

FAQ's on Newborn Care Perinatal education Programme

What is neonatal asphyxia?

Neonatal asphyxia is defined as the failure of an infant to cry or breathe well after delivery. Newborn infants normally start to breathe without assistance and often cry well. By 1 minute after delivery most infants are breathing well or crying. If an infant fails to establish adequate, sustained respiration after birth, the infant is said to have NEONATAL ASPHYXIA. These infants do not breathe well after birth. Neonatal asphyxia will result in hypoxia after delivery if the infant is not rapidly resuscitated. Neonatal asphyxia is an important cause of neonatal death if not managed correctly.

What is hypoxia?

Hypoxia is defined as TOO LITTLE OXYGEN IN THE CELLS OF THE BODY. Hypoxia may occur in the fetus or the newborn infant. If the placenta fails to provide the fetus with enough oxygen, hypoxia will result and cause fetal distress. Similarly, with failure to breathe well after delivery (i.e. neonatal asphyxia) the infant will develop hypoxia. As a result of hypoxia the heart rate falls, central cyanosis develops and the infant becomes hypotonic and unresponsive. Most fetal hypoxia occurs during labour (intrapartum hypoxia).

Note that the definitions of neonatal asphyxia and hypoxia are not the same. However, fetal hypoxia may result in neonatal asphyxia while neonatal asphyxia will result in hypoxia if the infant is not rapidly resuscitated. Many infants with fetal hypoxia during labour still manage to cry well at birth and, therefore, do not have birth asphyxia.

What is the APGAR score?

The APGAR score is a method of assessing an infant's clinical condition after delivery. The Apgar score is based on 5 vital signs:

1. Heart rate
2. Respiratory effort
3. Presence or absence of central and peripheral cyanosis
4. Muscle tone
5. Response to stimulation

Each vital sign is given a score of 0 or 1 or 2. A vital sign score of 2 is normal, a score of 1 is mildly abnormal and a score of 0 is severely abnormal. The individual vital sign scores are then totaled to give the Apgar score out of 10. The best possible Apgar score is 10 and the worst 0.

Normally the Apgar score is of 7 to 10. Infants with a score between 4 and 6 have moderate depression of their vital signs while infants with a score of 0 to 3 have severely depressed vital signs.

Due to the presence of peripheral cyanosis in most infants at delivery, it is unusual for a normal infant to score 10 at 1 minute. By 5 minutes most infants will have a score of 10. If the Apgar score is guessed, and not correctly assessed, too high a score is usually given. This is a common error in Apgar scoring.

A NORMAL APGAR SCORE IS 7 OR HIGHER

When should you determine the Apgar score?

The Apgar score should be performed on all infants at 1 minute after complete delivery to record the infant's clinical condition at birth and to assess whether the infant requires resuscitation. If the 1 minute Apgar score is below 7, then the Apgar score should be repeated at 5 minutes to document the success or failure of the resuscitation efforts. If the 5 minute Apgar score is still low, it should be repeated every 5 minutes until a normal Apgar score of 7 or more is achieved. In many hospitals, the Apgar score is often routinely repeated at 5 minutes even if the 1 minute score was normal. This is not necessary and the infant should rather be handed to the mother. Apgar scoring is an important way to document the infant's clinical condition and the process of resuscitation in the hospital or clinical records.

ALL INFANTS SHOULD RECEIVE AN APGAR SCORE AT ONE MINUTE

What causes a low apgar score?

There are many causes of a low Apgar score. These include:

1. Fetal distress due to hypoxia before delivery (especially during labour)
2. Maternal general anaesthesia or recent analgesia
3. Preterm infant
4. Difficult or traumatic delivery
5. Excessive suctioning of the pharynx after delivery
6. Severe respiratory distress

Note that fetal distress due to hypoxia during labour is only one of the many causes of neonatal Asphyxia.

It is important to always try and find the cause of a low 1 minute Apgar score. If the Apgar score remains low at 5 minutes, despite good resuscitation efforts, the infant probably had fetal hypoxia before birth.

INTRAPARTUM HYPOXIA IS THE MOST IMPORTANT CAUSE OF NEONATAL ASPHYXIA.

A base deficit of 10 or more in a sample of umbilical artery blood strongly suggests that the infant has had significant hypoxia before delivery. This is very useful information in any delivery following a diagnosis of fetal distress. It is also very useful in infants who need resuscitation after delivery.

What is infant resuscitation?

Resuscitation is a series of actions taken to establish normal breathing, heart rate, colour, tone and activity in an infant with depressed vital signs (i.e. a low Apgar score).

Which infants need resuscitation?

All infants who do not breathe well after delivery (i.e. infants with neonatal asphyxia) or have a 1 minute Apgar score below 7 need immediate resuscitation. The lower the Apgar score the more urgent is the need for resuscitation. Any infant who stops breathing or has depressed vital signs at any time after delivery or in the nursery also requires resuscitation. Therefore, it is important to formally assess the clinical condition of all infants after delivery.

ALL INFANTS WITH A 1 MINUTE APGAR SCORE BELOW 7 REQUIRE RESUSCITATION

In practice, it may be obvious before 1 minute is reached that an infant will need resuscitation. Therefore, some protocols suggest that the need for resuscitation should be assessed at 30 seconds after delivery. However, it usually takes a minute to dry the infant well, clamp the cord and make a quick general examination.

