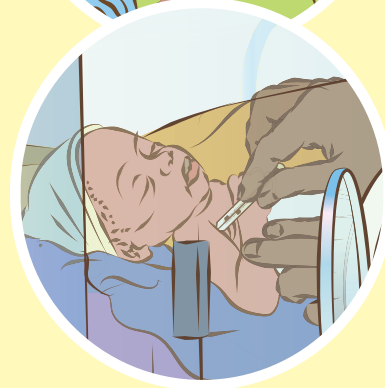


Essential Newborn Care 2

Appendix



Nasogastric tube



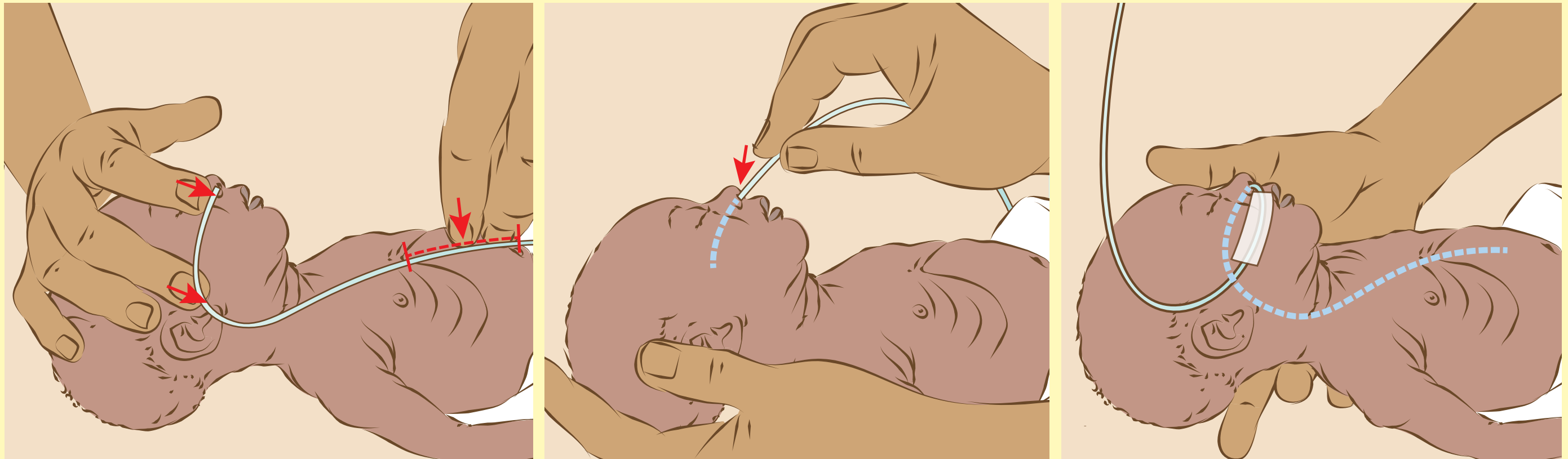
Alternative warming



**World Health
Organization**

If a baby cannot feed enough by mouth

Insert a nasogastric tube



Explain and demonstrate

Nasogastric tube feeding should be used for a baby who cannot feed well by mouth and

- Is unable to swallow without choking or
- Has early inadequate intake by breast or cup with low urine output (<6 wet diapers a day) or
- Cannot take enough breast milk by breast or cup to grow properly

To insert a nasogastric tube

- Wash hands
- Select correct size tube (5 or 6 French)
- Measure length of tube to be inserted from tip of nose to earlobe to half way between tip of breast bone and umbilicus

- Put a mark on tube at measured length
- Lubricate the tube with expressed milk
- Insert the tube gently through nostril to the mark
- Confirm proper placement of the tube:
 - Inject 2 mL of air while listening for the sound of air entering the stomach *and*
 - Withdraw air from the stomach and look for small amounts of gastric fluid
- Tape tube to the skin close to the nose
- Note depth of insertion using mark on tube and record in chart

▶ [Insert a nasogastric tube](#)

