

WEBINAR ON NEONATAL GUIDELINES

HOSPITAL ACQUIRED INFECTIONS AND INFECTION PREVENTION AND CONTROL (IPC)

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health

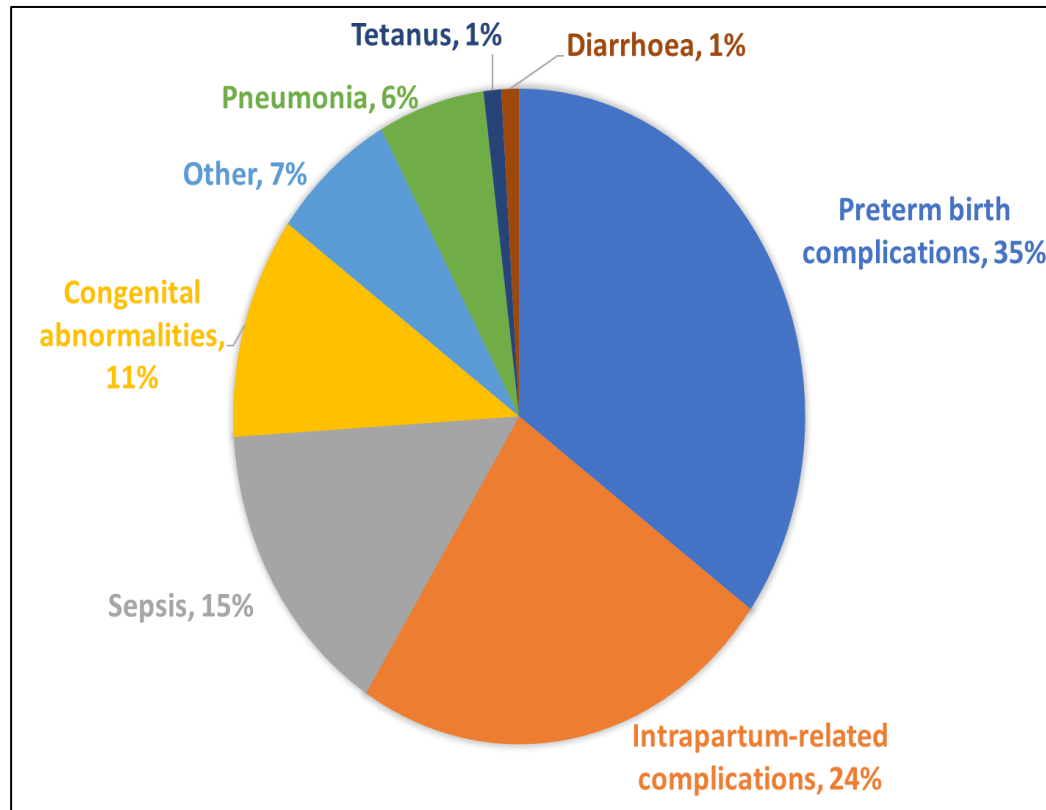
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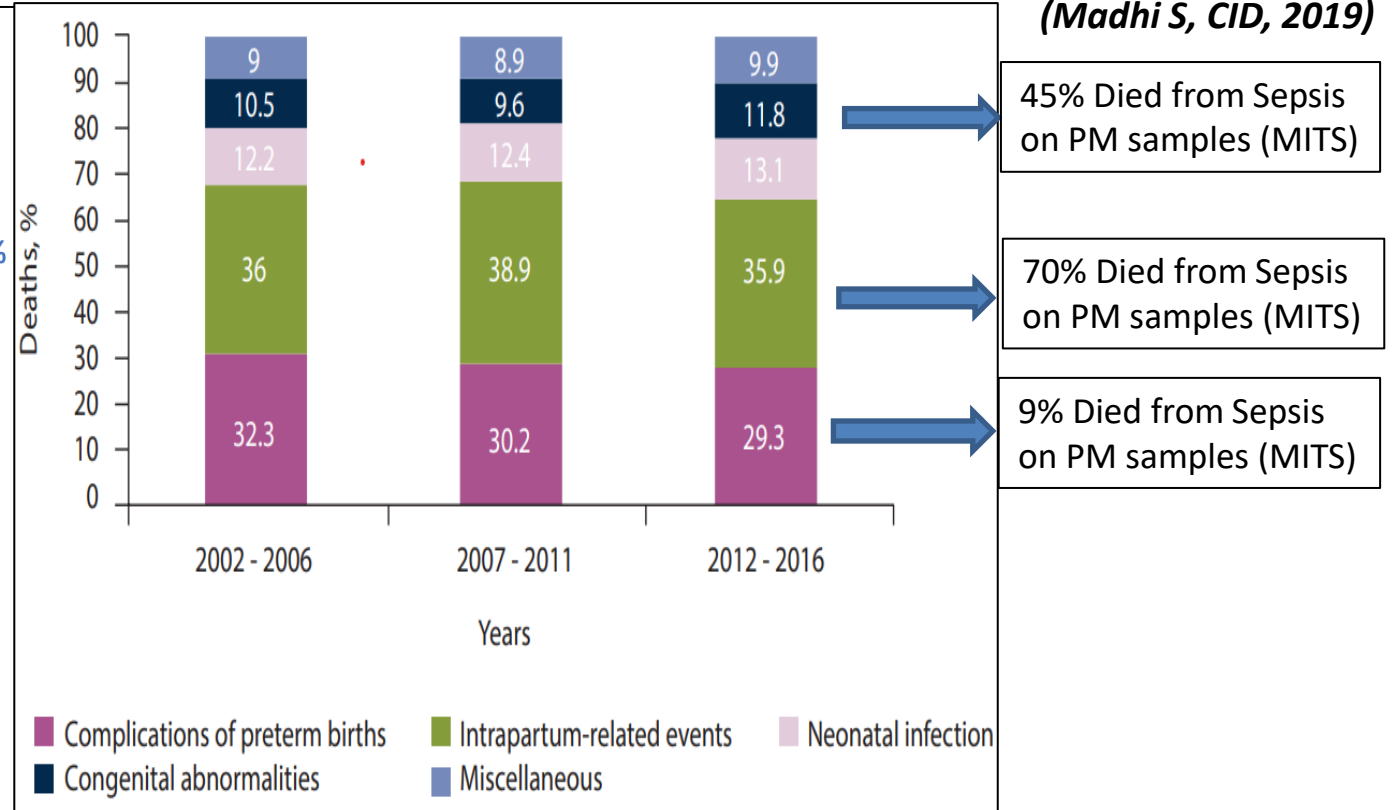
BACKGROUND

