



Coordinating a combined nursing and medical approach to reduce the incidence of central line associated bacteraemia in a critical care complex.

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Introduction

- ◆ 90% of catheter related blood stream infections with CVLs
- ◆ Associated mortality of 10-50%
- ◆ Cost \$20,000 - \$54,000 NZD
- ◆ Preventable



Study Aim

Does using a combined nursing and medical approach reduce the incidence of central line associated bacteraemia (CLAB) in a New Zealand tertiary critical care complex.

Setting

- ◆ Metropolitan Tertiary Hospital
- ◆ Critical Care Complex
 - ✧ 12 bed ICU
 - ✧ 6 bed HDU – opened in March 2009
 - ✧ PAR Team





Definition of CLAB – Criteria 1

Patient has a recognized pathogen cultured
from one or more blood cultures

and

Organism cultured from blood not related to
an infection at another site



Definition of CLAB – Criteria 2

- ◆ Patient has at least one of the following:
 - ◆ fever ($>38^{\circ}\text{C}$)
 - ◆ chills
 - ◆ hypotension
- ◆ A positive culture of common skin contaminant not related to an infection at another site
- ◆ Cultured from ≥ 2 blood cultures drawn on separate occasions



Methodology

- ◆ A before and after audit methodology
- ◆ October 2007 to April 2011_(inclusive)
- ◆ Data collected:
 - ✧ Number of line days
 - ✧ Patients identified as having CLAB
 - ✧ Staff Compliance



Prior to interventions

- ◆ 50% of our patients had a central line
- ◆ 1-2 patients per month had a CLAB
- ◆ 6.7 per 1000 catheter days



Insertion Bundle

- ◆ Hand Hygiene
- ◆ Chlorhexidine 2% and Alcohol 70% to clean site
- ◆ Subclavian as the preferred site
- ◆ Maximum Barrier Precautions
 - ◆ Hat and Mask
 - ◆ Sterile gown and gloves
 - ◆ Large sterile full body drape
 - ◆ Sterile technique during procedure & dressing application
- ◆ Review necessity daily

Insertion Pack

2% Chlorhexidine and 70% Alcohol maxi swab

CLAB Insertion Bundle Checklist

IDENTIFIED HARBOR

Respecting Center Line (RCL) (MSF)

Center Line Definition: _____ Patient Name: _____
MS Number: _____ Use patient's label

My culture when to incubate it is a great issue

PLEASE COMPLETE FOR ALL CENTRAL LINE INSERTIONS ON ALL PATIENTS

Insertion Site: _____ Catheter Type: _____
Catheter: _____ Hub: _____ Yaw Lock: _____
Other: _____

Line Dressing: _____

Antibiotic: _____ None _____
MSU (Dry): _____
Prevention: catheter to 4 hrs _____
Catheter Length: _____

DATE TIME INITIALED: _____ SIGNATURE: _____

DISPOSITION BUNDLE

Item	Yes	No
1. Hand hygiene		
2. Chlorhexidine 2% in 70% alcohol		
3. 70% alcohol		
4. Sterile gloves		
5. Sterile drape		
6. Sterile catheter		
7. Sterile connector		
8. Sterile cap		
9. Sterile dressing		
10. Sterile gauze		
11. Sterile syringe		
12. Sterile needle		
13. Sterile forceps		
14. Sterile scissors		
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496. Sterile needle		



Maintenance Bundle

- ◆ Check if line is necessary each day
- ◆ Is IVN/TPN infusing via dedicated lumen
- ◆ Check site for inflammation daily
- ◆ Clean ports with 2% Chlorhexidine and 70% alcohol each time accessed

Checklist

CLAB Insertion Bundle Checklist

Preventing Central Line Infections in CMDHB

COUNTIES MANUBAN
HOSPITALS BOARD

Central Line Definition Any catheter whose tip terminates in a great vessel	Patient Name NHI Number Use patient Label
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PLEASE COMPLETE FOR ALL CENTRAL LINE INSERTIONS ON ALL PATIENTS

Where was the line inserted? (CL) HDU Rural Hospital EC Theatre MIC NNU Other	Insertion site: Right Subclavian Basilic Femoral Other	Left Axillary Cephalic Ulnar Other	Catheter Type: CVC PICC Vas Cath Other
--	---	--	---

