

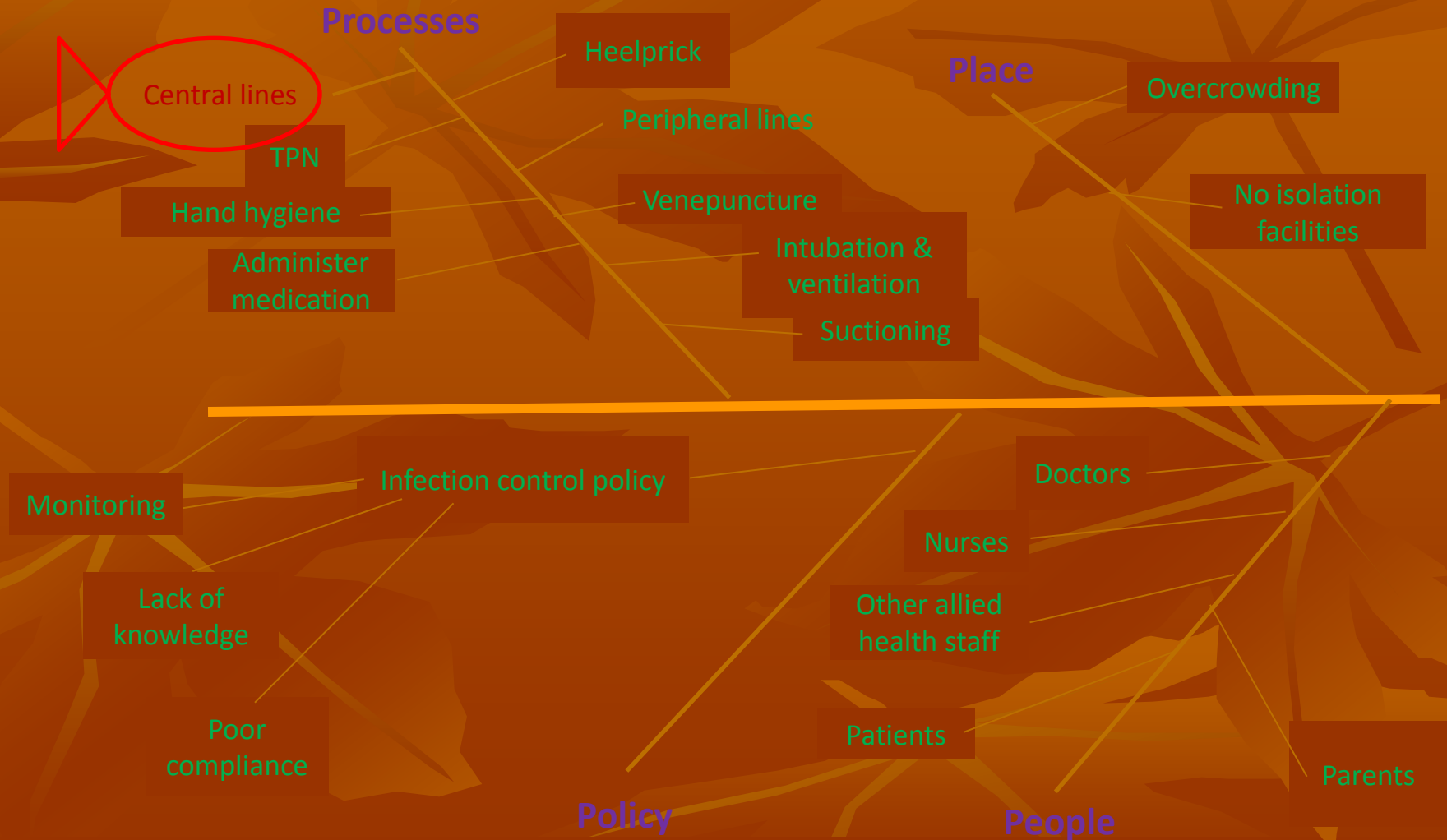
EPIQ PROJECT

Hospital Tengku Ampuan Rahimah
Klang

Aim

- To reduce nosocomial blood stream infections in NICU by 20%

Ishikawa Nosocomial BSI



Ishikawa central lines



HTAR

- Nosocomial BSI rate in babies <1500gms birth weight
- Focus:
 - Central line care
 - Skin breaks
 - Hand hygiene

Changes

Before

- Antiseptic
 - Povidone iodine
 - Chlorhexidine
- In large commercialised bottles

June 2011

- Antiseptic
 - Clinell swab (2% Chlorhexidine + 70% Alcohol) for venepuncture and blood taking
 - 2%Chlorhexidine + 70% Alcohol in individualised single use bottles (60mls) for blood culture, umbilical catheterization, PICC and chest tube insertion

Before

- Cannulation flushing
 - Preparation in large amount for daily use in 500mls Normal Saline
 - For use in branulla settings, umbilical cannulation and PICC insertions

June 2011

- Cannulation flushing
 - Heparin Saline 5cc single use vials
 - Normal saline 10cc single use vials
 - For use in umbilical cannulation and PICC insertions

Before

- General protocols
- Credentialling
 - Less formalised

June 2011

- Department Specific Protocols
 - PICC
 - Umbilical catheterisation
 - Blood sampling from UAC
 - Long line care and maintenance
 - Setting up TPN
- Credentialling
 - More formalised for procedures
 - Specific credentialling criteria