To remove a nasogastric tube

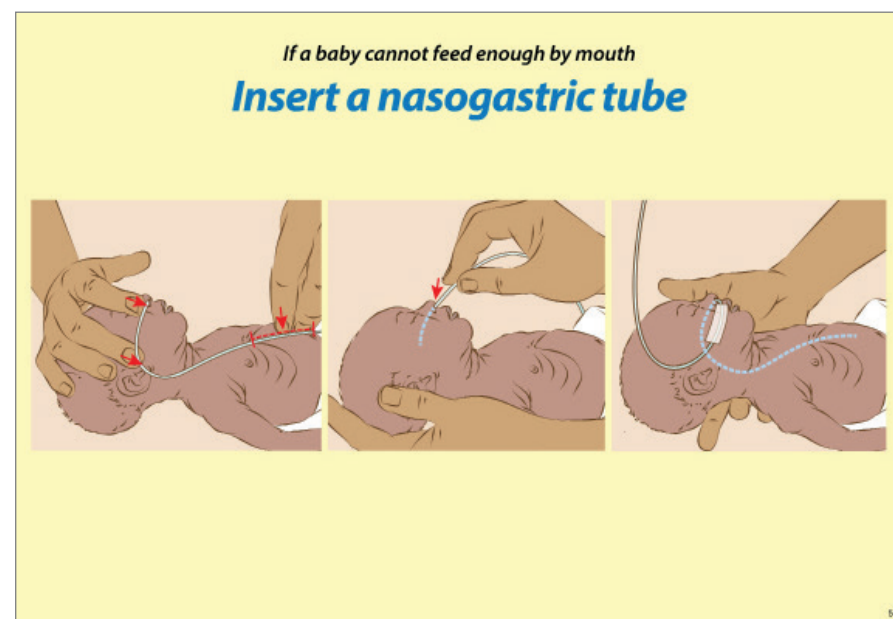
- Pinch the tube closed and withdraw rapidly
- Have a suction device available to remove milk or secretions in the throat.

Practice

- Select, measure, lubricate and insert the nasogastric tube.
- Confirm proper placement of the tube and secure it.
- Remove the tube safely.

Discuss

1. Does your facility have nasogastric tubes appropriate for feeding small babies? Are the tubes reused?
2. What problems might occur with insertion of a nasogastric tube?



Educational advice

Wash hands and use clean technique when handling the tube and supplies. Ask participants to talk through each step of insertion and answer mother's questions.

Materials for Practice:

- Small baby simulator
- Clean nasogastric tube (5 or 6 French)
- Tape (to mark and secure tube)
- 20 mL syringe
- Stethoscope

Background

Feeding by nasogastric tube may be necessary when a baby cannot feed by mouth or take enough milk by mouth to grow adequately and avoid dehydration. Orogastric tubes are measured the same way as nasogastric tubes. However, these tubes may be more difficult to secure and can interfere with oral feeding.

The most serious complication of inserting a nasogastric tube is placing it in the baby's airway by mistake. Listening for tube placement and/or

testing for gastric contents (pink on litmus paper) should be performed after every placement. If fluid or mucus is not obtained from the stomach or the baby has breathing problems, remove the tube. While there may be some resistance during insertion, a nasogastric tube should never be inserted forcibly. Avoid injury by using appropriate tape for the skin and removing with care.

Prior to each feed, the mark on the tube should be checked to make sure the tube has not moved. Ideally, placement should be checked by withdrawing gastric contents before each feeding. When in doubt, remove and reinsert the tube.

Five or 6 French tubes are used for small babies. A larger tube may be difficult to pass, result in damage to the nose, or deliver a feed too quickly. Larger tubes may be necessary to remove air and stomach contents from a baby with feeding intolerance.

Tubes are usually changed every 7 days but silicone tubes can be left in place longer. Alternating between nostrils is recommended. Nasogastric tubes usually have multiple holes near the end of the tube so they do not block easily. If obstructed, inject 2mL of air or clean water (while still in place) or replace the tube.

If a baby cannot feed enough by mouth

Give breast milk by nasogastric tube



Explain and demonstrate

Feeding with a nasogastric tube requires close attention to the baby. In some facilities, mothers may learn to administer feedings.