- Burden of Sepsis in Neonates
 - Neonatal deaths account for 47% of under-5 mortality globally and 31% in South Africa
 - Sepsis account for a significant proportion of neonatal deaths

- Global



- South Africa



(Rhoda, N. SAMJ, 2018)

DEFINITIONS

- Early Onset Sepsis
 - Sepsis occurring with first 3 days (72 hours) of life
- Late Onset Sepsis
 - Sepsis occurring at or more than 3 days (≥ 72 hours) of life
 - Community acquired
 - Healthcare Associated Infection or Hospital Acquired Infection (HAI)

Hospital Acquired Infections

- Definition
 - Infection presenting >48 hours after admission
 - Include patients from home who present with infection within 48 hours after discharge

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Types of Hospital Acquired Infections

- **Bloodstream infections**
- Pneumonia
- Urinary tract infection
 - Catheter associated
 - UTI not associated with catheter
- Meningitis
 - Culture positive
 - Culture negative
- Necrotizing enterocolitis
- Skin/ Soft tissue infections



Multiple Presentations with HAI

- One episode versus a different episode
 - A patient presenting with similar type of infection **within 14 days** of previous infection is considered as having the same episode of infection. This is called Repeat Infection Time (RIT) frame.
 - This includes isolated pathogens within the 14 days if the patient has similar infection



Clinical Presentation of HAI

- Signs are non-specific
 - General – temperature instability ($T < 36$ or ≥ 38), apnoea
 - Respiratory – respiratory distress (tachypnoea (> 60 bpm), retractions), grunting
 - CVS – tachycardia > 170 bpm, capillary refill time > 2 sec, hypotension
 - Abdomen- poor feeding, abdominal distension
 - CNS- lethargy, seizures, bulging fontanelle
 - Metabolic- hyperglycaemia, metabolic Acidosis
 - Others

Clinical Signs: WHO-defined possible serious bacterial infection (pSBI)

