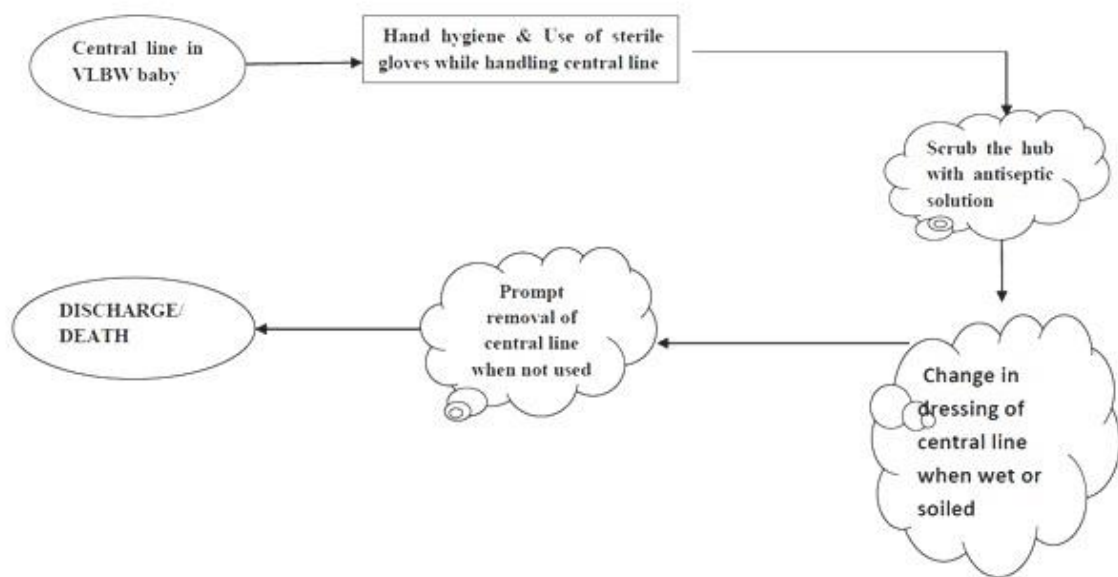


Figure 2- Control chart (I-MR chart) showing the LONS rate/1000 patient days during the study period (UCL- Upper control line, LCL- Lower control line; UCL and LCL correspond to +/- 3SD from mean)

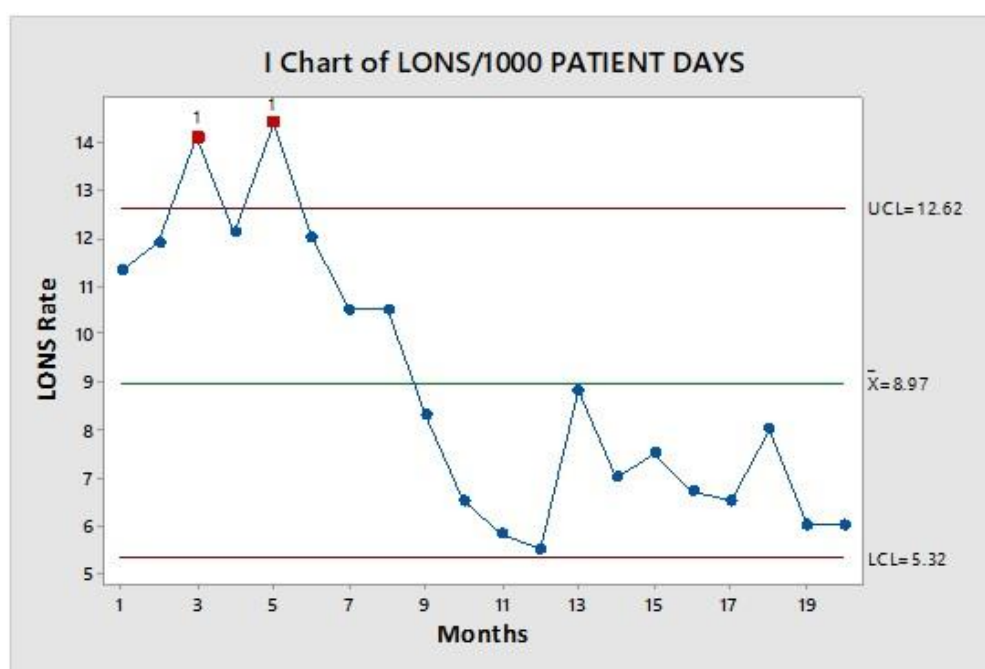


Figure 3- Handout of CLABSI bundle checklist in local language (Hindi)

