INFECTIONS SURVEILLANCE REGISTER

UNIT: _____

YEAR: _____

KWAZULU-NATAL PROVINCE

HEALTH

REPUBLIC OF SOUTH AFRICA

1. **Background-**How will this make the world a better place?

Healthcare-associated infections (HAI) represent a health systems failure resulting in increased costs, morbidity and mortality.

Globally the incidence of neonatal HAI is estimated to be 30%. (*Risk Factors for Nosocomial Infections in Neonatal Intensive Care Units (NICU) – 2015).* However rates are 20 times higher in resource-limited settings compared to developed country context (*Allengranzi et al, 2011).*
In SA infections account for 16.3% of new-born deaths and may be an underlying cause in many more.
In Regional and tertiary hospitals the risk of HAIs increases due to:

- Increased vulnerability of neonates
- Increased invasive modalities of care
- Increased length of stay.

>30% of HAI are preventable with adequate infection control (Haley RW et al. *Am J Epidemiol* 1985)

The purpose of this register is to:

- Strengthen monitoring/surveillance of HAI rates
- Identify common organisms
- Identify clusters/outbreaks
- Identify Device Associated Infections (DAIs)
- Monitor DAI rates
- Promote strengthening of IPC practices and use of IPC care bundles
- Reduce neonatal infection rates and subsequent mortality

2. **Instructions-**What do we need to do?

1. If sepsis is suspected:
    - Complete the relevant clinical investigations.
    - Send relevant specimen for culture to ascertain location of the infection.
    - Commence antibiotics
    - Enter patient in this register.
2. Enter patient details.
3. Enter culture specimen details. **NB** Date of specimen will become the date of occurrence for HAI or Device Associated Infections (DAI).
4. Enter reason culture was taken-clinical, laboratory, X-Ray or other markers for infection.
5. On Day 2 enter whether there is any growth.
6. On +/- Day 5 enter the bacterial growth
7. On +/- Day 7 enter the susceptibility (antibiogram)
8. Enter the conclusion of the investigations:
    - Hospital acquired infection? (All hospitals)
    - Device associated infection-VAP/CLABSI/CAUTI? (Only Reg/ Tert and those District hospitals using urinary catheters)

3. **Definitions-**What do we need to know?

1. **Present on Admission (POA) /Congenital:**
Evidence of infection is present 2 days prior to admission or within 2 days of admission.

2. **Healthcare-associated Infection (HAI):**
Evidence of infection occurs on or after the 3rd calendar day of admission.

3. **Ventilator-associated Pneumonia (VAP):** (Regional/Tertiary Hospitals only.)
Presence of pneumonia **and** invasive ventilation must be confirmed:

a) Presence of Pneumonia. Both clinical and X-Ray signs must be present:

- Clinical signs. Presence of both of the following:
    - Worsening gas exchange (eg O2 desaturations <94%, increased oxygen requirements/ventilator demand)
    - And at least ***three*** of the following:
        - Core temperature > 38°C or < 36°C
        - WCC ≤4000 /mm3 or >30,000 /mm3
        - New onset of purulent sputum/change in character of sputum/↑ respiratory secretions
        - Respiratory distress: (eg Apnoea, tachypnoea)
        - HR <100 bpm or >160 bpm

- X-Ray Evidence: Definitive infective changes confirmed.
Note: In patients with underlying pulmonary or cardiac disease (eg respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary oedema), 2 serial X-Rays should be taken looking for new/progressive and persistent infective changes

AND

b.) Presence of invasive ventilation evidenced by one of the following:

- The patient had been ventilated for >2 calendar days when pneumonia was confirmed.
- Ventilation had been in place for >2 calendar days and was discontinued 1 day before pneumonia was confirmed.

4. Central line Associated Blood Stream Infection: (Regional/Tertiary Hospitals only.)
Presence of a blood stream infection **and** a central line must be confirmed:

a.) Presence of blood stream infection evidenced by <u>one</u> of the following:
- Had a <u>recognized pathogen</u> cultured from one/more blood cultures ***and the*** organism is not related to an infection at another site.
- Had a common skin commensal cultured and <u>all</u> the following are present:
  - The organism is not related to an infection at another site.
  - Cultured from two or more blood cultures drawn within 48hrs of each or at different sites.
  - At least one of the following clinical signs must be present:
    - Core temperature > 38°C or < 36°C
    - Apnoea
    - Bradycardia

AND

b.) Presence of a central line evidenced by <u>one</u> of the following:
- A central line (CL) or umbilical catheter (UC) was in place for >2 calendar days when a blood stream infection was confirmed.
- A central line (CL) or umbilical catheter (UC) had been in place for >2 calendar days and was removed one day before the blood stream infection was confirmed.

NB. Group B Streptococcus (GBS): If within the 1st 6 days of life GBS is cultured from blood and a central line is present this will not be counted as a CLABSI but as POA/congenital infection.

