

Care of Normal Neonate

Normal neonate in this protocol has been defined as:

- Birth weight greater than 2500 g and gestation 37 weeks or more.
- No major malformation or birth trauma.
- Birth weight between 10th and 90th percentiles as per AIIMS intrauterine growth charts.¹
- The absence of maternal illness or intrapartum event that may put a neonate at risk of illness (e.g. gestational diabetes, antepartum hemorrhage, etc.).
- Normal Apgar scores; no need for resuscitation at birth.
- No postnatal illness such as respiratory distress, sepsis, dyselectrolytemia, hypoglycemia, or polycythemia.

CARE AT BIRTH

Personnel and equipment to be present at delivery:² One health provider (physician or nurse) trained in neonatal resuscitation must be physically available at birth of all infants irrespective of their risk status (high or low). *It is not good enough to have someone on call.*

More advanced neonatal resuscitation may be required if the delivery is anticipated to be high risk because of risk factors identified before birth. In these cases, at least two persons should be present solely to manage the neonate. The goal should be to provide a 'resuscitation team' with a specified leader and each member's identified role. There should be separate teams for multiple births.

The resuscitation corner must be in the delivery room itself. The health professional designated to care for the neonate at birth should check for "Resuscitation Preparedness" at the birthing place well in time before the neonate is delivered (Table 3.1). One may refer to the 'Neonatal Resuscitation Programme' (NRP) guidelines for details of resuscitation (www.aap.org/nrp).²

Table 3.1: Checklist for “Resuscitation Preparedness”

For providing warmth	Preheat the warmer by turning on manual mode for at least 20 minutes. At least three prewarmed towels and a blanket should be available.
Thermoregulation	Plastic bag or plastic wrap, heated mattress, and cap for small neonates.
For positioning	Prepare shoulder rolls and keep it ready.
For clearing airway	10–12 F suction catheter, suction set at 80–100 mm Hg, meconium aspirator.
For ventilation	Check the availability and the functioning of the self-inflating bags. Check for availability of all sizes of the masks 00, 0, and 1, 8F feeding tube, and 20 ml syringe.
For oxygen delivery	Oxygen tubing or T-piece resuscitator that can deliver the free flow oxygen. Pulse oximeter, oxygen blender.
For intubation	Laryngoscope with blades of sizes 0 and 1, endotracheal tubes, sizes: 2.5, 3.0, 3.5, stethoscope.
For medication	Access to 1:10,000 epinephrine and normal saline, supplies for administering medications and placing an emergency umbilical venous catheter, neonatal case record sheet for documentation.
For transportation	The transport incubator should be stationed in the birthing place for transportation in all high-risk deliveries.

Time of birth: The attending physician/nurse should note the time of birth. It is essential to call out the time of delivery loudly. This helps record accurate time and alerts other personnel in case any help is needed.

Standard precautions and asepsis at birth: In all cases, the personnel attending the delivery must exercise all the universal/standard precautions. All fluid products from the neonate/ mother should be treated as potentially infectious. Gloves, masks, and gowns should be worn when resuscitating the newborn. Protective eyewear or face shields should be worn during procedures likely to generate blood or other bodily fluids droplets.

It is essential to prevent infection at birth by observing five cleans:

1. **Clean hands:** Appropriate hand hygiene and wearing sterile gloves.

2. **Clean surface:** Use a clean and sterile towel to dry and cover the neonate.
3. **Clean cut:** The umbilical cord should be cut with a clean and sterile blade/scissor.
4. **Clean tie:** The cord should be clamped with a clean and sterile clamp or tie.
5. **Clean cord:** One should not apply anything to the cord.

Prevention and management of hypothermia: Immediately after birth, the newborn is at maximum risk of hypothermia. This may have a detrimental effect on the infant's health as the admission temperature of non-asphyxiated newborns has been shown to be a strong predictor of mortality at all gestational ages.² Take special care to prevent and manage hypothermia. It should be ensured that the delivery room temperature is 25–28°C and free from air draft.³ The pediatrician should receive the neonate directly (*no middle person should be allowed*) in a prewarmed sterile linen sheet. The infant should be dried thoroughly, including the head and face areas. Any wet linen should not remain in contact with the infant.

