PREVENTION OF INFECTION AND WASTE DISPOSAL

This module is designed for in-service orientation and continuing education of nursing personnel involved in the care of newborn babies in the hospital.

LEARNING OBJECTIVES

After going through this module, participants will be able to:

- Enumerate key points which prevent infection in the hospital.
- Enumerate six steps of effective hand washing.
- Refer to housekeeping and disinfection routines for the hospital.
- Learn waste disposal in the hospital.
- Plan surveillance for infection.

MODULE CONTENTS

The module includes following elements:

- **Text material**: Easy to read format for quick reproduction and essential reference material for the participants. Key messages are highlighted in the boxes.

- **Demonstration**: Observing nursing routines for asepsis (house keeping, disinfectant use).

- **Skills**: Practicing skills in hospital setting.

- **Self evaluation**: At the end of text evaluation, based on what you have already learnt. Feel free to consult your test material, if you need assistance in recapitulating.

- **Video film**: Learn asepsis routines for prevention of infection and hospital waste disposal in baby care area.
1. IMPORTANCE OF ASEPSIS

Sepsis is the most important cause of neonatal death in hospital. Every hospital should establish its own detailed policies to prevent infection of newborn in the baby care area.

Normally the newborn is free from harmful organisms for initial few hours after birth. Staff working in hospitals tends to transmit organisms during routine procedures, thus leading to colonization of organisms on surrounding skin of the abdomen, the perineum, groins and respiratory tract.

Prevention of infection is more cost effective than treating infection in neonates.

2. ASEPSIS BASICS

2.1 Basic requirements for asepsis in a baby care area:

- Running water supply
- Soap
- Elbow or foot operated taps
- Strict hand washing
- Avoid overcrowding, optimal number of nurses for care of more babies
- Plenty of disposables
- Rational antibiotic policy
- Obsession with good housekeeping and asepsis routines

2.2 Guidelines for ENTRY into the baby care area:

- Remove shoes, socks, woolens, watch, bangles, and rings. Roll up the full sleeves up to elbow.
- Put on new slippers, wash hands with soap and water for 2 minutes (follow six steps of hand washing).
- Put on sterile half sleeve gown.

2.3 Policy regarding VISITORS

- Only parents of the babies should be allowed entry into the nursery.
- Mothers are welcome at any time, they can come every 2 to 3 hours to the baby care area.
- Fathers should be allowed at the time of admission to the nursery, after stabilizing the baby, during hospital visiting hours 4 to 6 pm or when the newborn is sick. Father should be allowed especially after the rounds or at a convenient time in the unit (This policy can be framed in consultation with your pediatrician).
- Parents should be guided and supervised about proper hand washing technique.

Personnel with active infection should not be allowed entry into the baby care area.

2.4 Sterile gloves

- Always use sterile gloves for invasive procedures like sampling, starting intravenous lines, giving intravenous injections etc.
• Wash gloved hands to remove the blood stains and secretions. Remove gloves and put in the polar bleach bucket. Wash hands again with soap and water.
• Used gloves should be cleaned, dried, powdered and packed in a paper (e.g. a piece of newspaper) for re-autoclaving.
• Adequate number of pairs should be prepared every day. One can use disposable gloves, if available.

2.5 Full sleeve gown and masks

• Use them for all invasive procedures e.g. lumbar puncture, blood exchange transfusion etc.

2.6 Other basics

• Keep separate spirit and betadine swab containers, stethoscope, tape measure and thermometer for each baby.
• Change intravenous sets daily or as per set routine.
• Feeding tubes as long as baby can keep.
• Do not keep FOMITES e.g. files, X-ray films, pens etc. on the baby cot.
• Change antiseptic solution in SUCTION BOTTLES and sterile water in oxygen humidification chambers everyday and sterilize the bottles/chambers daily by dipping in 2% gluteraldehyde for 4 to 6 hours.

2.7 Nursery environment

• The nursery temperature should be maintained between 28-30° C.
• The environment should be calm and clean.
• Ensure 24 hours water and electricity supply with adequate lighting and ventilation.
• Over crowding should be avoided.
• Floor should be cleaned with diluted phenyl once in each nursing shift and as and when required.
• No dry mopping, only wet cleaning should be done.
• Clean the walls with 2% of bacillocid once in each nursing shift.
• Dustbin should be washed daily with soap and water; polythene should be changed daily or whenever full.