Line Coating:
Antibacterial Antiseptic None

NNU Only
Placement confirmed by X-ray

Catheter Length: _____

Time Line Inserted: _____

INSERTION BUNDLE:

To be completed by the inserter and signed by the proceduralist using checklist

1. Hand Hygiene - Did the proceduralist perform hand hygiene using chlorhexidine (CHG) solution?	Yes	No
2. Chlorhexidine Skin Antisepsis - Did the proceduralist prep the procedure site using chlorhexidine 2% in 70% alcohol (or NNU CHG % is stated by weight) for 30 seconds and allow solution time to dry completely?	Yes	No
3. Maximum Barrier Precautions - Did the proceduralist wear a hat?	Yes	No
Wear a mask		
Wear a sterile gown		
Wear sterile gloves		
Use a large sterile drape that covered the entire patient		
Maintain sterile technique during procedure		
Maintain sterile technique when applying the dressing		

Where high risk patient have CVC (e.g. burns, emergency insertion, long term TPN, immunocompromised) consider usage of prevention dressing device e.g. Biopatch

Applied YES NO

Proceduralist Name: _____ Proceduralist Signature: _____

Observer Name: _____ Observer Signature: _____

PLEASE LEAVE THIS FORM IN THE PATIENTS CHART

CMDHB CLAB CHECKLIST V9

February 2011

MAINTENANCE BUNDLE CHECKLIST

To be completed on all central lines

Question	Yes	No	NA	Comments
Was the Central Line reviewed for necessity today?				
Is there a dedicated port being used for the IV/TPN? (If no TPN infusing then please tick NA) Do you check the site today for information? (If any signs of infection are seen the catheter should be reviewed promptly) Prevention measure in use e.g. Biopatch disc or chlorhexidine gluconate (CHG) dressing				
Before accessing injection ports did you clean with 2% CHG in 70% alcohol				
Ward/Unit Today's Date _____ Line Day _____				
Was the Central Line reviewed for necessity today?				
Is there a dedicated port being used for the IV/TPN? (If no TPN infusing then please tick NA) Do you check the site today for information? (If any signs of infection are seen the catheter should be reviewed promptly) Prevention measure in use e.g. Biopatch disc or chlorhexidine gluconate (CHG) dressing				
Before accessing injection ports did you clean with 2% CHG in 70% alcohol				
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Is there a dedicated port being used for the IV/TPN? (If no TPN infusing then please tick NA) Do you check the site today for information? (If any signs of infection are seen the catheter should be reviewed promptly) Prevention measure in use e.g. Biopatch disc or chlorhexidine gluconate (CHG) dressing				
Before accessing injection ports did you clean with 2% CHG in 70% alcohol				
Ward/Unit Today's Date _____ Line Day _____				

Checklist

WE HAVE PREVENTED
CENTRAL LINE ASSOCIATE BACTEREMIA
IN ANY OF OUR PATIENTS

FOR

161

DAYS



Review of Line Dressing

◆ High risk patients

- ◆ Burns
- ◆ Immunocompromised

◆ High risk lines

- ◆ Rewired
- ◆ Lines inserted in other hospitals
- ◆ Insertions during emergencies

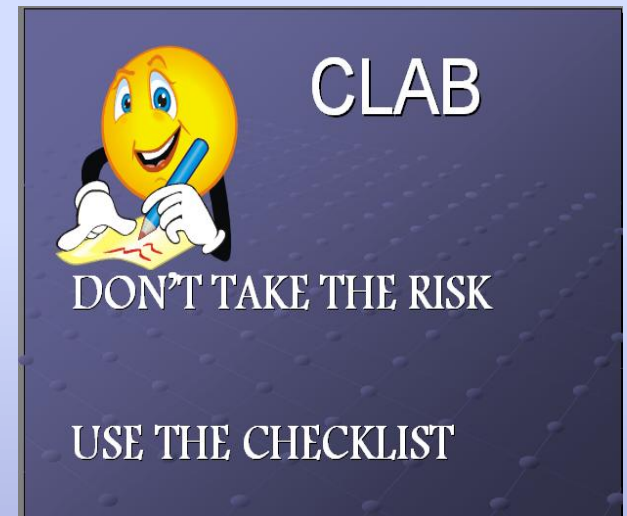


Supportive Measures

- ◆ Medical and Nursing education
- ◆ Monthly compliance audit
- ◆ In-depth review
- ◆ Communication book

