9.0 OBJECTIVES

After completing this practical, you should be able to:

- apply the principles of care of children during the procedure;
- appreciate the purpose, indications and contraindications of the procedure;
- assemble articles for the specific procedure;
- prepare the child for the specific procedure;
- perform or assist in the procedure; and
- carry out the nursing responsibilities involved in the procedure.

9.1 INTRODUCTION

In practical 8 we have focussed on your role as a nurse in assisting in various diagnostic procedures. This practical will acquaint you with how to participate in general and specific therapies of a sick child. Have you ever observed a sick child at home? Probably, you must have looked after such a child sometime or the other. You would agree that the ways and means of looking after a sick child at home is far different from that in a hospital setting. The hospital setting
involves many techniques and procedures that will not be and cannot be done at home. Hence, looking after a child in the hospital is more complex and requires specifics that have to be acquired through knowledge and practice.

As a student of nursing, you will have to perform the procedures, make decisions and judgements based on scientific knowledge and principles. You have to be familiar with the purposes, precautions, contraindications, nurse’s responsibilities etc. as neglect in any such areas may cause mishaps in the child.

In this practical various procedures related to recording of vital signs, feeding of child, hygienic care, gastric lavage, enema and others are discussed. At the end procedure of oxygen administration and restraints are also focused. You will find some repetition in certain procedures which will help you to imbibe what you already have learnt and what you are going to learn.

9.2 PRINCIPLES OF CARE OF INFANTS AND CHILDREN

i) Use positive statement at all times when talking to them.

ii) Delete the word don’t, when talking to a child.

iii) Encourage the child to be independent.

iv) Address the child wherever/whenever possible.

v) Talk clearly, calmly and in simple words.

vi) Secure the child’s attention before giving instructions.

vii) Stoop to the child’s height to talk to him.

viii) Always be calm and confident during the care.

ix) Have a firm but friendly manner while caring for the child.

x) Consider relatives, the mother and mother substitutes.

9.3 THERAPEUTIC PROCEDURES

Therapeutic procedures are those procedures that are used in the treatment of a sick child. These procedures are commonly performed in the day to day setting. Hence, you require practice to develop your skills in these procedures. These procedures are very often used to meet various needs of a child e.g. oxygenation need, hygienic need and nutritional need etc. Here you will find the procedures are arranged as per the needs of a child. We shall not focus on advanced procedure as these procedures are mentioned in Practical course BNSL-106 Medical Surgical Nursing. You have to apply same techniques of nursing care as in adults while caring for paediatric patients.

This practical will mainly deal with the common therapeutic procedures for children based on their needs in selected areas.

9.4 PHOTOTHERAPY AND EXCHANGE TRANSFUSION

This section will enable you to acquire skills related to phototherapy and exchange transfusion. You will also review the indications, contraindications,
procedure and your role in phototherapy and exchange transfusion. We shall also discuss the complications of each of these at the end of procedure. Before, beginning this practical, it is essential for you to revise the various conditions in which a neonate will require these two procedures. You should also review the various aspects of jaundice in the newborn. As you go through this section, you will gain the knowledge and skills needed to carry out phototherapy and assist at an exchange transfusion.

9.4.1 Phototherapy

As you know exposure of the jaundiced infant to blue, white or green light is effective in reducing the serum bilirubin level. When bilirubin absorbs light, several types of photochemical reactions occur. The first is photoisomerization which occurs in the extravascular space of the skin. This converts bilirubin produced in vivo by the breakdown of hemoglobin to a bilirubin isomer. This isomer diffuses into the blood and is bound to albumin, transported to the liver and excreted with the bile into the bowel. No conjugation is required.

Indications and Contraindications of Phototherapy

Indications

i) When there is an abnormal rise in the bilirubin level which may be due to physiological or pathological jaundice or any other problem.

ii) Prophylactic phototherapy is indicated in special circumstances i.e. tiny infants who are likely to develop dangerous levels of bilirubin and in severely bruised premature infants. In hemolytic disease of the newborn, phototherapy is used while the rise in the serum bilirubin level is plotted and while waiting for exchange transfusion. In such cases, phototherapy is started immediately at birth.