- Measure the amount to be fed into a container.
- Confirm tube is secured and the mark on the tube is visible at the edge of the nose.
- Hold the baby semi-upright, preferably skin-to-skin or in the lap.
- Open the nasogastric tube and attach an empty syringe of the correct size (without plunger).
- Pinch off the tube and pour milk into syringe.
- Hold syringe 20 cm above the baby and release pinch to allow milk to flow into the stomach.

- If flow does not start
 - Gently insert syringe plunger but do not push or
 - Cover top of the syringe barrel with thumb and release
- Remove syringe and recap tube when finished.

If baby spits up or chokes, slow the feed by

- lowering syringe and/or
- gently pinching tube

Each feed should take about 10 – 15 minutes.

When combining nasogastric tube feedings with cup or breastfeeding, adjust for the volume taken by cup or approximate intake at breast

Practice

Ask participants to practice with role play

- Explain to the mother the steps as you administer a feed.
- Discuss feeding tolerance with mother.
- Demonstrate adjusting the flow of milk.

Discuss

1. What problems occur while feeding a baby by nasogastric tube?
2. How are mothers involved in feeding with a nasogastric tube in your facility?

If a baby cannot feed enough by mouth
Give breast milk by nasogastric tube



Educational advice

Use water to simulate milk. Measure out water and pour into a syringe for administration to a simulator or into a container.

Materials for Practice:

- Small baby simulator to administer nasogastric feed
- Syringe(s) and nasogastric tube
- Water to simulate milk
- Container to receive liquid if simulator not available

Background

Feeding with a nasogastric tube requires close attention to the baby and adjustment of feedings as needed. If the baby spits up or chokes during feeding, stop and assess the baby. Recheck the mark on the nasogastric tube to make sure it has not moved. Consider slowing the rate of feeding or reducing the volume if a baby spits up with every feeding.

Both providers and mothers may learn the methods of feeding with

a nasogastric tube. Providers should first show mothers the steps and then watch her provide a feeding. A mother should hold the baby in breastfeeding position when giving nasogastric feeds.

When teaching nasogastric tube feeding, both feedback and encouragement will help mothers become competent and confident.

When a baby is receiving nasogastric tube feedings, evaluate the baby's readiness to feed by cup or breast each day. Early attempts may not result in measurable intake.

A baby may move directly from nasogastric feedings to breastfeeding or first to cup feeding. Experienced providers can help decide on the proper combination of feedings for each baby. They can help mothers judge when feeding volume can be adjusted after breastfeeding or when breastfeeding has been adequate and a nasogastric feeding is not needed. As the number of breastfeeds without supplementation increases, monitor signs of tiring and weight gain to help decide when to remove the nasogastric tube.

If skin-to-skin care is not possible or is ineffective

Consider alternative warming



Explain and demonstrate

Skin-to-skin care is best for babies

- Provides warmth
- Promotes development
- Supports breastfeeding
- Builds mother's confidence and skills in caregiving

Alternative warming methods require the following for safe use:

- **Preparation:** cleaning, storage, maintenance; policies/training for providers
- **Indications for use:** needs of baby, timeframe
- **Monitoring and adjustment:** close monitoring of baby temperature and servo-control for incubators and radiant warmers

- **Guidelines for discontinuation:** rewarming, weight gain

Practice

Ask participants to practice in a small group with the equipment used in the facility.

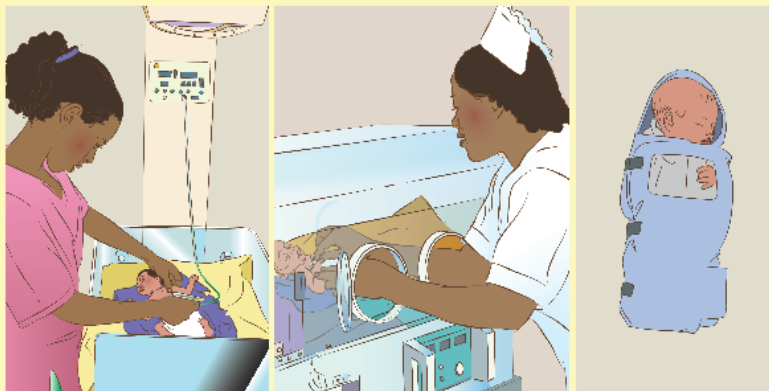
- Review the facility's policy/procedure
- Identify the place where clean equipment is stored.
- Read the recommended cleaning and maintenance
- Use the operating manual to identify controls and monitors
- Describe set-up of the equipment for a baby weighing 1550 grams weighing 2100 grams