PICC line insertion

1. Identify site for insertion

- Large vein in antecubital fossa/ long saphenous vein/ posterior tibial vein



2. Measure insertion distance

- Upper limb: insertion site to sternal notch
- Lower limb: insertion site to xiphisternum



3. Prepare equipment (refer to Equipment List in Appendix)

4. Put on cap & mask

5. Handwashing

6. Put on gown & sterile gloves



7. Clean skin with appropriate skin disinfectant x 3 rounds

- $\leq 1000g$: 2% Chlorhexidine in aqueous
- $> 1000g$: 2% Chlorhexidine in 70% alcohol
- Upper limb: clean whole upper limb till mid-chest of insertion site
 - Start from forearm downwards (assistant holds elbow region)
 - Then hold forearm with sterile gauze, & clean skin from elbow upwards (assistant changes to new pair of gloves)
- Lower limb: clean whole lower limb till umbilical region of insertion site

8. Allow to dry for at least one(1) minute



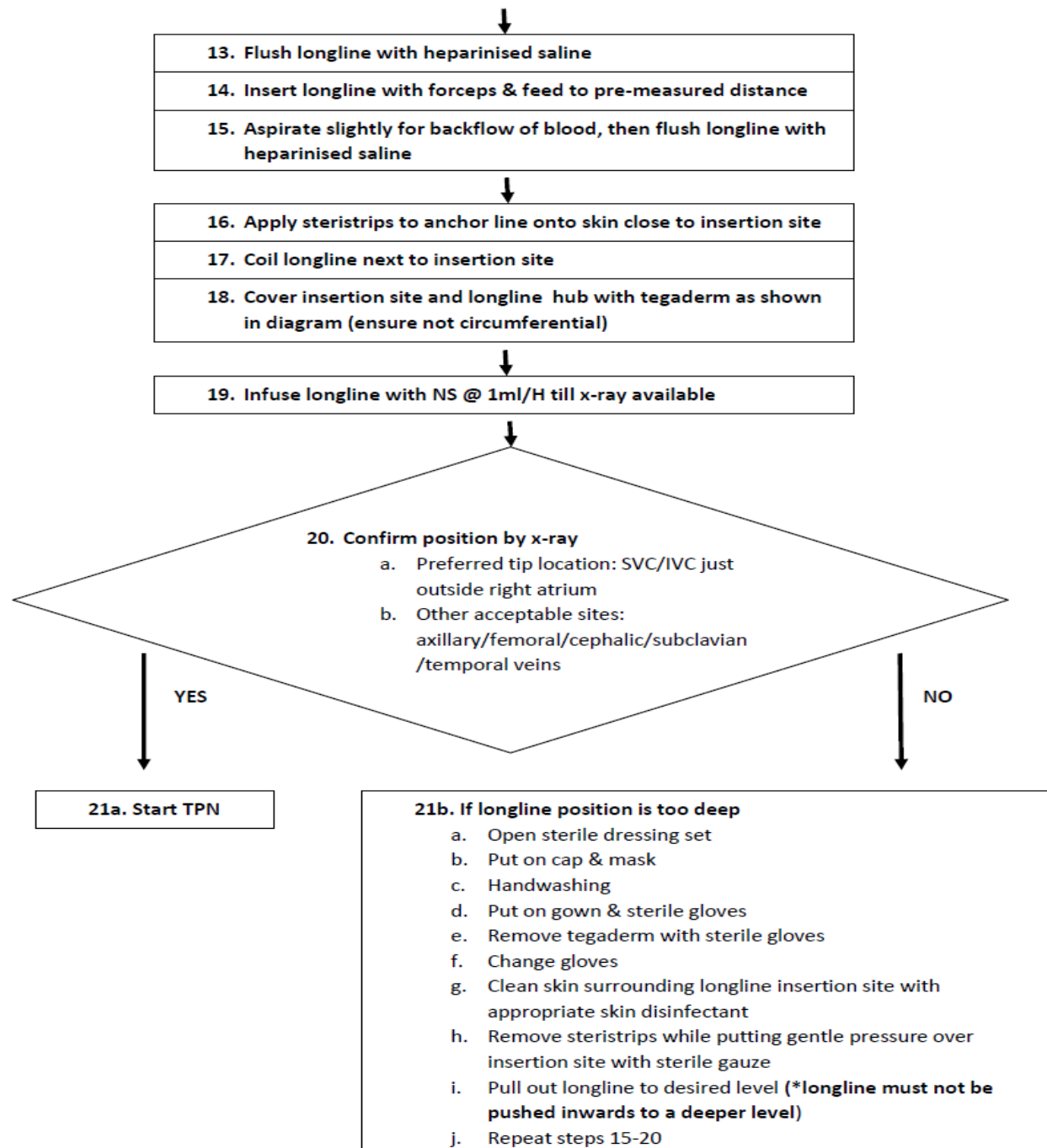
9. Create sterile field with drapes



10. Insert cannula

11. Remove trocar

12. Flush cannula with heparinised saline to ensure patency (2nd assistant opens longline set)



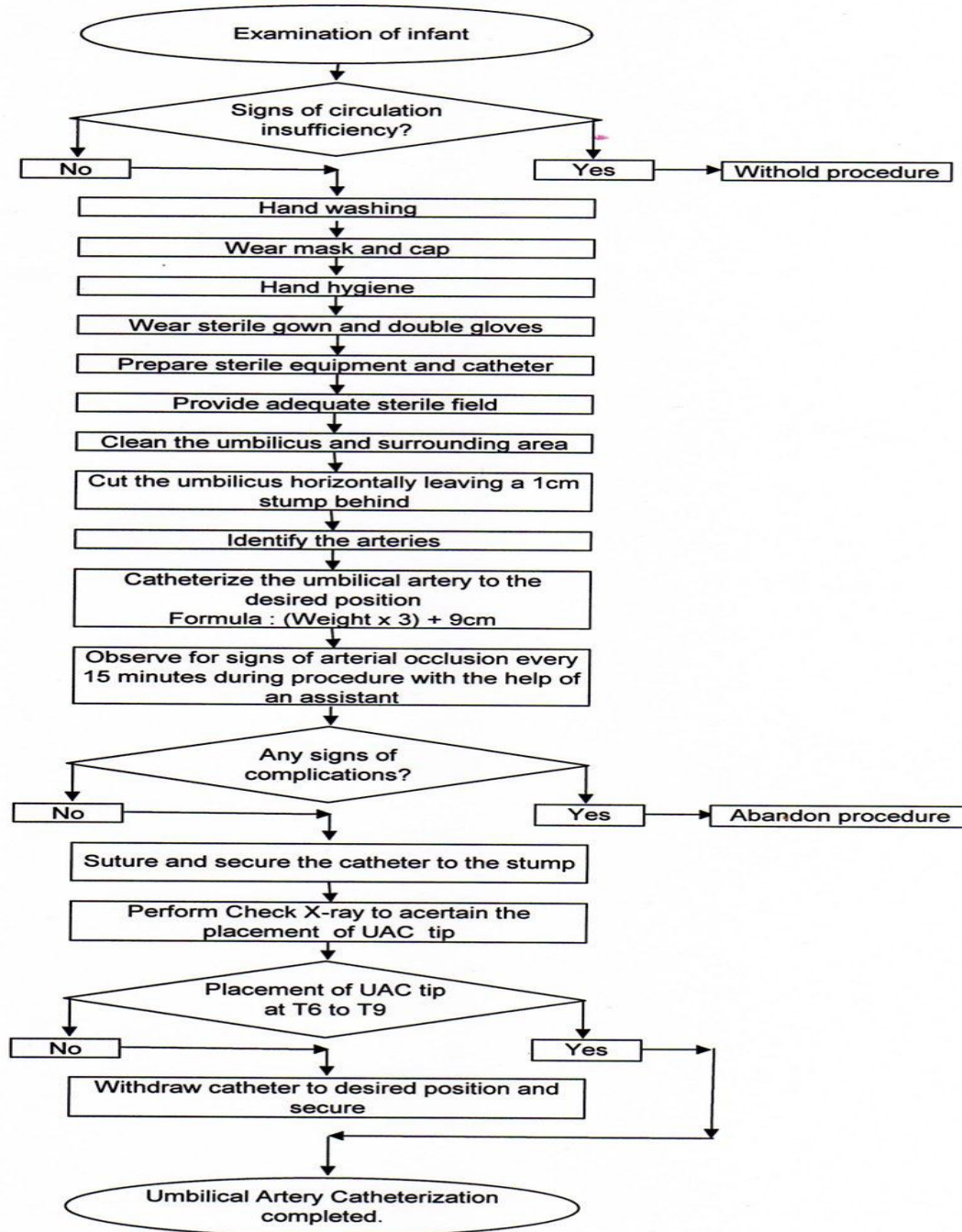
Appendix

- Covering longline insertion site with tegaderm

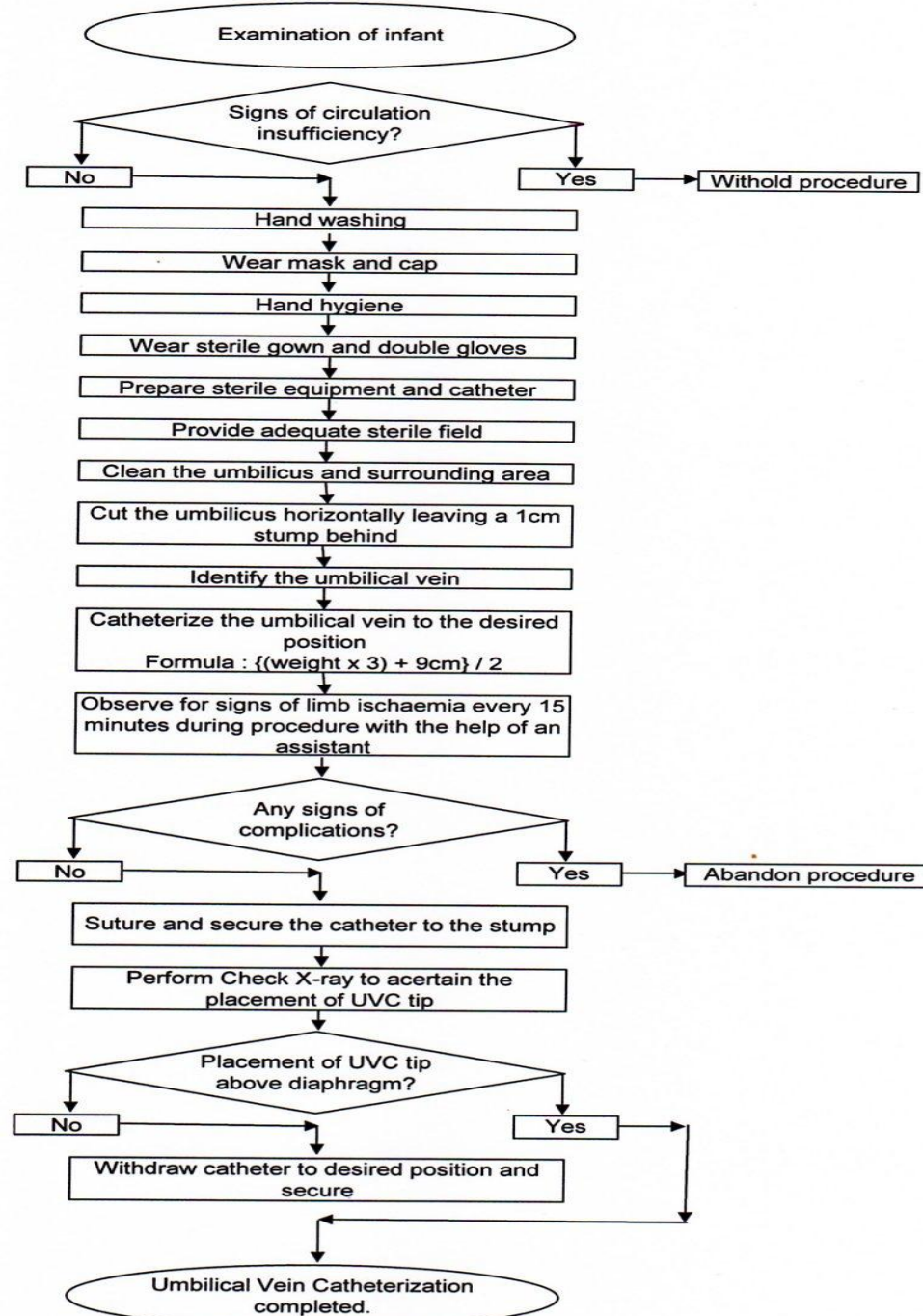


- **Equipment list:**
 - Cap
 - Mask
 - Sterile gown
 - Sterile gloves
 - Appropriate skin disinfectant
 - Sterile drapes