≥1 symptom or sign

- 85% Sensitivity
- 75% Specificity

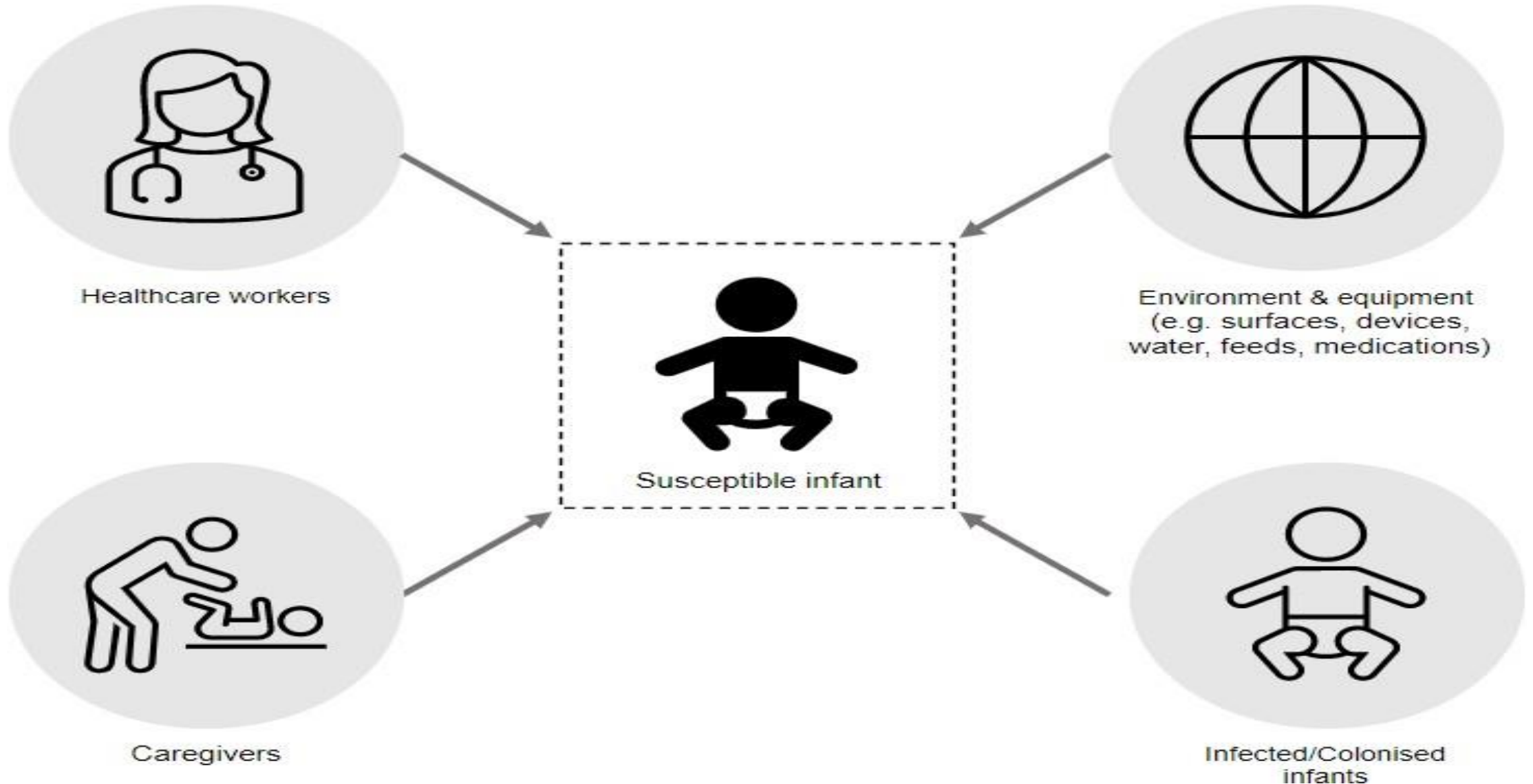
Young Infants Clinical Signs Study Lancet.
2008;371(9607):135-42.

	OR (95% CI)	p
History of difficulty feeding*	10.0 (6.9–14.5)	<0.0001
Movement only when stimulated*	6.9 (3.0–15.5)	<0.0001
Lethargic	3.5 (1.7–7.1)	0.0007
Temperature <35.5°C*	9.2 (4.6–18.6)	<0.0001
Temperature ≥37.5°C*	3.4 (2.4–4.9)	<0.0001
Prolonged capillary refill	10.5 (5.1–21.7)	<0.0001
Respiratory rate ≥60*	2.7 (1.9–3.8)	<0.0001
Grunting	2.9 (1.1–7.5)	0.025
Cyanosis	13.7 (1.6–116.5)	0.017
Severe chest indrawing*	8.9 (4.0–20.1)	<0.0001
History of convulsions*	15.4 (6.4–37.2)	<0.0001
Stiff limbs	15.1 (2.2–105.9)	0.006

*Symptom or sign indicative of need for hospitalisation.