3. HAND WASHING

• It is the single MOST IMPORTANT means of preventing nosocomial infections.
• It is VERY SIMPLE and CHEAP.

3.1 Hand washing norm

• 2 MINUTES, hand washing (6 steps) to be done before entering the unit.
• 20 seconds hand washing to be done before and after touching babies.

3.2 Steps of effective hand washing

• Roll sleeves above elbow.
• Remove wrist watch, bangles, rings etc.
• Using plain water and soap, wash parts of the hand in the following sequence:
  1. Palms and fingers and web spaces
  2. Back of hands
  3. Fingers and knuckles
4. Thumbs
5. Finger tips
6. Wrists and forearm upto elbow

Once you have washed your hands, do not touch anything e.g. hair, pen or any fomite till you carry out the required job.

- Keep elbows always dependent, i.e. lower than your hands.
- Close the tap with elbow.
- Dry hands using single-use sterile napkin or autoclaved newspaper pieces.
- Discard napkin in the bin kept for the purpose, if newspaper pieces-in the black bucket.
- Do not keep long or polished nails.

Remember - Rinsing hands with alcohol is NOT A SUBSTITUTE for proper hand washing

4. SKIN PREPARATION FOR VENEPUNCTURE AND OTHER PROCEDURES

Skin preparation is an important part of asepsis routines. It should be performed meticulously to avoid entry of pathogens during insertion of IV cannula, pricks or procedure. Always wear sterile gloves after 2 minutes of thorough hand washing. The procedure of skin preparation is given in the box below:

**Skin preparation for venepuncture**

**Steps:**

1. Wash and dry hands.
2. Wear sterile gloves.
3. Prepare skin site, confine to smallest possible area of skin.
4. Swab with alcohol first, allow it to dry.
5. Swab iodine on site and allow it to dry.
6. Swab again with alcohol to wipe off iodine, allow it to dry.
7. Skin is now ready for puncture of prick.

5. OTHER RECOMMENDATIONS

- Never use stock IV fluids. Do not use a single dextrose/saline bottle for >24 hours.
- There should be separate IV fluid bottle for each baby.
- Label the bottle with date and time of opening.
- After seal is removed, first clean with spirit swabs, then use Betadine soaked sterile cotton to cover the stopper of the bottle.
- Change the burette set every 24 hour or as per policy of your unit.
- Use syrups within 1 week of opening, write the opening date.
- Antibiotics vials to be changed after 24 hrs. e.g. injections Ampicillin and Cefotaxime.
- There is no need for flushing with heparinised saline to keep the IV line patent.
- Use separate IV line for giving antibiotics (do not open the IV fluid line for giving injections).
The facilitator will conduct a demonstration on ‘Steps of hand washing’ using a poster.

This will be followed by another demonstration on ‘how to wear gloves’.
SELF EVALUATION

1. Basic requirements for asepsis in baby care area include:

________________________________________________________________________________________

________________________________________________________________________________________

2. Single Most Important, Very Simple and Cheap method for prevention of infection in baby care area is

________________________________________________________________________________________

3. The key features of good hand washing technique include:
   a. ___________________________ steps
   b. ___________________________ minutes hand washing before entering the newborn care area.
   c. ___________________________ seconds hand washing in between and after touching the baby.

4. Sterile gloves should be worn for the following procedures (Enumerate any three).

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

5. What are the steps of skin preparation for IV cannula insertion or needle prick?

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

*You will be given individual feedback after you have evaluated yourself.*
There will be an oral drill by the facilitator on 'Disinfection routines'.