 - Sterile gauze
 - Sterile cotton swabs
 - Cannula
 - Non-tooth forceps
 - Steristrips
 - Longline set
 - Tegaderm
 - Heparinised saline (1iu/ml)
 - Normal saline

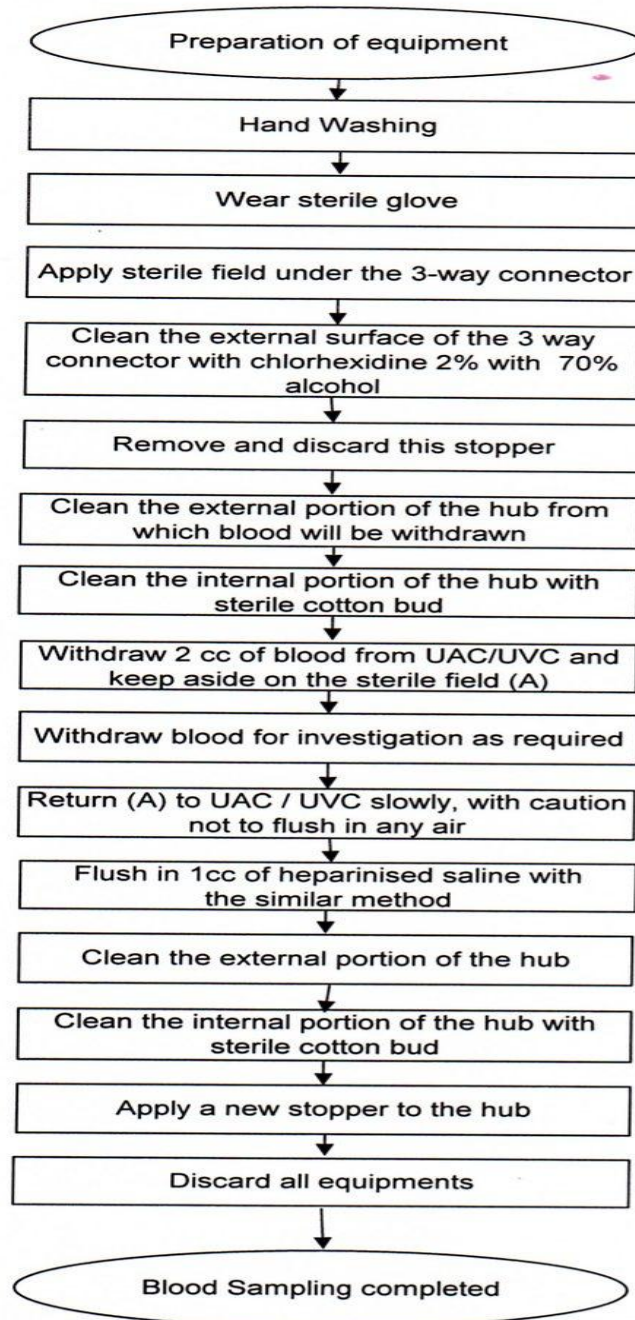
Umbilical Artery Catheterization



Umbilical Vein Catheterization



NICU HTAR
Blood Sampling From UAC/UVC



Equipment For Umbilical catheterization

1. Umbilical catheterization set
2. Sterile gown
3. Sterile Gloves
4. Appropriate antiseptic
 - Chlorohexidine 2% in aqueous for ELBW
 - Chlorohexidine 2% in 70% Alcohol for the others *
5. Appropriate size Umbilical catheter
6. Sterile blade
7. Sutures - Silk 3/0
8. 10cc syringe
9. Heparinized saline 1u/ml
10. Red 3-way connector