Contraindications of Phototherapy

Do not give phototherapy for conjugated jaundice. The babies are likely to turn a deep brown colour probably owing to photogradation of porphyrins which are raise in the plasma of infants with conjugated hyperbilirubinemia.

Set Up of Phototherapy Unit

Phototherapy generally consists of four to eight cool white, day bright, or special blue fluorescent tube lights covered by a plastic shield and placed about 18 or 45 cm inches away from the baby. The spectrum of light at 420-460 nm is the most effective. The energy output in this spectrum should be checked periodically to ensure efficiency. The efficiency of phototherapy depends on energy output of the spectrum and on the surface area of the infant exposed to those lights. Though, blue lights are the most effective, they are not widely used because they mask the clinical signs of cyanosis and colour change in the infant. While light permits better visual monitoring. The plastic shield absorbs ultra-violet irradiation. A photo-reaction occurs in the very outer layers (top 2 mm) of the skin. Once phototherapy has been initiated, serum levels of bilirubin must be monitored frequently (every 4-12 hours) because visual assessment of icterus is no longer valid.

Place the infant naked under the lights with shielding over the eyes. A small cloth may be placed for scrotum protection in male babies the infant’s position should be changed frequently. This permits maximal skin exposure to the lights. Make sure that baby is 18 inches or 45 cm away from light.
Nurse’s Role During Phototherapy

You should take care of following while nursing the baby in receiving phototherapy.

Check the lights of phototherapy unit before use and place it in a proper place.

**Eye Care:** Because of the potential for eye damage, the eyes should be covered while phototherapy is in use. Cover the eyes with pads without placing excessive pressure on the eyes and be carefully positioned to avoid occluding the nares. To permit evaluation of the infant’s eyes, eye patches should be removed every 4 hours and changed every 8 hours. The patches should be removed during feedings and parental visits.

**Temperature:** You should monitor infant’s temperature frequently.

**Fluid balance:** Fluid balance must be carefully monitored. Daily weight and close monitoring of intake and output such as urine volume and specific gravity may indicate a need for increased fluids as much as 30 per cent i.e. 10-30 ml/kg/day either orally or intravenously.

**Parental Explanations:** The treatment of phototherapy can be very disturbing to parents. Parents often feel guilty that perhaps something they did or failed to do resulted in their infant’s jaundice. Reassurance and support are vital especially for the lactating mother who may question her ability to adequately feed her infant. Eye patches tend to be especially. The lights should be turned off and eye patches removed during visits so that normal parent-infant interaction can occur.

**Complications of Phototherapy**

i) Insensible water loss: There is increased insensible water loss in infants undergoing phototherapy.

ii) Gastrointestinal effects: Phototherapy is associated with watery diarrhoea and increased faecal water loss. The diarrhoea may be caused by increased bile salts and unconjugated bilirubin in the bowel due to decreased out transit time.

iii) Decrease in serum calcium level in preterm infants have been described with phototherapy.

iv) Retinal Damage: It has been described in animals whose eyes have been exposed to phototherapy.

v) Skin: Exposure to wavelengths in the 360-400 mm range may cause erythema and increased skin blood flow.

vi) Bronze Baby Syndrome: Phototherapy should not be used in infants with liver disease or obstructive jaundice. These infants might develop the bronze baby syndrome.

vii) Cell damage: It effects in tissue culture cells exposed to phototherapy have been seen. These include mutation, sister chromated exchange and DNA strand breaks. Hence, it may be wise to shield the scrotum during phototherapy.

viii) Phototherapy upsets the usual maternal infant interaction and should be used judiciously.

The above discussion has enabled you to revise your skill in care of infant during phototherapy. Now as you know that there is a chance of bilirubin levels to be
Nursing Techniques in Paediatric Care-II

raised to such an extent where phototherapy may not be effective or infant's condition is such that it indicates exchange transfusion. You need to be skilled in assisting the physician in this procedure and preparing the baby and parents for this. We shall now learn this practical in the following section.

**Check Your Progress 1**

1) How does phototherapy help in the management of neonatal jaundice?

2) What are the indications for phototherapy?

3) What is the contraindications for phototherapy?

4) What is the nurse's responsibility when a baby is receiving phototherapy?