Can you anticipate who will need resuscitation at birth?

Yes. The following clinical situations often lead to the delivery of an infant with neonatal asphyxiated and a low Apgar score at 1 minute:

- Signs of fetal distress during labour
- Delivery before 37 weeks of gestation
- Abnormal presentation of the fetus
- Difficult or traumatic delivery
- General anaesthesia or recent analgesia (pethidine or morphine within the last 4 hours)

Remember that any infant can be born with neonatal asphyxia without prior warning. It is essential, therefore, to be prepared to resuscitate any newborn infant. Anyone who delivers an infant must be able to perform resuscitation.

Any Infant Can Have Neonatal Asphyxia Without Warning Signs During Labour

Equipment you need for basic infant resuscitation?

It is essential that you have all the basic equipment needed for basic infant resuscitation. The equipment must be in working order and immediately available. The equipment must be checked daily.

A warm, well lit corner of the delivery room should be available for resuscitation. A heat source, such as an overhead radiant warmer, is needed to keep the infant warm. Avoid draughts. A good light, such as an angle poise lamp, is required so that the infant can be closely observed during resuscitation.

How should you stimulate respiration immediately after birth?

Immediately after birth all infants must be quickly dried in a warm towel and then placed in a second warm, dry towel before they are clinically assessed. This prevents rapid heat loss due to evaporation. Handling and rubbing the newborn infant with a dry towel is usually all that is needed to stimulate the onset of breathing. Gently flicking under the infant's feet may be helpful in stimulating breathing. Stimulation alone will start breathing in most infants. The infant's mouth can be wiped with a clean towel if there are excessive secretions. There is no need to smack newborn infants to get them to breathe. Infants who are active, pink and breathe well can stay with their mother. It is best to place these well infants in the kangaroo mother care position and allow them to take the mother's breast. Always wear gloves when delivering or resuscitating an infant.

Dry and stimulate all infants immediately after delivery.

It is not necessary to routinely suction the mouth and nose of infants after delivery how do you resuscitate an infant?

If the infant fails to respond to drying and stimulation, then the infant must be actively resuscitated. The most experienced person, irrespective of rank, should resuscitate the infant. However, all staff who conduct deliveries must be able to resuscitate infants. It is very helpful to have an assistant during resuscitation.

There are 4 main steps in the basic resuscitation of a newborn infant. They can be easily remembered by thinking of the first 4 letters of the alphabet, i.e. "ABCD" - AIRWAY - BREATHING - CIRCULATION - DRUGS.

Open the airway by placing the infant's head in the neutral position with the neck slight extended. Do not flex or over extend the neck. It is best to place the infant on a firm surface, facing face up.

Gently clear the throat. The infant may be unable to breathe because the airway is blocked by mucus or blood. Therefore, if the infant fails to breathe after stimulation,

gently suction the back of the mouth and throat with a soft F 10 catheter. Once the airway has been opened and the infant stimulated, the infant's breathing, colour and heart rate must be assessed

Ventilation is the most important step in newborn resuscitation and is indicated if the infant does not breathe well or has a heart rate below 100

Free flow oxygen alone, without ventilation, is only indicated in the few infants who breathe well with a good heart rate but remain centrally cyanosed. Start the infant breathing by providing adequate ventilation.

MASK VENTILATION:

If the infant fails to breathe adequately despite stimulation and opening the airway, some form of artificial ventilation (breathing) is required. Most infants can be adequately ventilated with a bag and mask. The mask must be held tightly over the infant's nose and mouth. Make sure the head is in the correct position and the airway is clear.

INTUBATION AND VENTILATION:

The most effective method of ventilation is via an endotracheal tube. Infants who fail to respond to mask ventilation must be intubated. Ventilate the infant at a rate of about 40 breaths a minute. Make sure that the infant's chest moves well with each breath and that good, bilateral air entry is heard. Adequate ventilation is by far the most important step in resuscitating an infant with severe neonatal asphyxia.

MOST INFANTS CAN BE ADEQUATELY VENTILATED WITH A BAG AND MASK

Ventilation is usually given with supplementary oxygen until good breathing efforts are established.

3 most important vital signs of the Apgar score have returned to normal

The 3 most important vital signs of the Apgar score have returned to normal:

- A PULSE RATE ABOVE 100 BEATS PER MINUTE. Easily assessed by palpating the base of the umbilical cord or listening to the chest with a stethoscope.
- A GOOD CRY OR GOOD BREATHING EFFORTS (not just gasping). This assures adequate breathing.
- A PINK TONGUE. This indicates a good oxygen supply to the brain. Do not rely on the colour of the lips or buccal mucosa.

A GOOD HEART RATE IS THE BEST INDICATOR OF ADEQUATE VENTILATION

What post resuscitation care is needed?

All infants that require resuscitation must be carefully observed for at least 4 hours after delivery. Their temperature, pulse and respiratory rate, colour and activity should be recorded and their blood glucose concentration checked. Keep these infants warm and provide fluid and energy either intravenously or orally. Usually these infants are observed in a closed incubator. Do not bath the infant until the infant has fully recovered.

If the infant has signs of respiratory difficulty, or is centrally cyanosed in room air after resuscitation, it is essential to provide oxygen while the infant is being moved to the nursery. Some infants may even require ventilation during transport.

Careful notes must be made describing the infant's condition at birth, the resuscitation needed and the probable c