

Basic Principles in Infection Prevention in NICUs

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- In Sri Lanka;
 - Nearly 15 percent of term neonates need admission to the neonatal care unit
 - About 35 percent of preterm neonates need NICU admission in Sri Lanka*
- **All newborn babies who get admitted to NICUs are in additional risks of acquiring a neonatal sepsis irrespective of the reason for admission**

*DA Gunawardane, Sri Lankan Newborns; Improving Survival and Well-Being
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Preterm infants are particularly vulnerable to infections due to:

- their immature immune defenses
- prolonged hospitalizations
- delays in enteral feeding
- early antibiotic exposure
- need for life-sustaining invasive interventions

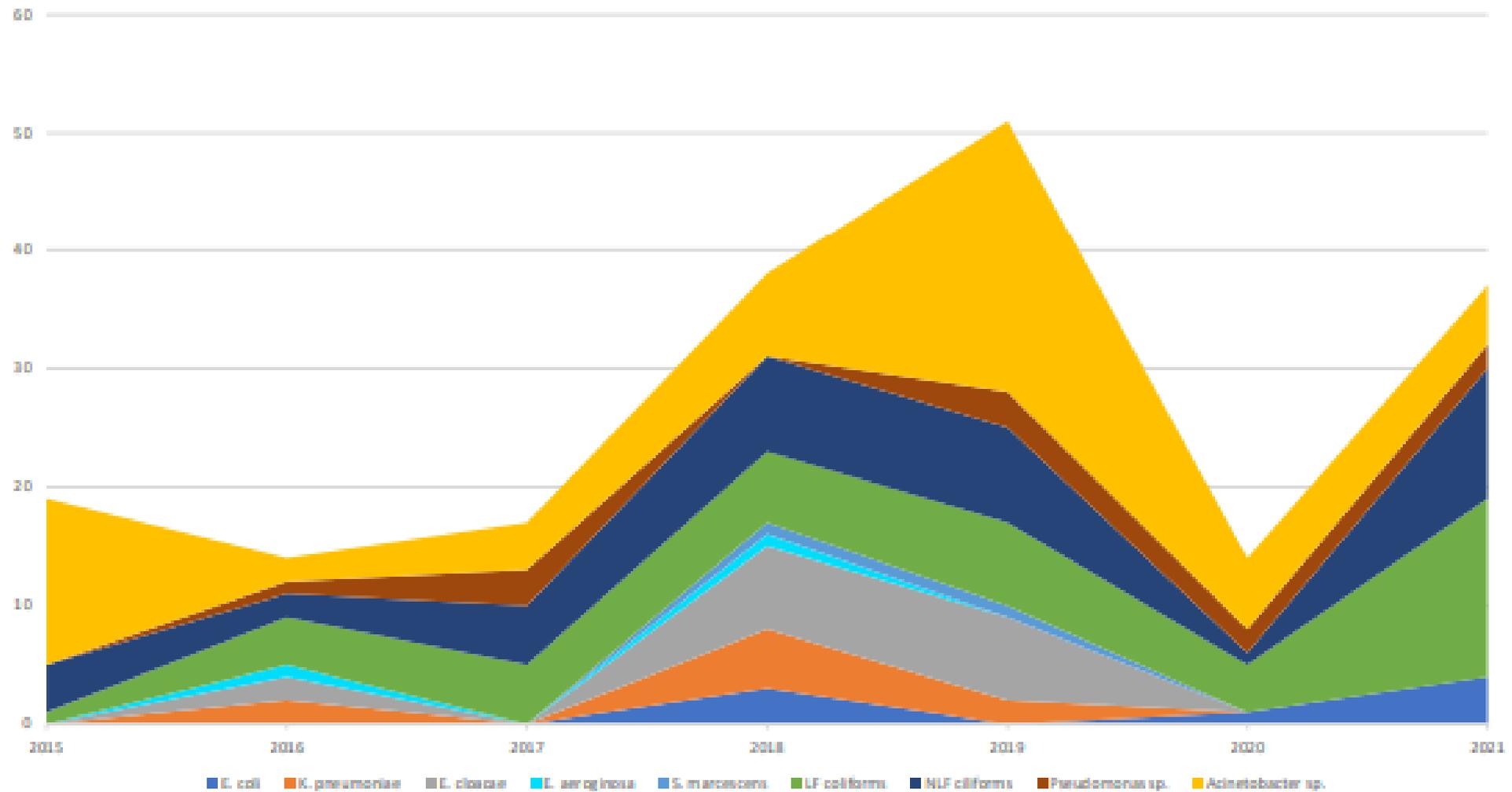


Year	2015	2016	2017	2018	2019	2020	2021	Total
Total live births	6,081	5,821	5,545	5,399	5,279	4,918	3,983	33,043
Total number of admissions to NICU	432	419	470	355	422	412	403	2,510
Total number of positive BC <small>*excluding contaminants</small>	27	32	72	72	84	36	48	323
Total number of gram-positive blood cultures	10 (37%)	10 (31%)	10 (13%)	10 (13%)	28 (33%)	15 (42%)	8 (17%)	83
Total number of gram-negative blood cultures	17 (74%)	16 (50%)	38 (53%)	51 (71%)	51 (61%)	18 (50%)	39 (81%)	191
Candida spp.	0	6 (19%)	18 (25%)	11 (15%)	2 (2%)	3 (8%)	1 (2%)	39

* Excluded contaminants included: Coagulase-negative Staphylococci, *Corynebacterium (Diphtheroids) spp.*, *Micrococcus spp.*, *Propionibacterium spp.*, and *Bacillus spp.*



Changing prevalence of pathogens causing gram-negative neonatal sepsis:



Let's



Stop



Neonatal
sepsis



STANDARD PRECAUTIONS

To be used by ALL health care workers at ALL times when attending to ALL patients



- Hand hygiene
- Personal protective equipment (PPE)
- Proper disposal of sharps (prevention of needle stick injuries)
- Cleaning, disinfection and sterilization
- Management of spills (Blood and body fluids)
- Waste management
- Occupational health



HCWs can unknowingly transmit microorganisms they have picked up on their hands from a previous patient contact or contact with the environment to the next patient or their environment if they do not perform hand hygiene in-between.

Hand washing:

- Hand washing is accepted as the single most important measure in infection control
- Poor compliance is related to
 - high workload
 - reduced availability
 - poor accessibility
- Continued monitoring and educational efforts improve hand washing habits

Healthcare providers should practice hand hygiene at key points :