1. CENTRAL LINE डालने से पहले अपने हाथों को अच्छी तरह से धो लें |
2. ASEPTIC TECHNIQUE का प्रयोग करें |
3. अधिकतम STERILE BARRIERS चीजों (जैसा CAP, MASK, GOWN, STERILE GLOVES OR STERILE SHEET ) का प्रयोग करें |
4. CENTRAL LINE के लिए सही साइट का चयन करें, विभिन्न मरीज और स्थिति के अनुसार |
5. SPIRIT और BETADINE से SITE CLEAN करें |
6. STERILE GUAZE या TRANSPARENT DRESSING SITE पर रखें |
7. हाथों की स्वच्छता की जरूरत को समझें |
8. प्रयोग के दौरान हाथों को STERILLIUM से SCRUB करें |
9. STERILE औज़ार का CATHETER लेने के लिए प्रयोग करें |
10. गीला और गंदे GUAZE, DRESSING को तुरन्त बदलना |
11. साफ और STERILE GLOVES से ASEPTIC TECHNIQUE का प्रयोग करते हुए DRESSING को बदल दें |
12. PMO LINE को हर 4 दिन के बाद और ज्यादा से ज्यादा 7 दिन में बदलें |
13. जब CATHETER का प्रयोग न हो तब निकाल दें |

Figure 4a- Test responses of health care workers during PDSA 3 **before** creation of WhatsApp group for CLABSI bundle awareness

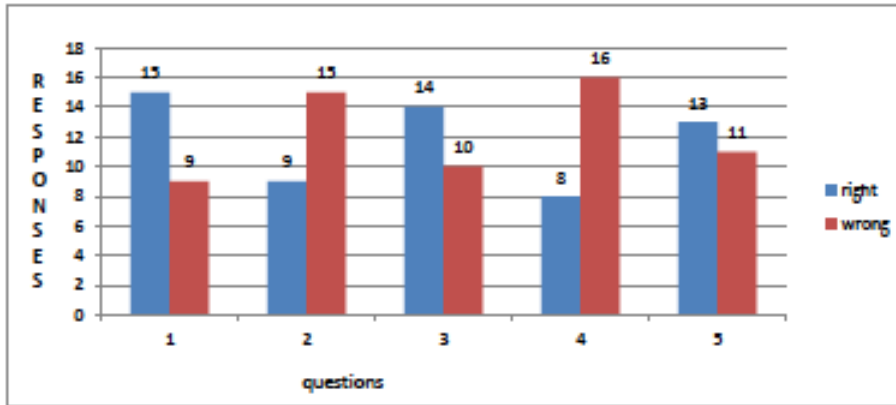


Figure 4b- Test responses of health care workers during PDSA cycle 3 **after** creation of WhatsApp group for CLABSI bundle awareness

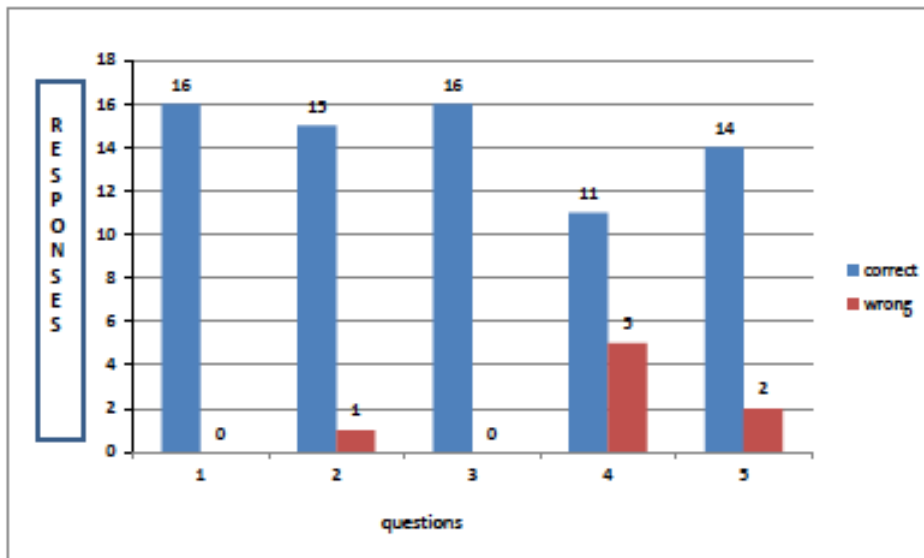


Table 1- Central Line Insertion and Maintenance bundle checklists used in the study  
[adapted from CDC (26)]