NICU HTAR
Blood Sampling From UAC/UVC

Equipment

1. Sterile base pack
2. Chlorohexidine 2 % with 70% alcohol
3. Sterile stopper
4. Sterile gloves
5. Sterile cotton buds
6. Sryinges as required
7. Heparinised saline

NICU HTAR
Care of Long Line (PICC)

A. Immediately after insertion

1. Assist doctor to secure line with sterile strips.
2. Coil line neatly and apply transparent dressing (Tegaderm) to cover up to the butterfly.
3. Splint arm if necessary to avoid pulling back on the line.
4. Apply label – date and time of insertion
5. Check dressing and plastering to prevent circulation compromise

B. Maintenance

1. Keep dressing clean and dry always.
2. Routine change of dressing is not required.
3. Avoid disconnection as far as possible. Keep line system closed.
4. Must don sterile gloves and provide sterile field whenever handling /disconnecting the line for change of I/V fluids or change of dressing.
5. Swab the connectors before and after disconnections.

D. Observation/monitoring

1. Observe for any bleeding, extravasation, swelling, leaking or signs of infection every 3 hourly. Document in chart HTAR PAED – 097.
2. Inform abnormal findings stat. Do not advance or manipulate line.

E. Caution

1. PICC line is meant mainly for TPN and I/V fluids only.
2. Do not infuse I/V antibiotics via PICC without specialist's permission.
3. Do not transfuse blood or blood products via PICC without specialist's permission.

Neonatal Intensive Care Unit
Care of Umbilical Lines

A. Immediately after insertion

1. Using sterile gloves, clean area around the umbilical stump with antiseptic and let dry.
2. Coil the umbilical catheters so that the catheters and the three-way stoppers do not fall onto the perineum area

B. Maintenance

1. Avoid disconnection as far as possible. Keep the catheter line system closed.
2. Swab fastidiously the connectors before and after disconnection.
3. Avoid unnecessary handling of the umbilical stump.
4. Keep umbilical stump clean and dry .No dressing is required over the umbilical stump.
5. Clean umbilical stump once a day during top & tail procedure using appropriate antiseptic. (Chlorohexidine 2% Aqueous for babies below 1kg. and Chlorohexidine 2% in 70% Alcohol for the others)
6. Keep umbilical stump exposed. Do not cover with diapers.
7. Keep the catheters and the connectors on a piece of sterile paper.

C. Observation

1. Observe umbilical stump for any bleeding, leaking or signs of infection every 3 hourly. Report abnormal findings stat. Never advance or manipulate catheter.
2. Note anchored marking on the catheter to detect dislodgement.