**Activity 1**

Visit post natal unit of a nursery of your work place. Identify a neonate requiring phototherapy. Provide nursing care and observe for any complication.

**9.4.2 Exchange Transfusion**

An exchange transfusion is the serial withdrawal and injection of small amounts of blood through a central vein—usually umbilical until the required volume has been exchanged. It is performed to correct anemia in infants severely affected with erythroblastosis and hydrops or to prevent or correct hyperbiliurbinemia that
might lead to neurologic sequelae. Double volume exchange transfusion lowers the bilirubin level in the plasma to about one-half the pre-exchange level. Bilirubin is removed from the extra-vascular space because extravascular bilirubin will equilibrate and bind to the albumin in the exchanged blood. The infant’s antibodies are washed out, and red cells that are partially hemolyzed or antibody coated are washed out. Exchange transfusion is instituted if evaluation of bilirubin and albumin levels indicate a significant risk of bilirubin toxicity.

Let us see now what are the indications of exchange transfusion and how the procedure of exchange transfusion is performed.

**Indication of Exchange Transfusion**

i) Early exchange transfusion is indicated in the presence of hydrops and is often indicated by a history of previously severely affected infants or a known sensitized infant. The objective of early exchange transfusion is to correct anemia, stop hemolysis and prevent a rise in bilirubin level. In hemolytic disease, immediate exchange transfusion is usually indicated if:

   a) The cord bilirubin level is over 4.5 mg/dl and the cord hemoglobin level is below 11 gm/dl.

   b) The bilirubin level is rising 1 mg/dl per hour despite phototherapy.

   c) The hemoglobin level is between 11 to 13 gm/dl and the bilirubin level is rising over 0.5 mg/dl per hour despite phototherapy.

   d) The bilirubin level is 20 mg/dl or it appears that it will reach 20mg/dl at the rate it is rising.

   e) There is progression of anemia despite control of bilirubin by other methods e.g. phototherapy.

ii) Later exchange transfusion are indicated at bilirubin levels that may be toxic, or if the bilirubin level may be expected to reach such levels. Repeat exchanges are usually indicated, when after the early rebound the bilirubin continues to rise over 1 mg/dl per hour or when there is a severe persistent hemolytic anemia.

**Procedure for Exchange Transfusion**

Before carrying out the procedure of exchange transfusion a major point of concern is right choice of collection of blood samples and carrying out various investigation such as cross match, Hb, bilirubin levels, glucose etc. We shall begin with choice of blood.

i) **Choice of Blood**

In emergency situations, O Rh negative blood can be used without cross matching. When blood is arranged in anticipation of the birth of a severely Rh-sensitized infant, O Rh negative blood cross matched against maternal serum should be arranged. It is important that an Rh negative infant or an infant with homolytic blood. In hemolytic disease of the newborn due to ABO incompatibility, O Rh specific cells with a low titre of anti-A and anti-B antibodies should be preferred.

Fresh citrate phosphate dextrose (CPD) blood (not more than 3 days old) or heparinised blood can be used for the procedure. ACD blood has a tendency to produce hypocalcemia, hyperkalemia and metabolic acidosis, which heparinised blood carries the risk of hypoglycemia and rise in face fatty acids leading to displacement of libirubin from albumin binding sites. CPD
blood is relatively safe and free from side-effects. An effective exchange is achieved by performing the procedure with double the blood volume of the baby i.e. \(2 \times 80 \text{ cc/kg of body weight}\). So now let us see that preparations you need to do before carrying out the procedure.

ii) **Collection of Specimen**

Exchange transfusion provides an opportunity for large quantities of blood being available for various investigations.

a) **Donor blood**

Hemoglobin, hematocrit, potassium and pH.

b) **Pre-exchange**

Hemoglobin, hematocrit, bilirubin, glucose, potassium and pH.

c) **Post-exchange**

Hemoglobin, hematocrit, bilirubin, glucose, calcium, potassium and pH.

d) **Bacteriological specimen**

Umbilical swab for culture at the beginning of the procedure and blood for culture at the end. At the time of removal of the catheter, its tip should be sent to culture.

e) **Equipment**

Radiant warmer, cross board, charts, blood with identification, syringes, umbilical catheter, life-saving drugs.

iii) **Procedure**

It should be performed either in the operation theatre or in the nursery with due aseptic precautions or as per the routine in your work place. You must keep the baby warm during the procedure with the help of a radiant warmer. The stomach contents should be aspirated. Place the baby fastened on to a well-padded crossboard. You should keep ready an exchange transfusion chart incorporating the following information: in/out volume, heart rate, respiratory rate, oxygen saturation, colour of the baby, temperature, drugs administered and any problems encountered. Assist in cleaning the area.