Skin-to-skin contact (STS): Any infant born vaginally and requiring only routine steps should be placed on the mother's abdomen or chest immediately after the birth for the initial one hour of life to ensure early skin-to-skin (STS) contact with the mother.⁴ This will maintain the newborn's temperature, promote early breastfeeding, and decrease the mother's pain and bleeding. The mother-neonate dyad should not be left alone and should be observed for breathing, color, and temperature every 15 minutes.

Delayed clamping of the umbilical cord: Umbilical cord clamping must be delayed for at least 30–60 seconds to allow additional blood transfer from the placenta to the infant. This delayed cord clamping is associated with improved hematologic status, iron status, and clinical anemia in term infants at 2–6 months.⁵

Drying of the neonate: The neonate should be dried at birth with a clean and sterile cloth. The drying should be gentle and only wipe out the blood and the meconium and not be vigorous enough to remove the vernix caseosa (white greasy material on the skin). The vernix protects the skin of the infant and helps maintain temperature. This gets absorbed on its own after some time. Paraffin or any other emollient is not recommended for cleaning at birth.

Clamping of the cord: The umbilical cord should be clamped 2–3 cm away from the abdomen using a commercially available clamp, a clean and autoclaved thread, or a sterile rubber band. The stump should be away from the genitals to avoid contamination. When the commercial clamps are unavailable, the rubber band could be a better option than a thread, as once the cord starts shriveling; the rubber band would still maintain its grip while the thread might loosen up. Inspect the cord every 15–30 minutes for the initial few hours after birth to detect any oozing from the cord early.

Routine stomach wash: Routine stomach wash in neonates to prevent gastritis (amniotic fluid or meconium) is not done.

Care of the eye: At birth, the neonates' eyes should be cleaned with separate swabs. Sterile water or normal saline may be used for this purpose. The swipe to clean the eyes should be gentle and done from the inner canthus area to the outer canthus. Cleaning the eyes daily is not recommended as a routine. There is insufficient evidence to recommend the routine antibiotic prophylaxis to prevent ophthalmia neonatorum in the Indian setting.

Placement of identity band: The birthing places with high birth rates should take utmost care to ensure the identity of the mother–neonate dyad by an appropriate method as per the hospital policy. Each infant must have an identity band containing the mother's name, hospital registration number, gender, and birth weight of the infant. The reliability of the footprints for identification has not been investigated.

Recording of apgar scores: The Apgar scores should be recorded at 1 minute and 5 minutes of birth. This score has a limited value in guiding resuscitation and initial stabilization. The prediction of the subsequent outcomes by Apgar scores is also poor. However, Apgar scores may help in deciding the need for nursery admission.

A recent review by Ramaswamy et al. (2022)³ exploring delivery room interventions to prevent hypothermia in term and late preterm neonates found one cluster RCT that compared an operation theatre room temperature of 23°C with 20°C for births from caesarian section. The higher room temperature was associated with higher incidence of normothermia (RR 1.26, 95% CI 1.11–1.42), higher body temperature (MD 0.30°C, 95% CI 0.23–0.37) and lower risk of moderate hypothermia (RR 0.26, 95% CI 0.16–0.42).

A review by Moore et al. (2016)⁴ found that skin-to-skin contact between the mother and her neonate immediately after birth improves breastfeeding rate at 1–4 months and its duration by over 60 days, and helps the mother to breastfeed successfully on first attempt. Further, newborns who receive STS have higher blood glucose and similar temperature as compared to those receiving standard care. No important negative effects were identified.

A Cochrane review⁵ including 15 trials (3911 mother and infant pairs) showed that delayed cord clamping, compared to early cord clamping, was associated with the following effects in term infants:

- Higher mean birthweight (WMD 101 g, 95% CI 45–157).
- Higher hemoglobin concentration at 24–48 hours (WMD 1.5 g/dl, 95% CI 1.21–1.78).
- Increased requirement of phototherapy for jaundice (RR 1.61, 95% CI 1.04–2.44).
- Lower incidence of iron deficiency at 3–6 months (RR 0.38, 95% CI 0.15–0.96).