Nosocomial BSI

Less than 1500gms

HTAR

Nosocomial BSI <1500gms at NICU HTAR

2010

- Total admissions : 244
- Confirmed BSI : 40

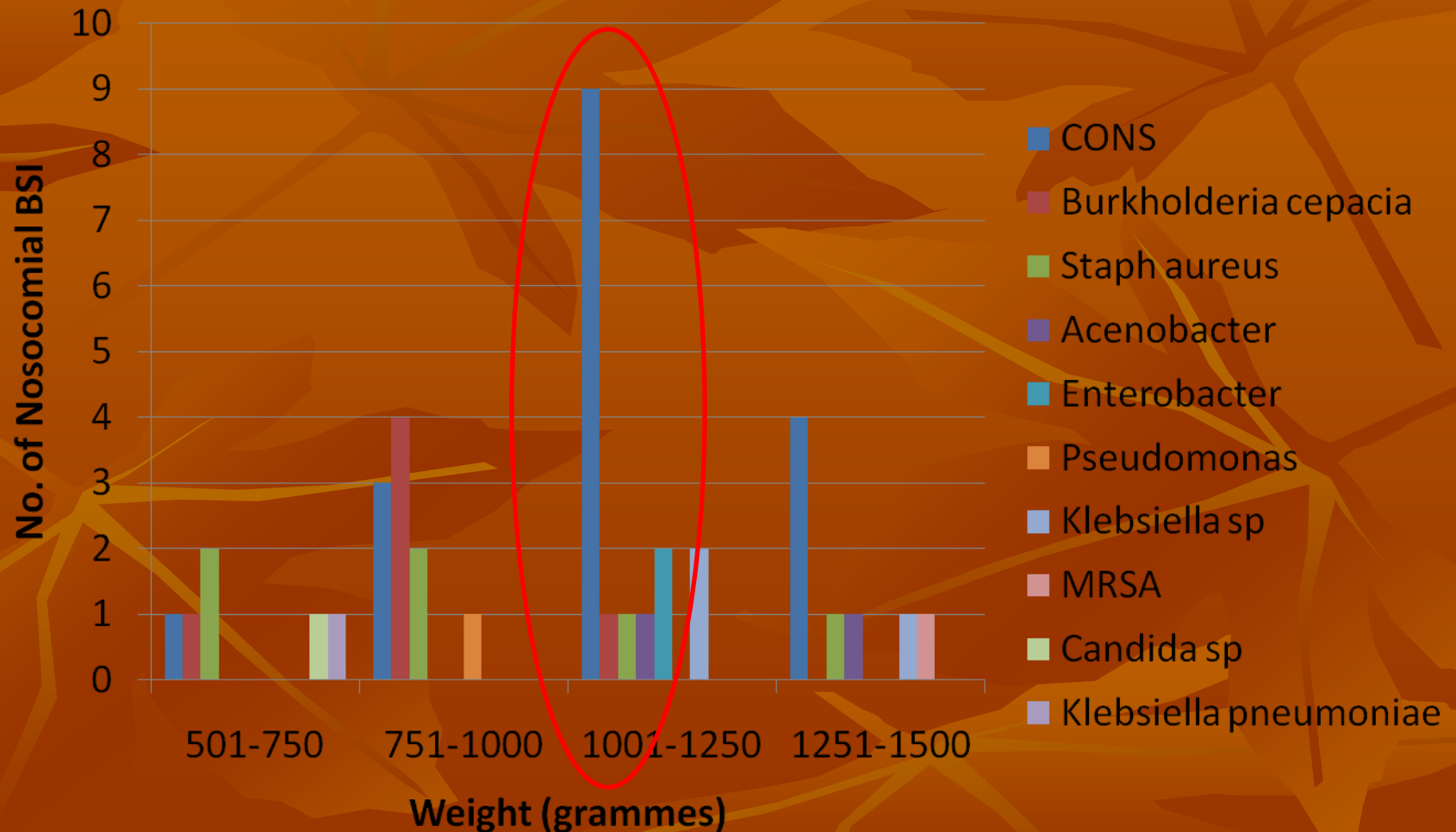
16%

2011 (Jan – Nov)

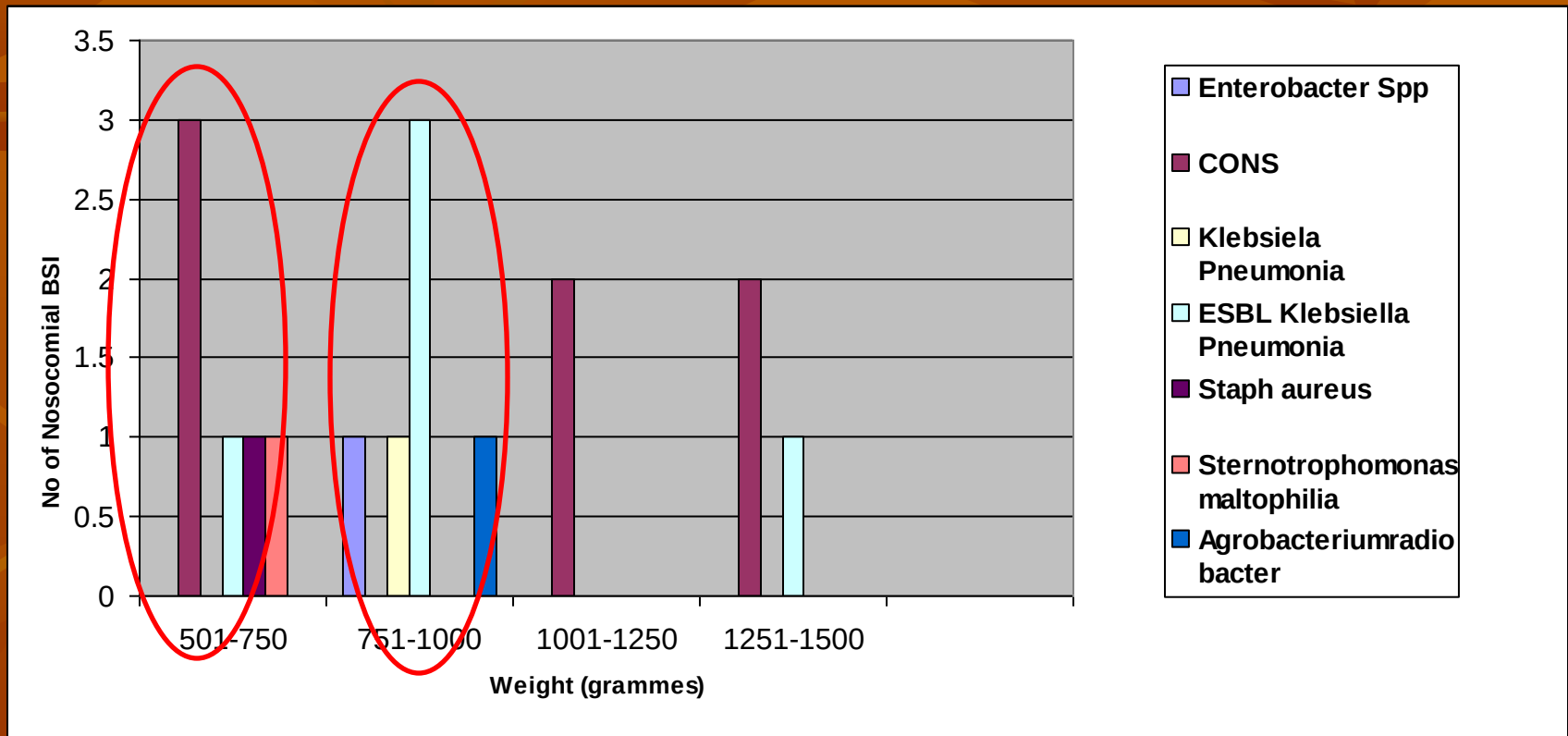
- Total admissions : 134
- Confirmed BSI : 16