After full aseptic precautions, the umbilical vein is to be cannulated by the doctor. The catheter is attached to two three-way tapes so that its leads are connected to the umbilical catheter, syringe, donor blood and a sterile container for waste. The blood is withdrawn with gentle suction and donor's blood is injected slowly in amounts of 10-15 ml depending upon the size of the baby. During the procedure the bottle of donor blood should be gently agitated from time to time to keep the cells and plasma mixed. The jammed syringes and blocked three-way connectors should be rinsed with heparinised saline (10 units of heparin/ml). You must maintain an accurate record of the blood flowing in and out as well as the condition of the baby. Watch for heart rate, temperature, respiration, colour etc. during the procedure.

Whenever any untoward signs appear such as restlessness, grunting, distressed respiration, heart rate above 160 or below 100 per minute, fall in oxygen saturation and deterioration in the colour of the baby or umbilical blood, the procedure must be withheld till the baby improves. When ACD or CPD blood is being transfused, you have to take care that 1 ml calcium gluconate should be injected slowly after every 50 ml of exchange. The
catheter should be rinsed with heparinised saline before and injection of
calcium gluconate to avoid clotting of blood. During the injection, the heart
rate must be watched closely for any bradycardia. If the heart rate falls
below 100 beats per minute, the injection must be abandoned and the baby
started on oral calcium gluconate after the procedure.

After completion of the procedure, the catheter should be filled with
heparinised normal saline and the umbilical stump sprayed with an antibiotic
powder and covered with a light dressing.

Now let us quickly revise your main role during exchange transfusion to avoid
any complication.

— Explanation to parents about the procedure.
— Assisting in pre and post exchange investigation.
— Setting up and assisting under the aseptic conditions.
— Guard against hypothermia, hypoglycemia.
— Monitoring vital parameters.
— Recording time, volume withdrawn and infused, parameters, medications,
  administered and special observation.
— Watch for complication.

Check Your Progress 2

1) What do you mean by an exchange transfusion?

2) What are the indications for an exchange transfusion?

3) Which are the investigations to be carried out when an exchange transfusion
   is scheduled?

4) Explain the precautions to be taken regarding the choice of blood.

5) What observation must the nurse make during the procedure?

6) What are the various complications that can occur due to an exchange
   transfusion?

7) What is the nurse’s role in an exchange transfusion?

Activity

Visit a new born nursery of your work place. Identify a new born who is
planned to receive exchange transfusion. Identify the problem for which
exchange transfusion is indicated. Set unit and assist in the procedure.
Complications of Exchange Transfusion

i) Infection of umbilical vessels and systemic injection related to blood transfusion like malaria, CMV, AIDS and hepatitis B.

ii) Overloading of circulation with cardiac failure or shock following excessive deficit or rapidly performed exchange transfusion.

iii) Inadequate heating arrangements may give rise to hypothermia.

iv) Hypocalcemia, hyperkalemia, acidosis and sudden cardiac arrest or arrhythmia may occur during exchange transfusion with ACD blood or old blood. Acidosis may be followed by mild alkalosis as the citrate is being metabolized.

v) Hypoglycemia and bleeding manifestation may occur following exchange transfusion with heparinized blood.

vi) Oxygen toxicity may occur at a relatively lower arterial oxygen tension because adult hemoglobin (transfused blood) readily releases oxygen to the tissues by virtue of its poor affinity to kind oxygen.

9.5 PROCEDURES RELATED TO VITAL SIGNS

Here we shall mainly focus on vital signs. You may agree with us that vital signs are also in a sense as a part of diagnostic procedures so these have been discussed here.

Before you proceed through this section, it is important for you to be familiar with the many terminologies related to these procedures. You already know these terms but at this point of time you need to refer to medical dictionary to review the meaning of the following terms.