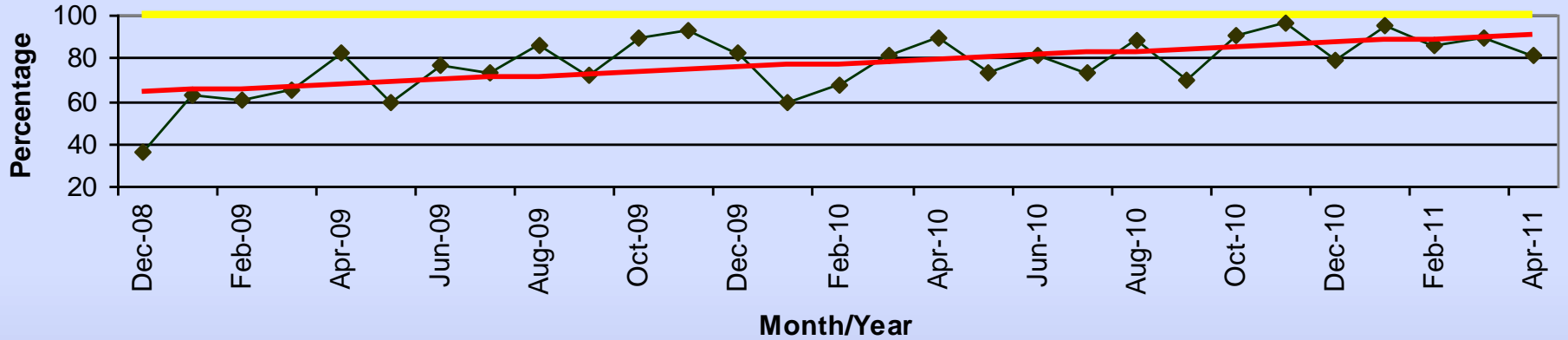
Sustaining Compliance

- ◆ Shift reminders
- ◆ Screen savers
- ◆ New staff orientation
- ◆ Charge nurse checklist