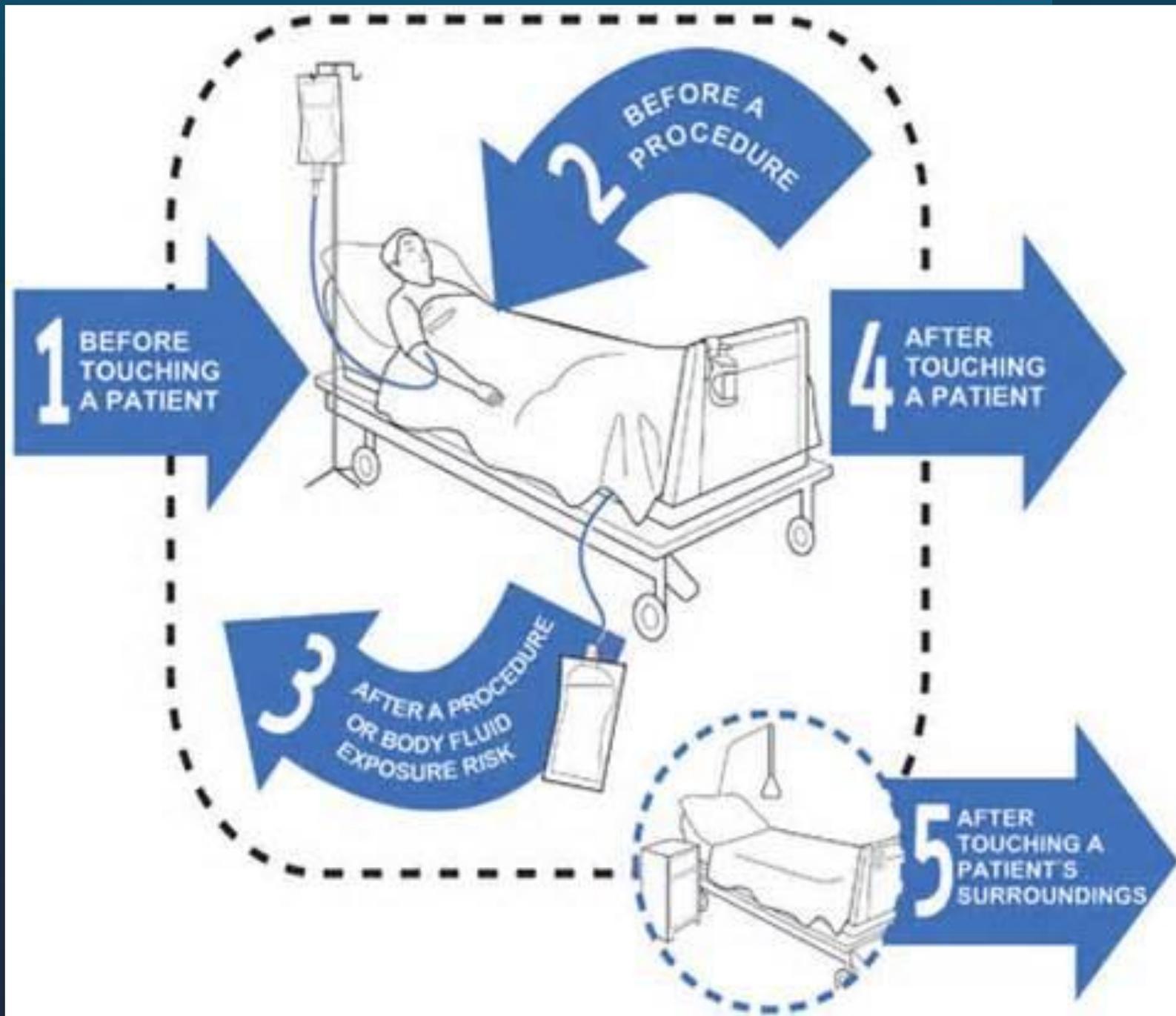
Before patient contact

Before any procedure (wearing gloves is not enough)

After contact with blood, body fluids, or any procedure (even if gloves are worn)

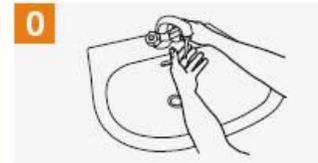
After touching a patient

After touching a patient's surroundings



Hand Hygiene Technique with Soap and Water

 Duration of the entire procedure: 40-60 seconds



0 Wet hands with water;



1 Apply enough soap to cover all hand surfaces;



2 Rub hands palm to palm;



3 Right palm over left dorsum with interlaced fingers and vice versa;



4 Palm to palm with fingers interlaced;



5 Backs of fingers to opposing palms with fingers interlocked;



6 Rotational rubbing of left thumb clasped in right palm and vice versa;



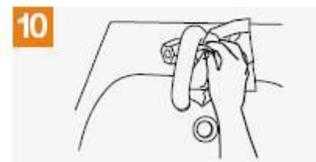
7 Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