Activity 1

Familiarize yourself with the following terms by referring to the medical dictionary.

i) Blood pressure
   - Diastolic pressure
   - Systolic pressure
   - Pulse pressure

ii) Pulse
   - Volume of pulse
   - Rate and rhythm of pulse
   - Tachycardia
   - Bradycardia

iii) Respiration
   - Inspiration
   - Expiration
- Depth of respiration
- Sternal retraction
- Anoxia
- Apnea
- Asphyxia
- Hypo/hyper-ventilation
- Cyanosis
- Dyspnoea
- Hypercapnia
- Hypoxia
- Orthopnea

iv) **Temperature**
- Hyper/Hypo-thermia
- Pyrexia
- Febrile
- Lysis

Now that you have reviewed these terms, let us continue with the procedure.
Before we do that let us review vital signs.

**Vital Signs**

Vital signs reflect the physiological state of the child, which is governed by the body’s vital organs (brain, heart, lungs) and are necessary to sustain life. They are as follows:

i) **Temperature**, measured as:
   a) Oral b) Rectal c) Axillary

ii) **Pulse** measured at pulse points:
   a) Radial b) Femoral c) Temporal d) Brachial e) Pedal f) Popliteal g) Carotid

iii) **Respiration** measured as a cycle of:
   a) Inspiration b) Expiration c) Pause

iv) **B.P.** measured as:
   a) Auscultatory b) Palpatory

**9.5.1 Recording Temperature**

**Purpose**

i) To assess the condition of the child on admission.

ii) Determine baseline values for comparison.

iii) Detect any deviations.

iv) Evaluate therapeutic measures as given
Indications
- Routinely
- Pyrexia
- Pre and post operatively
- Post procedures
- Emergencies

Contraindications
These are listed as per various routes of taking temperature.

Rectal Temperature
Rectal surgery, diarrhoea, rectal anamoly, rectal ulcers and after enema.

Oral Temperature
- Child below 6 years
- Oral surgery/infections
- Presence of dyspnoea
- Child with oxygen therapy
- Immediately following cold and hot drink

Axillary Temperature
- Immediately after bath/sponge

Equipments
i) Thermometer – oral/rectal
ii) Cotton swabs
iii) Bottles of savlon/dettol solution and plain water
iv) Kidney-tray
v) Stethoscope and sphygmomanometer

Fig. 9.2: Different types of thermometers
Procedure

We shall discuss the procedure of rectal temperature first followed by oral and axillary temperature. Let us discuss the procedure of taking rectal temperature.

**Rectal Temperature**

i) Shake thermometer to lowest level  
ii) Wipe the solution  
iii) Lubricate the rounded tip of thermometer with water  
iv) Restrain child’s legs  
v) Expose buttocks and gently insert one inch into anus  
vi) Hold in place for 3-5 minutes  
vii) Wipe any fecal materials  

viii) Wash and replace thermometer after reading

![Fig. 9.3: Recording rectal temperature](image)

**Oral Temperature**

i) Place the thermometer under tongue.  
ii) Hold lips together for 2-3 minutes  
iii) Wipe thermometer before reading  

iv) Wash and replace

**Axillary Temperature**

i) Wipe axilla  
ii) Place thermometer in the hollow of the axilla  
iii) Hold hand close to body  

iv) Keep in place for 3-5 minutes
9.5.2 Recording Pulse

i) Take apical pulse for children under 3 years

ii) Take pulse always before temperature to avoid elevation due to crying

iii) Take pulse for 1 full minute

Procedure

i) Place stethoscope between child’s left nipple and sternum.

ii) For older child, apply gentle pressure with second and middle finger along the appropriate artery

iii) Count for 1 full minute

iv) Record finding

9.5.3 Recording Respiration

Expose the chest of the child.

Count respiration before checking temperature.

Check for 1 full minute.

Count 1 complete cycle of respiration, i.e. inspiration and expiration. (Fig. 9.5)
Note rise and fall of chest and abdomen.

Note sternal retraction. (Fig. 9.6)

![Sternal Retraction Diagram](image)

Fig. 9.6: Sternal retraction

Listen for abnormal sounds in breathing.