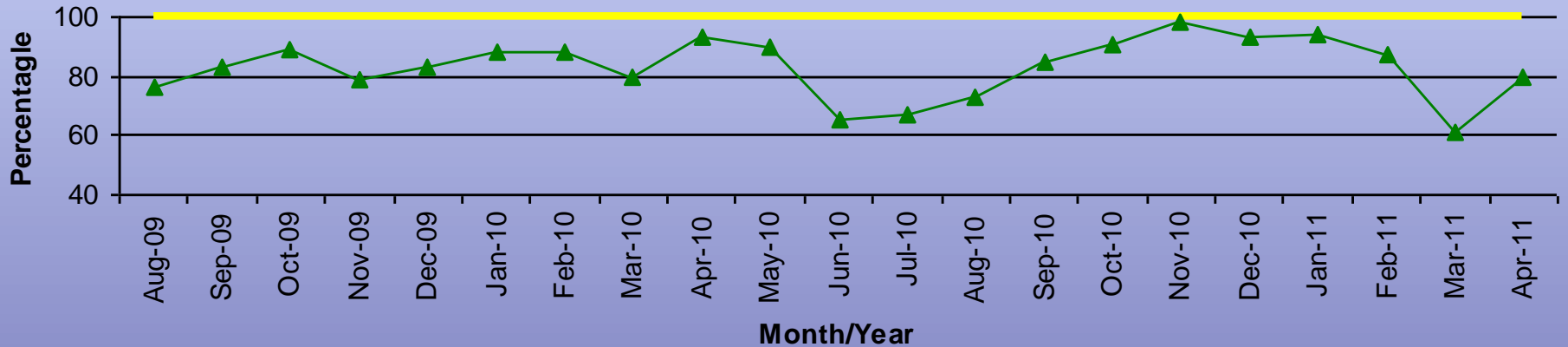


Results - Compliance

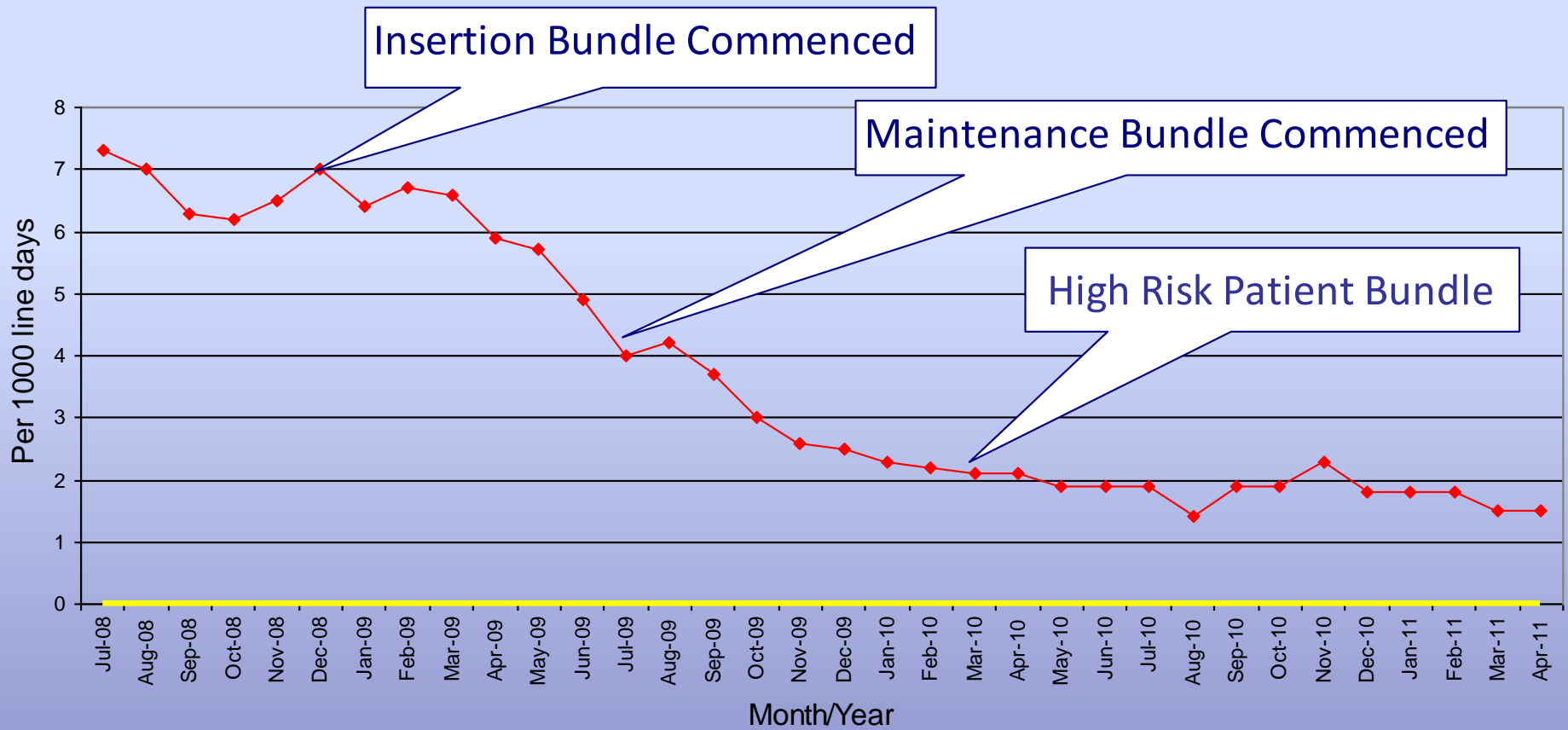
Insertion Bundle Compliance



Maintenance Bundle Compliance



Results – CCC CLAB Rate





Conclusion

Using a combined nursing and medical approach does reduce the incidence of CLAB.

Outside the CCC Walls

CLAB