<b>A. Proper insertion practices</b>
<ul style="list-style-type: none"> <li>a. Perform hand hygiene before catheter insertion</li> <li>b. Adhere to aseptic techniques</li> <li>c. Use maximum sterile barrier precautions (i.e. mask, cap, gown, sterile gloves and sterile body drape)</li> <li>d. Choose best site for catheter insertion to prevent infections and other noninfectious complications based on individual patient characteristics</li> <li>e. Prepare insertion site with chlorhexidine &amp; alcohol.</li> <li>f. Place sterile gauze dressing or a sterile, transparent, semi permeable dressing over insertion site.</li> </ul>
<b>B. Proper line maintenance practices</b>
<ul style="list-style-type: none"> <li>i. Comply with hand hygiene requirements</li> <li>ii. Scrub access ports or hub with friction immediately prior to each use with an appropriate antiseptic</li> <li>iii. Immediately replace dressings that are wet, soiled or dislodged.</li> <li>iv. Perform routine dressing changes using aseptic technique with clean or sterile gloves.</li> <li>v. Change administration sets for continuous infusions no more frequently than every 4 days, but at least every 7 days</li> <li>vi. Prompt removal of catheter when not in use.</li> </ul>

Table 2- Baseline characteristics of the study population in the three phases of the study

Characteristic	Phase 1 (n = 33)	Phase 2 (n = 63)	Phase 3 (n = 51)	P value
<b>Gender</b>				0.58
Male	18	31	30	
Female	15	32	21	
<b>Gestational age</b>				0.57
< 28 weeks	7	10	10	
28-32 weeks	17	43	32	
33- 36 weeks	9	10	9	
Mean GA in weeks+ standard deviation	30w+4 ± 2w+6	30w+1 ± 2w+3	30w+1 ± 2w+6	0.81 (ANOVA)
<b>Birth weight</b>				0.16
<750gm	2	5	1	
750-999gm	13	12	16	
1000-1249gm	4	19	16	
1250-1500gm	14	27	18	
Mean birth weight+ standard deviation	1115±269gm	1174±263gm	1110±241gm	0.35 (ANOVA)
<b>Weight for GA</b>				0.89
SGA	15	26	23	
AGA	18	37	28	
<b>APGAR at 5min</b>				<b>0.04</b>
>7	18	31	39	
< or 7	12	28	11	
< or 3	3	4	1	
<b>Admission temp</b>				0.18
>37.5	1	1	1	
36.5-37.5	20	42	40	
<36.5	12	20	10	
<b>Type of central lines</b>				0.67
UVC	19	33	25	
PICC	12	21	22	
Both	2	9	4	
Media n duration of central line days + IQR	5 (4-6)	6 (5-8)	7(6-8)	<b>0.012</b>

<b>Median length of hospital stay + IQR</b>	24 (10- 32)	26 (15-40)	31 (21-47)	<b>0.034</b>
<b>Central line utilization ratio</b>	0.22	0.25	0.21	0.49
<b>ELBW %</b>	45.5	26.6	33.3	0.17
<b>ELBW survival %</b>	46.7	76.5	82.3`	<b>0.02</b>

Table 3- Sample of test questions given to the health care workers for testing

Multiple choice questions
1. While inserting central line, hand hygiene should be done A. Yes B. No
2. Barrier methods used while inserting central line are A. Mask B. Gown C. Head cap D. All of the above.
3. IV port site or hub should be scrubbed with friction prior to its use with antiseptic solution A. Yes B. No
4. PMO lines used for continuous infusions should be changed once in A. 20 hrs B. 24 hrs C. 72 hrs D. 96 hrs
5. Duration of hand wash as per WHO guidelines A. 20 - 40 sec B. 24 - 36 sec C. 30 – 50 sec D. 40 – 60 sec