Table 5: Independent clinical predictors of severe illness requiring hospital admission in the 0–6 days age-group (excluding jaundice)

Spread of Infection in Hospital



Reducing Risk and Limiting Spread of HAI

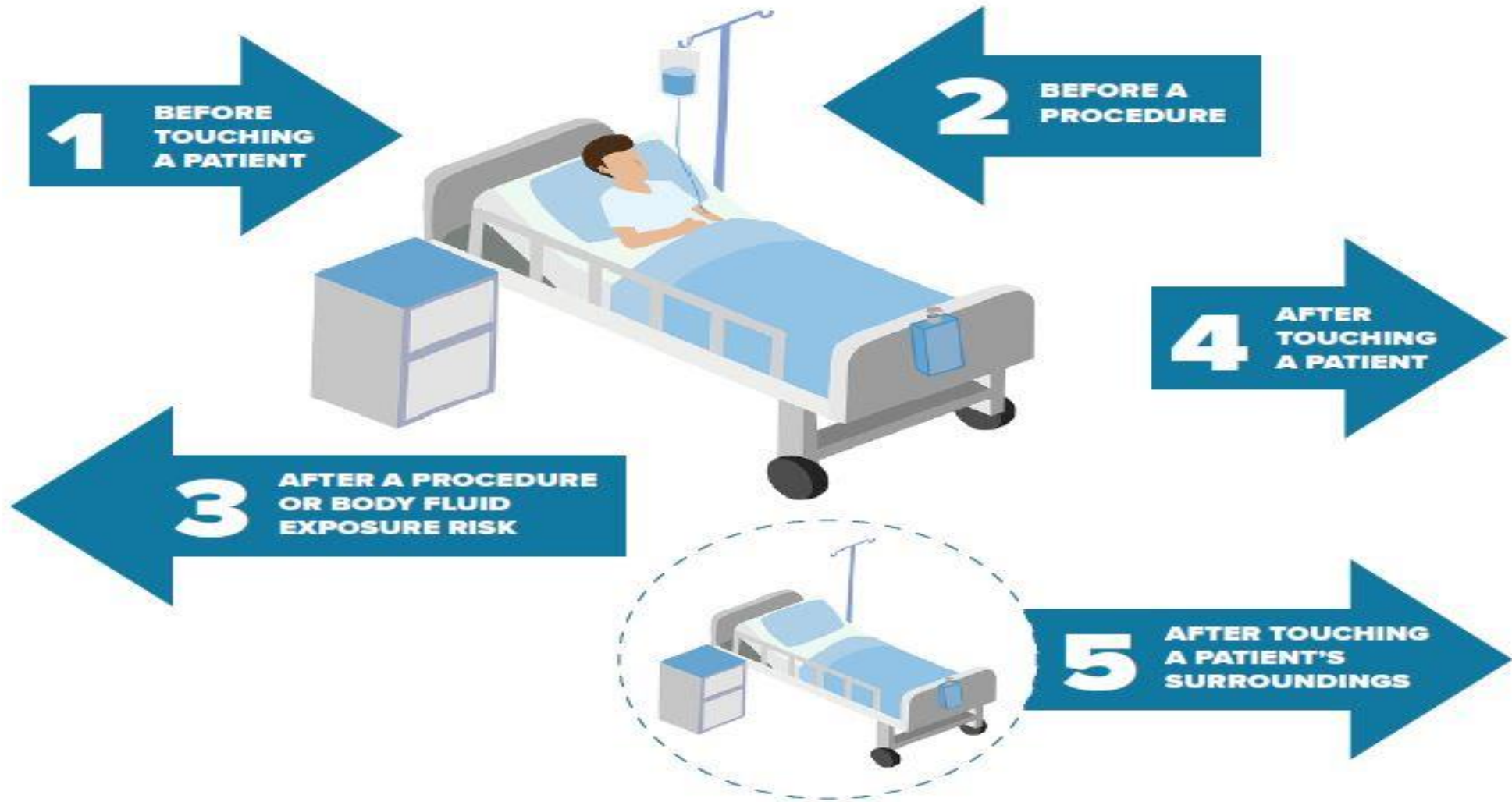
- Implement
 - Standard precautions
 - Transmission-based precautions

Standard Precautions

The Key Elements of Standard Precautions are:

- hand hygiene.
- appropriate use of personal protective equipment (PPE).
- patient placement.
- appropriate use of antiseptics, disinfectants, and detergents.
- decontamination of medical devices.
- safe handling of linen and laundry.
- health care waste management.
- respiratory hygiene and cough etiquette.
- environmental cleaning.
- injection safety, prevention of injuries from sharp instruments and post-exposure prophylaxis.