- Demonstrate how to monitor temperature (temperature probe and servo control if using incubator or radiant warmer)
- Show where and when to record baby's temperature and support given
- Describe response to low/high baby temperature and alarms/malfunction

Discuss

1. What equipment is used to provide warmth in your facility when skin-to-skin care is not possible?
2. How do you select what device to use when providing warmth with alternative methods? What are the advantages and disadvantages of each method used?

If skin-to-skin care is not possible or is ineffective
Consider alternative warming



Educational advice

Participants should practice in a small group with a facilitator who is experienced with the facility's equipment for warming.

Before the practice, assemble the facility's policy/procedure for use of the equipment, locate the operating manual for the device, and obtain a device that is not in use, if possible. If all warming equipment is in use, it may be necessary to practice in pairs at the bedside.

Repeat the practice with each type of equipment in use at the facility. There may be many different brands or models of equipment in use; providers should be familiar with the characteristics of each. Temperature probes often are not interchangeable between different brands or models. Safe use of incubators and radiant warmers depends on the correct temperature probe for servo-control of heat output.

Background

Skin-to-skin care provides the best combination of advantages for mothers and babies. This method safely keeps small infants

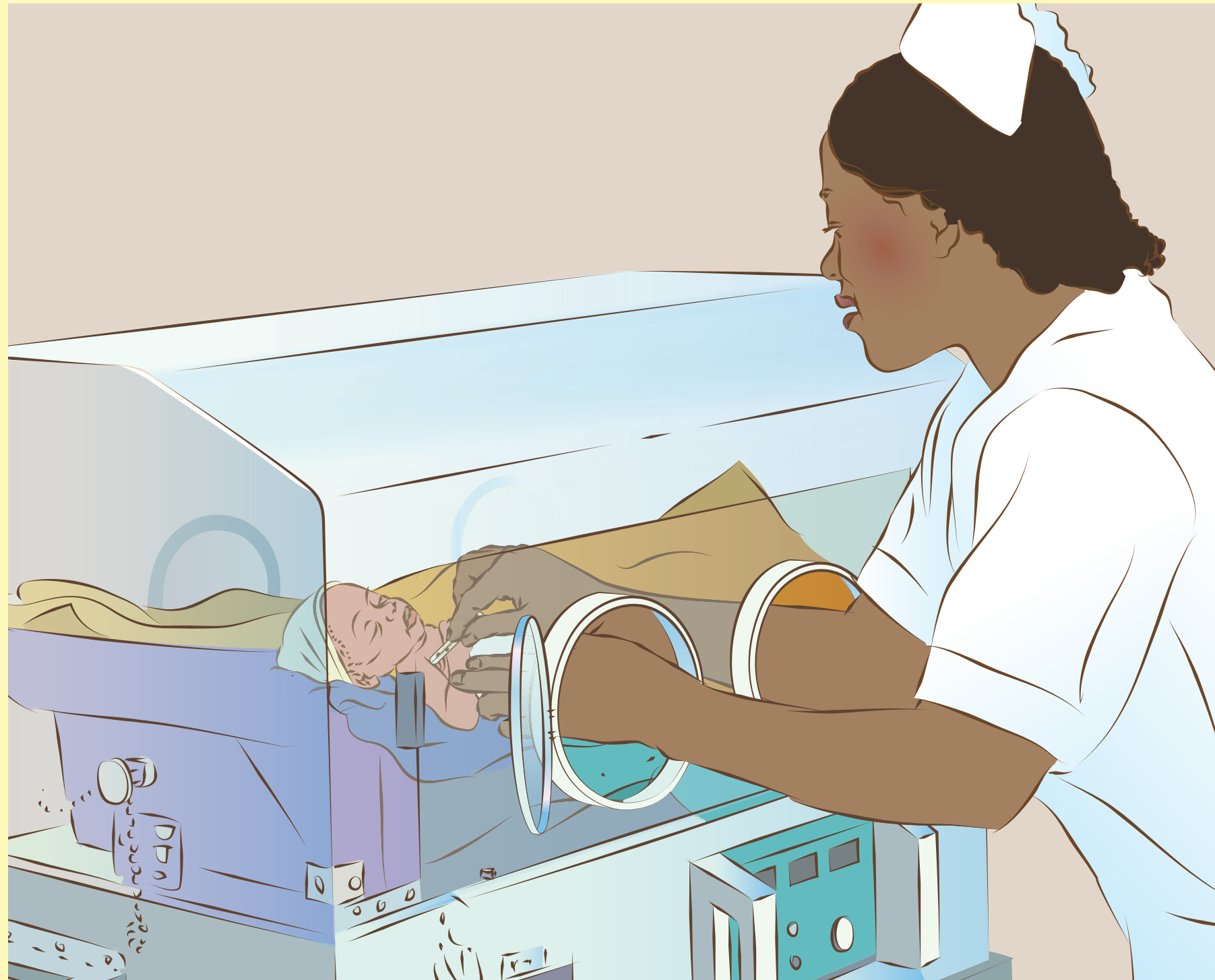
warm. At the same time it promotes a baby's brain and physical development, supports breastfeeding, and builds the interaction between mother and baby.