- Note cyanosis, sternal retractions, nasal flaring, dyspnoea (Fig. 9.7)

![Respiratory Distress Signs](image)

Fig. 9.7: Signs of respiratory distress

<table>
<thead>
<tr>
<th>Condition</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>No xiphoid retractions</td>
<td>0</td>
</tr>
<tr>
<td>No expiratory grunt</td>
<td>0</td>
</tr>
<tr>
<td>Xiphoid retractions just visible</td>
<td>1</td>
</tr>
<tr>
<td>Expiratory grunt audible with stethoscope</td>
<td>1</td>
</tr>
<tr>
<td>Marked xiphoid and sternal retractions</td>
<td>2</td>
</tr>
<tr>
<td>Expiratory grunt audible with unaided ear</td>
<td>2</td>
</tr>
</tbody>
</table>
By now, you must have realised the importance of these procedures in children and how, there are similarities and difference in the methods as in adult patient. Before going further, do the following activity.

Activity 3

i) Compare the temperature, pulse and respiration in the following conditions:
   a) a child who is awake
   b) a child who is asleep
   c) a child with pyrexia
   d) children in different age groups

   Note the difference and determine the reasons for the same.

ii) Check the temperature by the various routes mentioned during different parts of the day. Compare the differences.

iii) Check the temperature, pulse, respiration of a child with heart problem, identify and report, rate, rhythm and volume.

Now that you have learnt how to measure the vital signs in children, let us move on to the other needs of the child.

9.6 PROCEDURES RELATED TO HYGIENIC CARE

Would you like to remain without a bath on any given day? Do you remain without a bath when you are sick? No one normally, would like to miss that daily, routine procedure. Similarly, this is also a routine for a child. The type of bath varies to meet the needs of each child. You will give complete bath to an ill child, assist with a self-help bath for a convalescent child.

**Purposes**

i) To cleanse the skin, to remove odour and perspiration.

ii) To promote comfort and cleanliness.

iii) To stimulate circulation systematically and locally.

iv) To promote muscle tone by active and passive exercise.

v) To promote elimination from skin.

vi) To permit careful observation of the child.

**Equipment**

Bed linen for change, towel, wash cloth, bath blanket, clean dress, soap, bath basin, powder, spirit, hot and cold water in two separate jugs.

**Points to Remember**

i) Avoid drafts and chills.

ii) Bath water to be 38° to 40.5° C.

iii) Room temperature to be 23.9° C to 26.7° C.

iv) Give bath before feeds to prevent vomiting.

v) Be quick with the procedure.
vi) Begin with the cleanest part to the unclean part i.e. face, chest, limbs, genitals.

vii) Give attention to skin folds e.g. axilla, ears, webs of fingers, toes etc. (Fig. 9.8 a-h)

Fig. 9.8 (a): Procedure for bathing

Fig. 9.8 (b): Cleaning hair
Fig. 9.8 (c): Cleaning skin folds

Fig. 9.8 (d): Cleaning skin
The procedure of bed bath remains the same as that of an adult patient.

**Activity 4**

Select a sick child and give sponge bath keeping scientific principles in mind.

**Tepid Sponge**

It is given as a *therapeutic measure to reduce fever in a child. This measure is given only when ordered to do so* (Fig. 9.9).

**Equipment**

Plastic sheets, bath blankets, hot water bottle, towel, 6 napkins, tepid water.

**Precaution**

Never use cold water or alcohol sponge. This causes vasoconstriction and shivering, that increases body temperature. Alcohol reduces temperature very quickly, leading to convulsion. Its fumes are also toxic.

**Procedure**

i) Explain procedure to the child and parents

ii) Give antipyretic drug 20 minutes prior to the procedure if ordered.
iii) Check vital signs for baseline comparison.
iv) Place plastic sheet and bath blanket under the child.
v) Undress child and cover with second bath blanket.
vi) Place hot water bottle at child’s feet to prevent chills.

vii) Wet the cloth and place in groin and axilla.
viii) Expose only the area to be sponged.
ix) Do sponging in gentle long strokes.
x) Use friction to bring blood back to surface.
xi) Continue sponging for 20-23 minutes.

xii) Watch if child becomes chilled, cyanosed.
xiii) Pat child dry and dress in light clothes.
xiv) Record temperature after 20 minutes.