12%

Nosocomial Bloodstream Infections HTAR 2010



Nosocomial Bloodstream Infections HTAR 2011



Nosocomial BSI <1500gms at NICU HTAR

Jan – May 2011

- Total admissions : 73
- Confirmed BSI : 8

10.9%

Jun – Nov 2011

- Total admissions : 65
- Confirmed BSI : 8

12.3%

Central lines

- All 16 neonates had central lines and PICC insertions

Results

- Comparing Nosocomial BSI rates from 2010 and 2011 (Jan till November)
 - NICU HTAR succeeded in reducing the Nosocomial BSI rates by 25%
- But comparing the first half of the year to second half of the year for 2011, the nosocomial BSI rates has increased by 1.4%

Total number of admissions to NICU were **109** in April and **104** in August 2011 (BOR April 88.75%, August 82.5%)

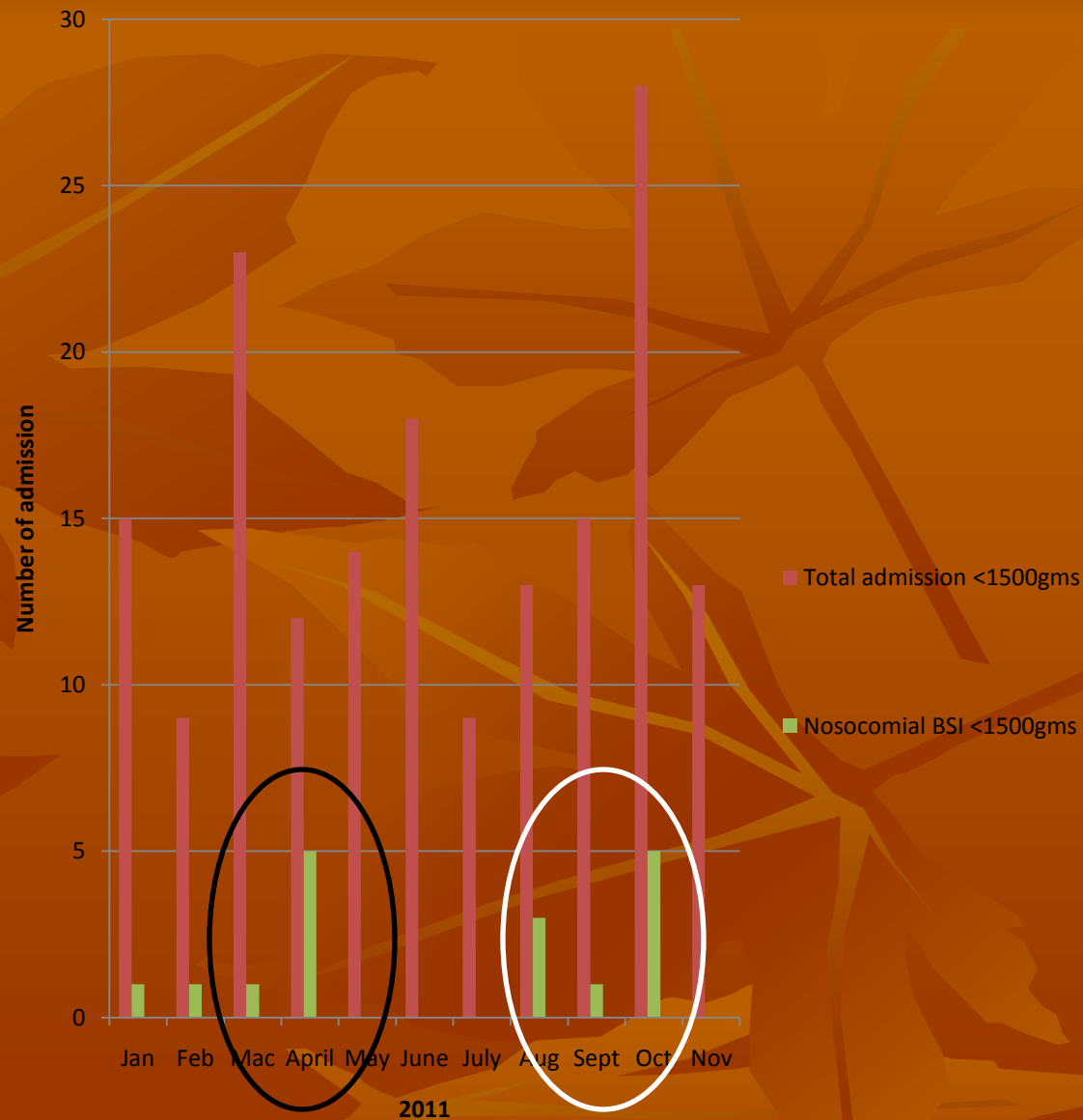
Total number of admissions for <1500gms were **28** in October 2011

Nosocomial BSI were higher in April, August and October 2011

overcrowding

lack of adequate
isolation facilities

shortage of manpower



Month	Total admission	No. of babies <1500gms	Confirmed BSI<1500gms	%
Jan	79	15	1	6.6
Feb	87	9	1	11.1
Mac	119	23	1	4.3
April	109	12	5	13.3
May	87	14	0	0
June	94	18	0	0
July	86	9	0	0
Aug	104	13	2	15.3
Sept	117	15	1	6.6
Oct	82	28	5	17.8
Nov	81	9	0	0



Hand Hygiene

Baseline Data

- Started on 1st June 2011
- KPI of 75%
- WHO World Alliance for Patient Safety
 - 5 moments hand hygiene