However, illness in the mother or baby, absence or death of the mother, and unavailability of other caregivers may mean that an alternative is needed. In certain cases, skin-to-skin care may not be adequate to maintain normal body temperature.

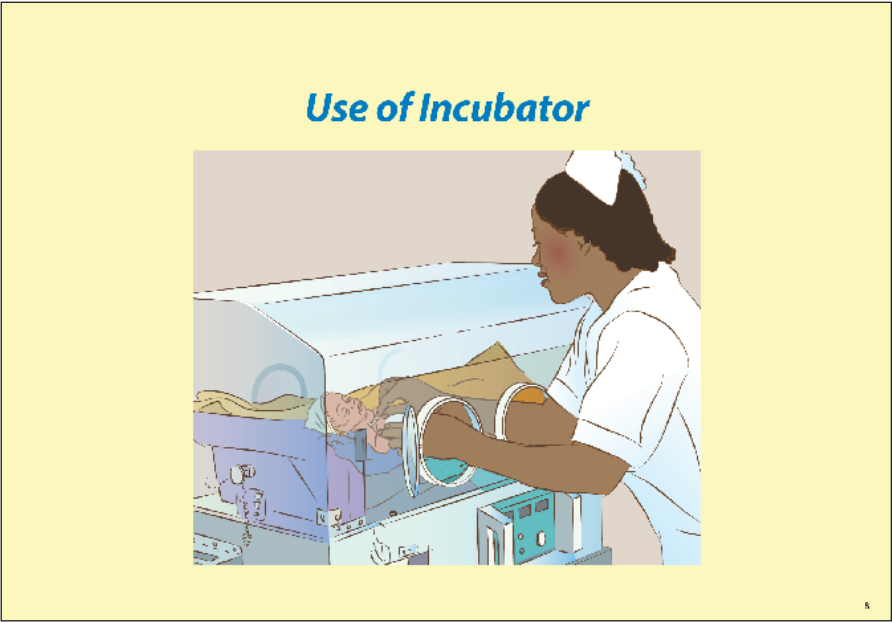
A wide range of warming devices can be used. Some use electricity to generate heat, others store heat in special materials or generate heat chemically. Incubators are generally preferred for extremely low birth weight babies and short-to-long-term use. Radiant warmers and mattresses/swaddlers are generally for short-term use. Ease of access to the baby and ability to visually monitor the baby vary with the type of device.

Misuse and malfunction of warming devices can result in dangerously low or high temperature. Warming devices increase the risk of infection when used to care for more than one baby or when not properly cleaned and stored.