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Fig. 9.9: Procedure for tepid sponge

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9.7 GASTRIC LAVAGE

We shall define gastric lavage first and then go on to the procedure.

**Definition**

It is the aspiration of stomach contents by using some suitable fluids like normal saline.

**Purposes**

i) To clear the stomach of gastric contents.
ii) To provide gastric decompression by relieving pressure and irritation to gastric mucosa.
iii) To relieve distension, pain in abdomen e.g. paralytic ileus.
iv) To remove ingested poison.

v) To aspirate out swallowed amniotic fluid in babies born with foetal distress.

vi) To reduce vomiting reflux in persistent vomiting.

vii) To test gastric content for Acid Fast Bacilli (AFB) e.g. in tuberculosis.

viii) Before anaesthesia in emergency surgery.

Procedure

The procedure is the same as that of gastric intubation. The solution used for lavage is always normal saline, cold saline is preferred if bleeding.

i) Instill the normal saline slowly up to 50-60 cc. at a time through a 20 cc syringe or asepto syringe.

ii) Invert the syringe into bucket/Kidney tray with a little fluid in it once the amount is instilled (do not allow air to enter).

iii) Turn patient to the right side to facilitate free drainage of contents due to gravity.

iv) Apply gentle pressure over abdomen, or encourage patient to cough.

v) Repeat procedure till return fluid is clear.

vi) Record amount, colour, consistency of fluid.

vii) Remove nasal tube if not required.

9.8 ENEMA

The process of introducing a stream of solution into the rectum and lower colon and draining the solution is called as “enema”. It is used to cleanse the colon before diagnostic, and surgical procedures of the bowels.

Before we go further, carry out following activity:

Activity 6

i) Revise the types of enemas given in adult patients.

ii) Revise the scientific principles related to this procedure in an adult patient.

iii) Familiarize yourself with the following terms:

   a) Emolient       b) Non-retention enema      c) Carminative
   d) Retention enema e) Purgative               f) Astringent
   g) Cathartic      h) Water intoxication      i) Laxative

Purposes

i) To cleanse or remove accumulated solids or gas in lower bowel before surgery and investigations of G.I. tract.

ii) To stimulate peristalsis in the bowel.

iii) To supply fluids and nourishment.

iv) To reduce temperature.
v) To stop local haemorrhage.
vi) To introduce medications.
vii) To soothe the irritated mucosa of colon.
viii) To diagnose.
ix) To destroy parasites (hypertonic solution)

**Indications for Enema**

i) Pre-operative
ii) Post-operative
iii) Constipation
iv) Hyperpyrexia
v) Helminthes if present
vi) Malnourishment
vii) Rectal bleeding
viii) Abdominal distension, flatus, spasmodic pain
ix) Colitis, dysentery to relieve spasm and inflammation

**Equipment**

i) A large tray
ii) Clean enema container
iii) Soap solution (8 ml. of soap jelly in 500 ml. H₂O)
v) Catheter (24-30) french size for older child
vii) Bedpan with cover
viii) Lubricant
ix) Gauze
x) Solution thermometer
xi) Enema stand
xii) Kidney tray
xiii) Screen

**Procedures**

- Assemble articles for procedure.
- Check functioning of enema tubings.
- Inform the child (if older) or parents.
- Provide privacy.
- Check temperature of fluid.
- Expel air.
- Insert 3-8 cms of catheter into rectum. (Fig. 9.10).
- Allow fluid to run by gravity.
- Gently remove the rectal catheter.
- In smaller children hold the buttocks for 10 minutes tightly to prevent expulsion of fluid.

Fig. 9.10: Insertion of catheter into rectum for enema

Activity 6

List the types of solutions, amount and purposes of enemas used in your work situation for children.

9.9 OXYGEN ADMINISTRATION

Oxygen is administered to the child through:

i) Tent (Fig. 9.11)

ii) Nasal catheter/prongs

iii) Mask

iv) Hood

v) Incubator
Oxygen tents deliver approximately 40 per cent of $O_2$, nasal catheter/prongs, deliver 50 per cent and masks, hoods, incubators–100 per cent.