CARE OF NEONATE DURING THE INITIAL FEW HOURS AFTER BIRTH

Weight: The neonate should be weighed after STS/stabilization, and the temperature should be documented to be normal. A sterile preheated sheet (or a single-use paper towel) should be placed on a 5–10-g sensitivity weighing machine. After zeroing, the neonate is gently placed on the weighing machine, and the weight is recorded. Weighing the neonate is a complex skill and requires adequate training of health providers.

Initiation of breastfeeds: Breastfeeding should be initiated at the earliest time possible, preferably during STS contact. The time of initiation of breastfeeding should be documented. The health provider should actively assist the mother in putting the neonate on the breast irrespective of the mode of delivery. Breastfeeding counseling alone without proactive support is unlikely to result in high rates of successful breastfeeding.

Vitamin K: Vitamin K should be administered to all neonates (0.5 mg for neonates less than 1000 grams and 1 mg for neonates more than 1000 grams).⁶ It is preferable to administer vitamin K1; however, vitamin K3 may be administered if unavailable.⁷ This should be administered as an IM injection using the 26 G (1/2 inch) needle and a 1 ml syringe on the anterolateral aspect of the thigh.

First examination: The neonate should be thoroughly examined by the attending person from head to toe, and the findings should be recorded in the neonatal record sheet. Looking at midline structures for malformations (e.g. cleft lip, neck masses, chest abnormality, omphalocele, meningocele, cloacal abnormality, etc.) is vital. Give special attention to identifying and documenting the anal opening. There is no need for routine catheter passage in the stomach, nostrils, and rectum to detect esophageal atresia, choanal atresia, and anorectal malformation, respectively. The axillary temperature of the neonate should be recorded before the neonate is shifted out from the birthing place. The neonate should be examined for birth injuries in cases with difficult extraction.

Communication with the family: Before leaving the birthing place, the health professional should communicate with the mother and the family members. One should ensure that the family members and the mother get to witness the gender and identity number of the neonate. The following facts should be told to the family:

1. The gender of the neonate
2. Birth weight
3. The well-being of the neonate.

Rooming in: A normal newborn should never be separated from the mother. In the initial few hours of life, the neonate is very active, and the closeness of the neonate to the mother will facilitate early breastfeeding and bonding. Studies have shown that any separation during these initial hours may adversely impact various outcomes, including exclusive breastfeeding rates at discharge.⁸

Care of the cord: The umbilical stump should be kept dry and devoid of application. Fold the nappy below the stump to avoid any contamination. Recent evidence supports the application of 4% chlorhexidine in community settings with high neonatal mortality and unhygienic cord practices.⁹

Oil massage: The benefits of the oil application have been described for low birth weight neonates in both developed and developing countries. However, a lack of data exists for the oil application and/or massage in term neonates.¹⁰ Oil massage is a low-cost traditional practice well ingrained in different cultures, with no reported adverse outcome. The same may be allowed in a gentle way and with clean hands. Do not use oils with additives or irritant oils (such as mustard oil) for this purpose.

Exclusive breastfeeding: A proactive and systematic approach should be followed to initiate, support, and maintain breastfeeding. The various advantages of breastfeeds should be discussed with the mother to motivate her to breastfeed. The availability of a dedicated lactation nurse or counselor would significantly increase the chances of successful breastfeeding.

Bath: Recent evidence suggests that delaying the first newborn bath until at least 24 hours of life may prevent hypothermia and reduce mortality risk.¹¹ Avoid dip baths during the hospital stay, as this increases the risk of hypothermia. The sponging of the neonate should be done once a day with clean water, as per the requirement. The dip bath may be undertaken once the cord has fallen and the neonate is discharged from the hospital.

Powder application: Currently, there is no evidence to suggest regular powder use and the same should be avoided.

Position of sleep: No Indian study has addressed the issue of the relation of sleep position to the occurrence of sudden infant death syndrome (SIDS). There is substantial evidence in the literature from developed countries of an association between prone position and SIDS independent of the other variables.¹² Healthy-term newborns should preferably be made to sleep on their backs.

Traditional practices that should be discouraged: Applying kajal/surma in the eyes, putting oil in the ear, or applying the cow-dung on the cord must be discouraged.

Timing of discharge in a normal newborn: The mother and neonate must stay in the hospital for at least 48–72 hours (for the establishment of breastfeeding and observation for any morbidity, including jaundice). However, an early discharge within 24–48 hours may be considered for non-primigravida mothers with a history of successful breastfeeding.