8 Rinse hands with water;



9 Dry hands thoroughly with a single use towel;



10 Use towel to turn off faucet;



11 Your hands are now safe.

Hand hygiene audits

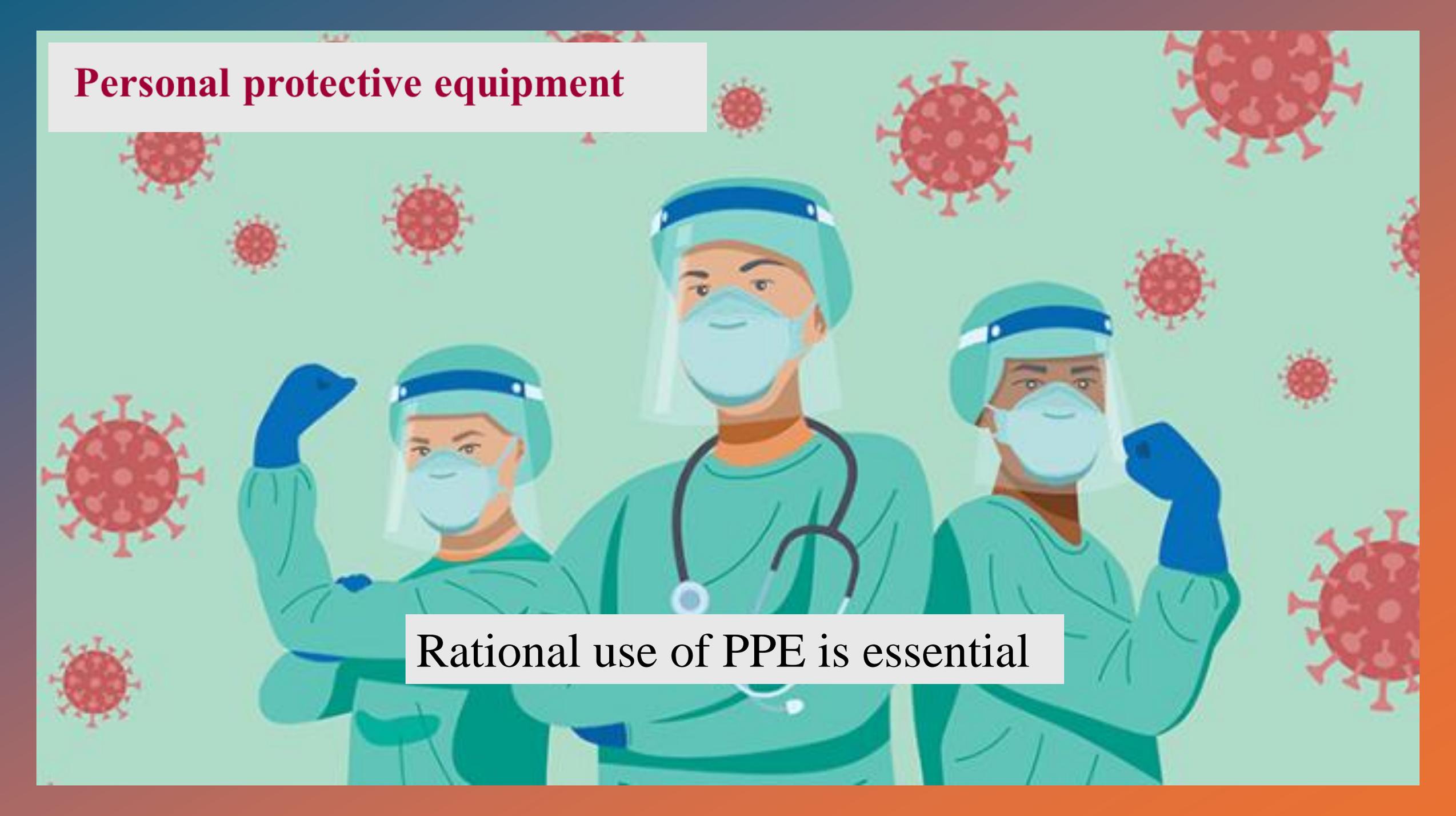
Detection of hand hygiene compliance by a validated observer (direct observation) is considered the gold standard in hand hygiene compliance monitoring

National Hand Hygiene Audit Requirements 2021

Hand hygiene compliance auditing is conducted to assess the effectiveness of hand hygiene programs conducted in Australia, as part of the National Hand Hygiene Initiative (NHHI), and consistent with AHMAC endorsed benchmarks. Hand hygiene compliance is assessed in both public and private Australian hospitals.