5. Catheter-associated Urinary Tract Infection (CAUTI):
(Regional/Tertiary Hospitals only plus District hospitals using urinary catheters.)
Presence of a UTI and an indwelling urinary catheter must be confirmed.

a) Presence of a urinary tract infection: Both clinical & laboratory signs must be present:
- At least *one* of the following clinical signs with no other recognized cause:
  - Core temperature > 38°C or < 36°C
  - Bradycardia
  - Vomiting
  - Apnoea
  - Lethargy
  - Suprapubic tenderness
- Urine culture with no more than two species of organisms identified, at least one of which is a bacterium of $\geq 10^5$ CFU/ml. NB. If suprapubic urine (SPU) sample was obtained (preferable) -a single organism with lesser growth is also significant.

AND

b) Presence of an indwelling urinary catheter evidenced by <u>one</u> of the following:
- A catheter was in place for >2 days when the UTI was confirmed.
- A urinary catheter had been in place for >2 calendar days and was removed one day before the UTI was confirmed.

4. <u>Numerators and Denominators</u>

1. Infection Rates:

Numerators: Obtained from this register include:
- No. of hospital acquired infections (HAIs)
- No. of Ventilator associated pneumonias (VAPs) **(Regional/Tertiary only.)**
- No. of Central line associated blood stream infections (CLABSIs) **(Regional/Tert. only.)**
- No. of Catheter associated urinary tract infections (CAUTIs) **(Regional/Tert. only.)**

Denominators: Obtained from the Midnight headcount book include:
- No. of inpatient days (Tot. no. of patients present in the unit at midnight)
- No. of ventilator days (Tot. no. of ventilated patients present in the unit at midnight) **(Regional/Tertiary only.)**
- No. of central line days (Tot. no. of patients with a central line present in the unit at midnight) **(Regional/Tertiary only.)**
- No. of catheter days (Tot. no. of patients with an indwelling urinary catheter present in the unit at midnight) **(Reg/Tert. only + District hosps using urinary catheters.)**

NB Central line/ventilator/catheter days:
- The day the line/ET-tube/catheter is inserted is counted as Day 1.
- If a line/ET-tube/catheter is removed and resited within 1 calendar day, the no. of days count continues unchanged.
- If a line/ET-tube/catheter is removed and resited > 1 calendar day later, the no. of days count starts again from Day 1.

5. <u>Calculations & International Rates-</u>How will we know we made a difference?

1. Calculate Infection rates on a monthly basis.
2. HAI rates need to be calculated and monitored by all hospitals.
3. DAI only need to be calculated by Regional/Tertiary hospitals and those district hospitals using urinary catheters
4. Record in Neonatal Statistics register
5. Monitor how many days pass with zero HAIs/DAIs

	HAI	VAP	CLABSI	CAUTI
HAI/DAI	<u>No. of HAIs</u> x1000 No. of inpatient days	<u>No. of VAPs</u> x1000 No. of vent. days	<u>No. of CLABSIs</u> x1000 No. of CL days	<u>No. of CAUTIs</u> x1000 No. of catheter days
NHS * (304 NICUs)		1.1/1000 vent. days	2.3/1000 CL days	
SE Asia# (All patients)	20/1000	14.7/1000 vent. days	4.7/1000 CL days	8.9/1000 cat. days

* Device-associated infections among neonatal intensive care unit patients: incidence and associated pathogens reported to the National Healthcare Safety Network, 2006-2008 Infect Control Hosp Epidemiol. 2012 Dec;33(12):1200-6.
#The burden of healthcare-associated infections in Southeast Asia: a systematic literature review and meta-analysis. Clinical Infectious Diseases. 2015 Feb 12;60(11):1690-9.

Month:

Admission Details							**Culture**									**ABX**
							Type of sample									
Seq. no.	Name	Hospital no.	Diagnosis	Bed no.	Admission date	Admitted from	Invest. Date	Blood ✓	CSF ✓	Urine ✓	Stool ✓	Sputum ✓	Aspirate ✓	Swab (Site) ✓	Other	Curr-ently on ABX? Y / N

ABX = Antibiotics

Reason for culture						Results										Conclusion				
Clinical exam		Investigations				Day 2	+/- Day 5								Day 7					
		Laboratory		X-Ray		Growth?														
Findings	Y / N	Parameter	Result	Infec. change Y / N	Other	Y / N	Nil	Acinetobacter	Klebsiela	Enterobacter	Ecoli	Pseudomonas	Staphylococcus	Other	Susceptibility / Antibiogram	ABX changed / stopped? Y / N	NIL / POA ✓	HAI ✓	VAP ✓	CABSI ✓	CAUTI ✓
Hypo/Hyperthemia:		WCC:																			
Tachypnoea/Apnoea:		Platelets:																			
Tachy/Bradycardia:		CRP:																			
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