The following criteria should be met in all the neonates before discharge planning:

- The routine formal examination of the newborn has been performed and documented.
- The newborn has received the immunization as per schedule.
- The newborn has undergone screening as per unit protocols, e.g. critical heart diseases, hearing defects, eye abnormalities, and congenital hypothyroidism.

- The mother is confident and trained to take care of the neonate.
- The newborn is not having any significant jaundice or other illness requiring close observation by a health provider.
- The newborn is breastfeeding adequately. The adequacy of feeds can be determined by
 - Passage of urine 6–8 times every 24 hours
 - Neonate sleeping well for 2–3 hours after feeds
 - There is no excessive weight loss (usually, neonates do not lose more than 8–10% in the initial 3–4 days)
- The mother has been counseled regarding routine newborn care, and her queries are answered.
- Neonates should have a follow up visit at 48 hours of discharge if discharged before 48 hours or if there was feeding or other issues at discharge. Evaluate breastfeeding and jaundice in these neonates
- Follow-up advice should be communicated to the mother of the neonate.

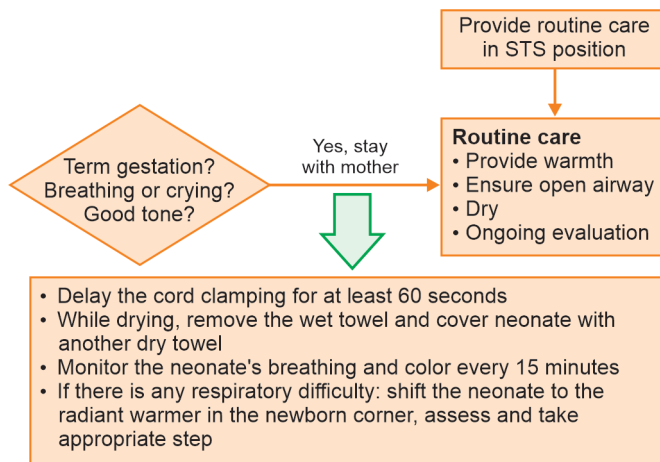
ADVICE ON DISCHARGE: NORMAL NEWBORN

1. **Exclusive breastfeeds:** All mothers should be advised to exclusively breastfeed their neonates until 6 months of age. The short-term and long-term advantages of breast milk should be discussed with the mother to facilitate success.
2. **Vitamin D supplementation:**¹³ A daily dose of 400 IU/day has been shown to achieve 25(OH)D levels >50 nmol/L in most breastfed term infants. The supplementation should continue for one year.
3. **Immunization:** The mother should be explained the immunization schedule, and the date of the following vaccination should be mentioned on the discharge card.
4. The follow-up date for the neonates discharged early (within 48 hours) for assessment of jaundice should be communicated to the parents.
5. The danger signs should be documented, and the mother should be educated to recognize the same and report early when they are recognized:^{14, 15}
 - a. Not feeding well.
 - b. History of convulsions.
 - c. No spontaneous movement.
 - d. Fast breathing (RR >60/min).

- e. Severe chest in-drawing.
- f. A temperature of more than 37.5°C or below 35.5°C.
- g. Any jaundice in the first 24 hr of life OR yellow palms and soles at any age.

Skin-to-skin (STS) Contact at Birth in Term Neonates

- Assess the neonate as per neonatal resuscitation guidelines:
 - The neonates that are delivered vaginally and eligible for Routine Care must receive STS contact with their mother for initial one hr of life.
- Rarely, a neonate in STS contact may show a sign of illness (respiratory distress) or develop some complication (smothering). DO NOT leave the mother and neonate dyad alone. MONITOR them during this period.



- Continue STS for one hr in the birthing room by putting neonate over chest between the breasts.
- Perform quick examination for obvious malformation.
- Show the neonate to the mother and counsel her.
- Put identity band.
- Initiate breastfeeding.
- Do not leave the mother-neonate dyad alone and monitor breathing and color q 15 minutes.
- If mother has to be shifted to postnatal ward: shift with neonate in STS and continue STS for 1 hour.
- After 1 hour: weigh the neonate and give injection vitamin K and initiate rooming-in.

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