<table>
<thead>
<tr>
<th>Name</th>
<th>Disinfection method</th>
<th>Frequency &amp; other considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baby linen, blanket blanket cover</td>
<td>Wash and autoclave</td>
<td>Use autoclaved linen each time</td>
</tr>
<tr>
<td>Cotton gauze</td>
<td>Autoclave</td>
<td>As required. Every time use autoclaved cotton</td>
</tr>
<tr>
<td>Feeding utensils (paladai, spoon &amp; katories etc.)</td>
<td>Wash with soap and water and then boil for 10 minutes</td>
<td>Before each use</td>
</tr>
<tr>
<td>Swab container, injection and medicine tray</td>
<td>Wash with soap and water / autoclave</td>
<td>Daily morning shift. Use separate swab containers for each baby</td>
</tr>
<tr>
<td>Sets for procedures</td>
<td>Autoclave</td>
<td>After each use. Every 72 hours if not used</td>
</tr>
<tr>
<td>Cheattle forceps</td>
<td>Autoclave</td>
<td>Daily. Put in sterile autoclaved bottle containing dry sterile cotton</td>
</tr>
<tr>
<td>Stethoscope, measuring tape, thermometer, BP cuffs, probes of radiant warmer/incubator pulse oximeter</td>
<td>Clean with spirit swab</td>
<td>Daily</td>
</tr>
<tr>
<td>Laryngoscope</td>
<td>Clean with spirit swabs thoroughly daily and after each use. Wrap in autoclaved cloth, put date on cover</td>
<td>If used for an infected baby, wash with soap and water. Put the blade in 2% gluteraldehyde after removing the bulb. Wash thoroughly after removing from gluteraldehyde.</td>
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<tr>
<td>Syringe pumps</td>
<td>Clean with wet clean cloth. If blood stained use soap and water.</td>
<td>Daily in morning shift. In each shift, if possible</td>
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<tr>
<td>Oxygen hood</td>
<td>Wash with soap and water</td>
<td>Daily in morning shift. Dry with Clean linen</td>
</tr>
<tr>
<td>Face mask</td>
<td>Clean with soap and water, immerse in Gluteraldehyde for 20 min, rinse in distilled / running water, dry and wrap with autoclaved linen</td>
<td>Daily and after each use</td>
</tr>
<tr>
<td>Resuscitation bag and reservoirs, oxygen tubing, bottle and tubing of suction machine</td>
<td>Clean with detergent/soap and water after dismantling. Immerse in gluteraldehyde for 4-6 hours. Rinse in distilled water. Dry, wrap in autoclaved linen and put a date</td>
<td>Weekly for resuscitation bag and reservoir. Daily for others Use savlon for suction bottle, change daily</td>
</tr>
<tr>
<td>Weighing machine</td>
<td>Wipe with 2% Bacillocid</td>
<td>Daily in morning shift and when required</td>
</tr>
<tr>
<td>Radiant warmer &amp; Incubator</td>
<td>Clean with soap water daily, if occupied. If not occupied, clean with 2% Bacillocid</td>
<td>Daily</td>
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</table>
6. SAFE DISPOSAL OF HOSPITAL WASTE

Proper disposal of hospital waste is important to keep the environment clean. The waste should be disposed off in a proper way. All health professionals should be well conversant with their local hospital policies for waste disposal which may vary from place to place.

The following are different colour drums with different color polythene for different type of waste, to be disposed off in a different way.

   a. **Black drums / Bags**

   Left over food, fruits feeds, vegetables, waste paper, packing material, empty box, bags etc. This waste is disposed off by routine municipal council committee machinery.

   b. **Yellow drums / Bags**

   Infected non-plastic waste e.g. human anatomical waste, blood, body fluids, placenta etc. This type of waste requires incineration.

   c. **Blue drums / Bags**

   Infected plastic waste such as used disposable syringes, needles (first destroy the needle in the needle destroyer). Used sharps, blade and broken glass should be discarded in puncture proof containers before discarding. Patients IV set, BT set, ET tube, catheter, urine bag etc. should be cut into pieces and disposed in blue bag. This waste will be autoclaved to make it non-infectious. This is then shredded and disposed off.
There will be demonstration by facilitator on safe disposal of hospital waste using demonstration aid.
1. Indicate the bucket you will use for following wastes:
   • Paper towel after use _____________________________
   • Soiled nappy of the baby _____________________________
   • Used disposable syringe _____________________________

2. How do you sterilize the following?
   • Thermometer _____________________________
   • Ambu bag _____________________________
   • Cheattle forceps _____________________________
   • Probe of pulse oximeter _____________________________
   • Oxygen tubing _____________________________
   • Stethoscope _____________________________

3. B/o Rajkumari is a 32 wk preterm baby with birth weight of 1.3 kg. The baby is 2 days old now. Mother is now recovered from her delivery problems and wants to help you in baby’s work, what are the areas you would like to involve the mother?
   1. ___________________________________________
   2. ___________________________________________
   3. ___________________________________________
   4. ___________________________________________

*You will be given individual feedback after you have evaluated yourself.*
VIDEO DEMONSTRATION

There will be video demonstration on ‘Asepsis routine and disposal of hospital waste’. The video demonstration will be followed by discussion.