Use of incubator



Background	Air Mode	Servo (Skin control) Mode
	<ul style="list-style-type: none"> - An internal or auxiliary temperature probe reads the air temperature. - A set air temperature is selected on the control panel. - Set air temperature is adjusted by the operator based on the frequently observed air and baby temperatures. 	<ul style="list-style-type: none"> - A temperature probe is placed on the baby's exposed skin and secured with a reflective probe cover. - The set or desired skin temperature is selected, usually 36 – 36.5 °C. Skin temperature is slightly lower than axillary temperature. - Adjustments are made on the basis of frequently measured set point, air and baby (axillary) temperatures.
Initiation	<ul style="list-style-type: none"> - Use air mode to pre-warm the incubator before moving the patient. - Set air temperature to 34 + 0.5 °C for an infant 1500 – 2000 grams or 33 + 1°C for an infant 2000 – 2500 grams. - Dress baby lightly. - Put only one baby in a incubator or warmer. - If using servo (skin control) mode, attach skin temperature probe, switch control panel to servo mode and set goal skin temperature of 36 – 36.5 °C. 	
Monitoring	<ul style="list-style-type: none"> - Check baby's axillary temperature hourly until stable; also note air temperature and skin temperature (in servo mode) - Check servo probe placement every 3 hours. Relocate the probe every 12 hours to another dry, non-bony area. The baby should not lie on the skin temperature probe. - Take and record temperature of baby and device every 3 hours. - Look for an increasing or decreasing trend in the environmental temperature; investigate any alarm or infant temperature <36.5 or >37.5 °C. 	
Adjustment	<ul style="list-style-type: none"> - Air mode: adjust air temperature by 0.5 °C up if the baby is cool (<36.5 °C) and down if baby is hot (<37.5 °C). - Servo mode: If alarming check probe placement and adjust temperature by 0.5 °C up if baby is cool (<36.5 °C) and down if baby is hot (<37.5 °C). - Keep the incubator door closed to avoid cooling the baby and causing wide swings in temperature. 	
Discontinuation	<ul style="list-style-type: none"> - When skin-to-skin care is possible or baby is rewarmed and maintaining temperature of 36.5 – 37.5 °C. - Baby weighs over 1600 grams, is gaining weight adequately for 3-5 days and is maintaining temperature of 36.5 – 37.5 °C with incubator temperature of 27 – 28 °C. 	



Use of radiant warmer



Background	Manual Mode	Servo (Skin control) Mode – preferred mode for safety
	<ul style="list-style-type: none">- Heater output is selected on the control panel (usually as a percentage of power).- Depending on the setting selected a baby might be insufficiently warmed or dangerously overheated.- Safe operation depends on frequent measurement of the baby's temperature, so use should be only short-term.	<ul style="list-style-type: none">- A temperature probe is placed on the baby's exposed skin and secured with a reflective probe cover.- The set or desired skin temperature is selected, usually 36 – 36.5 °C. Skin temperature is slightly lower than axillary temperature.- Adjustments are made on the basis of frequently measured set point and baby (axillary) temperatures and heater output.
Initiation	<ul style="list-style-type: none">- Pre-warm in manual mode by setting heat output to desired power. Manual: Set heat output control to middle range.- Servo (skin control) mode: Attach skin temperature probe, switch control panel to servo mode and set goal skin temperature of 36 – 36.5 °C.- Dress baby lightly.- Put only one baby on a warmer.	
Monitoring	<ul style="list-style-type: none">- Check baby's temperature every 15 minutes until stable.- Take baby's temperature and record it and the output of the warmer every hour. Record the skin temperature also in servo mode.- Check temperature probe placement every hour with monitoring of temperature.- Look for an increasing or decreasing trend in the heater output; investigate any alarms or infant temperature <36.5 or >37.5 °C.	
Adjustment	<ul style="list-style-type: none">- Manual mode: adjust heater output up if the baby is cool (<36.5 °C) ; remove baby from warmer or adjust heater output down if baby is hot (>37.5 °C).- Servo mode: If alarming check probe placement and adjust skin temperature by 0.5 °C up if baby is cool (<36.5 °C) and down if baby is hot (>37.5 °C).	
Discontinuation	<ul style="list-style-type: none">- When skin-to-skin care is possible or baby is rewarmed and maintaining temperature of 36.5 -37.5°C.	

Use of Radiant Warmer