Personal protective equipment



Rational use of PPE is essential

Transmission based precautions

Contact precautions

MRSA
MDR organism
VRE
C. diff., Norovirus

Single room isolation / cohort isolation

Wear clean gowns and gloves

Wash hands before leaving the room

Droplet precautions

Respiratory viruses
Meningococcus

Cough etiquette

Hand hygiene

Face mask

Patient isolation

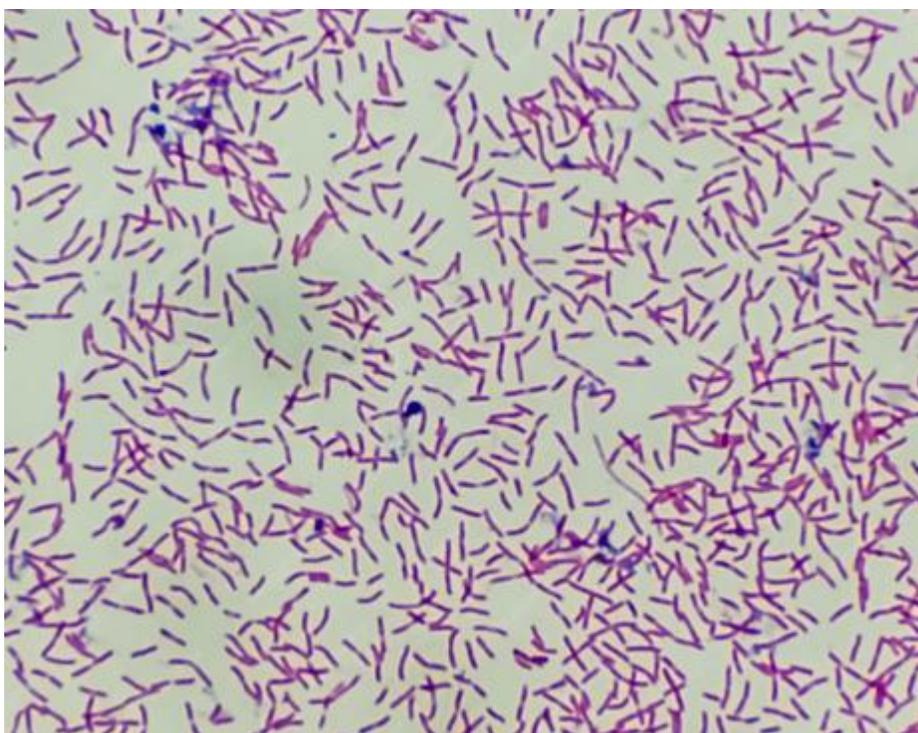
Airborne precautions

TB
VZV

Isolation room

N -95 mask / respirator

A blood culture collected from a 4-day-old baby signalled positive for Gram negative bacilli



For all staff

Contact Precautions

In addition to Standard Precautions

Before entering room

- 1 Perform hand hygiene
- 2 Put on gown or apron
- 3 Put on gloves

On leaving room

- 1 Dispose of gloves
- 2 Perform hand hygiene
- 3 Dispose of gown or apron
- 4 Perform hand hygiene

**PHENOTYPIC AND MOLECULAR
CHARACTERISATION OF OUTBREAK STRAIN OF
ENTEROBACTER CLOCAE IN A SPECIAL CARE BABY
UNIT (SCBU), COLOMBO SOUTH TEACHING
HOSPITAL (CSTH), SRI LANKA**

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Introduction: Increased frequency of clinical isolates of *Enterobacter* species raised a concern about emerging outbreak in SCBU of CSTH. During June–July 2018, six neonates became septic with four fatalities. SCBU was closed while outbreak investigations were undertaken.

Aim: To describe the challenges in characterising and controlling an outbreak in a developing country.

Method: Rectal screening and strict enforcement of isolation and contact precautions for positive babies were followed. Strict hand hygiene, cultures of IV medication, equipment, and stringent environment cleaning followed. Further identification of clinical isolates was performed at the Medical Research Institute



For all staff

Droplet Precautions

In addition to Standard Precautions

Before entering room

1



Perform
hand hygiene

2



Put on a
surgical mask

On leaving room

1



Dispose
of mask

2



Perform
hand hygiene



For all staff

Airborne Precautions

in addition to Standard Precautions

Before entering room	On leaving room
<p>1  Perform hand hygiene</p>	<p>1  Dispose of mask</p>
<p>2  Put on N95 or P2 mask</p>	<p>2  Perform hand hygiene</p>
<p>3  Perform a fit check of the mask</p>	

Proper disposal of sharps/ prevention of needle stick injuries:

- Take care to prevent injuries when using, handling, and disposing of sharps
- Avoid recapping used needles
- Do not bend, break, or manipulate used needles by hand
- Discard sharps directly into a ‘sharps bin’
- Discard used sharps immediately and never leave them lying around
- If the sharp bin is at a distance, the used sharp should be carefully carried to it on a tray

- Dispose of the sharp container when it is $\frac{3}{4}$ full
- Do not pass sharps directly from hand to hand



Cleaning, disinfection and sterilization

- Involves equipment, patient environment and general environment
(Refer the infection control manual of the SLCM)



Management of spills - Blood and body fluid spills

- Wear heavy-duty gloves
- Soak up fluid using absorbent material (paper towels, gauze, wadding)
- Pour 1% hypochlorite solution (10,000 ppm of available chlorine) till it is well soaked. Leave for at least 10 minutes
- Remove the absorbent material and discard it as clinical waste
- Clean the area with detergent and water, and dry
- Discard gloves as clinical waste
- Wash hands



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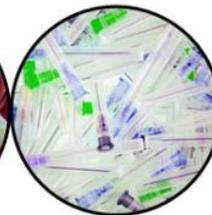
Waste management:

- Waste segregation
- Waste disposal

Types of Medical Waste



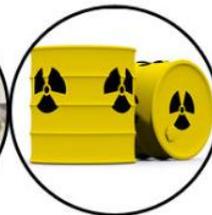
Infectious waste



Sharps waste



Pharmaceutical waste



Radioactive waste



Non-hazardous waste



Occupational health:

All health care workers must be vaccinated against/ immune to:

Hepatitis B

Chickenpox

MMR

Influenza (annually)

SARS CoV-2



Thank you