**Purposes**

i) To assist oxygenation of infants/child’s blood.

ii) To maintain an atmosphere of moist oxygen to facilitate normal breathing.

**Precautions**

i) Do not administer $O_2$ without doctor’s orders, except in emergency.

ii) Do not administer more than 50 per cent concentration.

iii) Do not allow smoking.

iv) Do not use electrical equipment near $O_2$ source.

v) Do not use oil, alcohol near $O_2$ source.

vi) Always administer humidified $O_2$.

**Equipment**

$O_2$ source, flowmeter, Nasal prongs, sterile distilled $H_2O$ in wolf’s bottle, tubings.
Procedures

- Show the nasal prong to the child, if older.
- Explain the procedure and the need for oxygen.
- Fill humidifier with water to approximately level indicated.
- Attach connecting tube from nasal prongs to humidifier outlet.
- Attach tubing from \( \text{O}_2 \) flowmeter to humidifier inlet.
- Set flow rate as prescribed.
- Feel to see if \( \text{O}_2 \) is flowing.
- Adjust nasal prongs
- Watch child’s reaction, colour, respiration.

Activity 7

i) Observe the hood, mask and tent methods of \( \text{O}_2 \) administration in the ward.

ii) Compare the three methods and the advantages, disadvantages of each method.

9.10 RERAINTS

Restraints are a necessary part of nursing of children, but it must be the last resort.

Definition

Restraints is a means of limiting physical movement of the child to facilitate examination, do a procedure or prevent injury to the child.

Purposes

i) To maintain safety of the child.

ii) To facilitate physical examination and diagnostic procedure.

iii) To allow healing of a part due to immobilization.

Precautions

i) Restraints must be applied correctly to avoid circulatory impairment and skin irritation.

ii) Adequately pad the restraint to protect the skin.

iii) Place child in correct body alignment.

iv) Tie all restraints to the bed frames and not to side rails.

v) Release restraints every 2-3 hours.

vi) Observe child when restraints are released, to avoid injury.

Types of Restraints

i) **Mummy restraints** are used for procedures of neck, head, e.g. Jugular vein puncture, Scalp vein infusion, Naso gastric tube insertion. (Fig. 9.12 a,b,c,d)
ii) **Modified Mummy Restraints** for procedure on chest and abdomen (follow steps of procedures shown in the diagram) (Fig. 9.13 a,b,c).
iii) **Elbow restraint** to prevent flexion of elbow, as in procedures of upper limbs, I/V infusions.

**Equipment**

A piece of material with pockets to insert tongue depressors.

**Procedures**

- Insert tongue depressors into pockets.
- Pad arm, with gown/cotton, and wrap restraint around arm.
- Pin it securely.
- Do not rub child’s axilla or wrist (Fig. 9.14 a,b)

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**Fig. 9.14 (a): Elbow Restraints**

**Fig. 9.14 (b): Elbow Restraints**
iv) **Clove Hitch Restraints:** This is an extremity restraint. It must be always padded before and during application.

**Articles**

i) 3-4 feet length of gauze folded lengthwise.

ii) Padding material.

**Procedure**

Follow steps as shown in Fig. 9.15 a-e.
Precautions

i) These restraints should not hinder circulation.

ii) Should not be too loose to slip off.

Activity 8

Practice making and application of these restraints.

Guideline – Therapeutic Procedures

Name of the child : 
Age Diagnosis : 
Bed No. : 
Ward : 
Hospital : 
Date of the admission : 

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name of the procedure</th>
<th>Nursing action/observation</th>
<th>Remarks after the procedure</th>
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9.11 LET US SUM UP

In this practical, we discussed what principles you should follow while caring a child in the hospital. We have identified some of the therapeutic procedures based on the various needs of the child. Phototherapy and exchange transfusion are two vital therapies used in the management of neonatal jaundice. For the purpose of fulfilling observation needs we have focussed on vital signs. In order to take care of hygienic needs we discussed the bed bath. We have also focussed on gastric lavage and procedure of enema. Methods of oxygen administration have been discussed to enable you to gain skill of meeting oxygen needs of a child. Children are very active and it is difficult to carry out any procedure without restraining them. Therefore, various procedures of restraining the child have been explained to fulfil the mobility needs of a child.