Attention To All

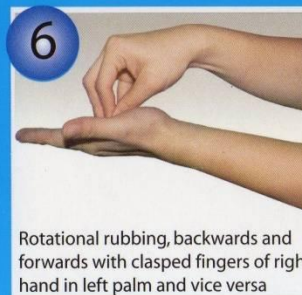
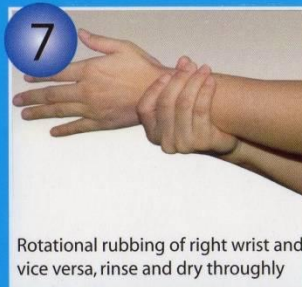
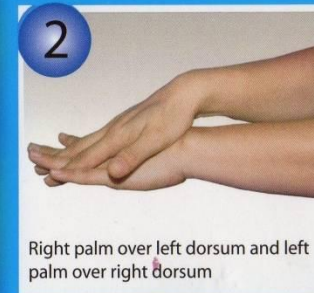
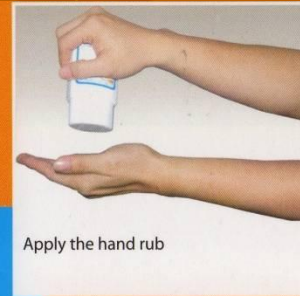
Before entering SCN and NICU, all staff (from Peds. and other departments) and parents please ensure the following:

- 1. Roll up your long sleeves to above elbow level**
- 2. Remove your wrist watch**
- 3. Remove your wrist bracelet/prayer string**
- 4. And, remove your ring as well.**

WASH HANDS BEFORE TOUCHING BABY!



7 STEPS EFFECTIVE HAND HYGIENE TECHNIQUE



Reference WHO



ANNEX 34

OBSERVATION FORM

Country			City			Hospital			Site ID		
Observer (initials)						Period No.			Department		
Date (dd.mm.yyyy)						Session No.			Service name		
Start/End time (hh:mm)						Form No.			Ward name		
Prof.cat. Code Number			Prof.cat. Code Number			Prof.cat. Code Number			Prof.cat. Code Number		

Opp	Indication	Action	Opp	Indication	Action	Opp	Indication	Action	Opp	Indication	Action
☐ bef-pat. ☐ bef-asept. ☐ aft-bfluid ☐ aft-pat. ☐ aft-surr.	☐ rub ☐ wash ☐ missed		☐ bef-pat. ☐ bef-asept. ☐ aft-bfluid ☐ aft-pat. ☐ aft-surr.	☐ rub ☐ wash ☐ missed		☐ bef-pat. ☐ bef-asept. ☐ aft-bfluid ☐ aft-pat. ☐ aft-surr.	☐ rub ☐ wash ☐ missed		☐ bef-pat. ☐ bef-asept. ☐ aft-bfluid ☐ aft-pat. ☐ aft-surr.	☐ rub ☐ wash ☐ missed	
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Data Collection

- 4 observer in NICU, 3 sister and 1 matron.
- Monthly data analysis
- Observe doctors, nurses and others (PPKs, parents, radiographers, pharmacists and O&G house officers)

Hand Hygiene

2010

Month	Compliance (%)
March	80
October	67
November	75
December	80

2011

Month	Compliance (%)
July	85.5
August	87.8
September	85.6
October	88.2
November	88.8

Hand Hygiene Compliance

Month	Before patient (%)	Before aseptic (%)	After body fluid (%)	After patient (%)	After surroundings (%)	%
July						
Dr	92	96	100	90	50	85.5
Nurses	92	95	100	97	56	
Others	90	100	100	92	30	
August						
Dr	92	100	91	93	63	87.8
Nurses	88	96	98	88	52	
Others	100	100	100	100	56	
September						
Dr	100	100	88	96	34	85.6
Nurses	99	100	100	99	53	
Others	100	100	100	87	27	
October						
Dr	94	89	100	100	54	88.2
Nurses	98	97	100	99	63	
Others	92	100	100	76	30	

- 
- Deficiency of hand hygiene compliance is at the level of “after surroundings”



Skin Breaks

Baseline data: Skin breaks

- Preliminary data on all those BW <1500g
 - With nosocomial BSI
 - total skin break count
 - Period Jun - Nov 2011
 - In the first 14 days of life
 - Record the number of skin break per shift

Hypotheses

- High number of skin break is associated with higher risk of infection

Name: [REDACTED]

RN : 1168377.

DOB : 13/4/11

Wt: 1.26 kg.

Shift Date	Am	Pm	On	Total
3/5/11	- NW -	11 2	-	42
4/5/11	1A	-	-	2
5/5/11	-	-	-	-
6/5/11	-	-	-	-
7/5/11	-	-	-	-
G/TOTAL				4

Skin breaks Count In babies <1500gms with Nosocomial BSI in the first 2 weeks of life

Patient	Birth weight (grammes)	Total skin breaks	
S1	830	20	
S2	830	23	
S3	850	77	
S4	840	9	
S5	650	8	
S6	1280	2	Death at Day 3 of life
S7	880	-	
S8	660	4	
S9	1200	7	
S10	850	2	Death at Day 21 of life

- 
- Small sample
 - Wide range of number of skin break
 - 2 – 77 skin break in 9 babies with nosocomial BSI

Discussion

- Nosocomial BSI in babies < 1500gms from Jan till Nov 2011 is 12% (25% reduced as compared to 2010)
- Deficiency of hand hygiene compliance is at the level of “after surroundings”
- Total number of skin breaks in babies less than 1500gms could not determine the risk for infection – there is a need for a more detailed study



Thank you