5 Moments for HAND HYGIENE



Transmission Based Precautions

- Contact precautions
- Droplet precautions
- Airborne precautions

These should always be applied in addition to Standard Precautions

Contact Precautions

- Must be applied when caring for patients with suspected or confirmed infections or colonisation with microbes transmitted by **direct** (e.g., hands of HCWs) or **indirect contact** (via contaminated environment or equipment).
- Conditions and/or organisms which require contact precautions include the following:
 - **Bacteria** transmitted by contact such as, but not limited to methicillin-resistance *Staphylococcus aureus* (MRSA), Vancomycin-resistant *Enterococci*, extended-spectrum (ESBL)- and carbapenem-resistant (CR)-Gram-negative bacteria (GNB), MDR- and XDR *Pseudomonas aeruginosa* and *Acinetobacter spp*, and drug-resistant
 - **Candida species** such as *C. auris*.
 - Conditions: skin infections, diarrhoeal diseases.
- In addition, procedures such as wound dressing or where contact with faeces, urine, secretions, or excretions is anticipated, necessitate contact precautions

Contact Precautions (Cont'd)

- Patient placement
 - Isolation/ Cohorting
- Hand hygiene
- PPE
 - Aprons
 - Gloves
- Environmental cleaning
- Patient care equipment

Droplet Precautions

- Transmission occurs when droplets containing microbes generated from an infected person are propelled a short distance before they fall due to gravity, landing on surfaces surrounding the patient, contaminating the environment, or come in contact with another person's conjunctivae or mucous membranes (eyes, nose, or mouth).
- Microbes transmitted by the droplet route **include influenza, RSV and other respiratory viruses, *Neisseria meningitidis* and SARS-CoV-2.**

Droplet Spread: Risk-prone procedures

- Endotracheal suctioning
- Chest physiotherapy
- Bronchoscopy
- Re-use of ventilatory circuits
- Washing and cleaning of ventilator equipment

Droplet Precautions

- Patient placement
 - Isolation/ Cohorting
 - Place patients at least 1-2 meters from next patient
- Hand hygiene
- PPE
 - Aprons
 - Gloves
 - Mask- surgical mask, N95 if conducting aerosol generating procedures
- Environmental cleaning
- Patient care equipment

Airborne Precautions

- Airborne pathogens can be transmitted via aerosols and air currents. Diseases transmitted via the airborne route include **pulmonary tuberculosis, measles, varicella, and SARS-CoV-2**

Airborne Precautions (Cont'd)

Patient Placement

- Place patient in a single room with en-suite bathroom
- Ideally the patient should be accommodated in a room with negative pressure ventilation, alternatively in a room with open windows
- Keep door always closed
- Hand hygiene
- PPE
 - Aprons
 - Gloves
 - Mask- surgical mask, N95 if conducting aerosol generating procedures
- Environmental cleaning
- Patient care equipment

Surveillance

- Get to know your local background epidemiology, performance of the unit around IPC practices
- Allows one to detect outbreaks
- Assists with deciding on local antibiogram
- Different types of surveillance
 - Laboratory based
 - Clinical/ Care bundles- VAP, CLABSI
 - Pharmacy

Example of Data to Collect as Part of Surveillance

Demographic Data	Medical Devices Related To Reported HAI
Ward	Type of medical device
Baby's name and surname	Date of insertion
Hospital number	Date of removal
Sex	Was the medical device inserted on date of the first positive culture?
Date of birth	Antimicrobial therapy related to reported HAI
Birth weight (grams)	Name of agent
Type of delivery	Date started
Admission data	Date stopped
Date of admission	Duration
Admission diagnosis	Outcome
Laboratory data for reported HAI	In-hospital outcome (Discharged / transferred/ Died)
Date of specimen collection	
Laboratory episode number	
Specimen type	
Organism isolated	



I Thank You