NEONATAL RESUSCITATION
Neonatal Resuscitation

The following questions should be answered after every birth:

- Is the amniotic fluid clear?
- Is the baby breathing or crying?
- Is there a good muscle tone?
- Is the color pink?
- Was the baby born at term?

If the answer is no to any of these consider resuscitation
Adequate preparation

1. A self-inflating Ambou bag (newborn size)
2. Two infant masks (for normal and small newborn),
3. A suction device (mucus extractor),
4. A radiant heater (if available), warm towels, a blanket and
5. A clock
The important steps in resuscitation are:

1. Prevention of heat loss,
2. Opening the airway and
3. Positive pressure ventilation that starts within the first minute of life
TEMPRETURE

Airway
Breathing
Circulation
GENERAL MANAGEMENT

- Dry the baby, remove the wet cloth.
- Clamp and cut the cord immediately if not already done.
- Move the baby to a firm, warm surface under a radiant heater for resuscitation.
- Suctioning of mouth and nose
Suctioning to Clear the Newborn’s Airway

Suctioning the mouth

Suctioning the nose
Correct position

Too flexed

Too extended
The second step (within 20-30 seconds of birth) is assessment of neonatal respiration.

If the newborn is crying and breathing is normal, no resuscitation is needed.
If there is no cry:

but the chest is rising symmetrically with frequency >30/minute,

no immediate action is needed
Provision of Tactile Stimulation

- If drying and suctioning do not induce respirations, provide additional tactile stimulation
  - Two safe and appropriate methods are:
  - Slapping or flicking the soles of the feet
  - Rubbing the infant's back
- If the infant remains apneic after a brief period (5 to 10 seconds) of stimulation:
  - Immediately initiate *positive-pressure ventilation* with a pediatric bag-valve device and supplemental oxygen (40 to 60 ventilations/min)
Heart Rate

If less than 100/minute:

★ Provide artificial ventilations, 40-60/minute.
★ Reassess after 30 seconds.
★ If no improvement, continue ventilations.
Ventilation can almost always be initiated using a bag and mask and room air. (it is rarely necessary to intubate)
Squeeze the bag with two fingers only or with the whole hand, depending on the size of the bag.
When no equipment mouth to mouth-and-nose breathing should be done.
Oxygen administration

Administer oxygen if the newborn displays:
- Cyanosis of the skin
- Spontaneous and adequate breathing
- Heart rate above 100 beats per minute
• After effectively ventilating for about 1 minute, stop briefly but do not remove the mask and bag and look for spontaneous breathing.
• If there is none or it is weak, continue ventilating until spontaneous cry/breathing begins.
• If the newborn starts crying: stop ventilating but do not leave the newborn.
If breathing is slow continue ventilating and ask for arrangement for referral if possible.

If there is no breathing at all after 20 minutes of ventilation:

Stop ventilation
• Do not separate the mother and the newborn.
• Leave the newborn skin-to-skin with the mother.
• Encourage breast-feeding within one hour of birth.
• The newborn that needs resuscitation is at higher risk of hypoglycemia.
• Observe sucking (Good sucking is a sign of good recovery.)
ADVANCED RESUSCITATION
Endotracheal intubation

- It is more convenient for prolonged resuscitation but is also a more complicated procedure that requires good training.
Resuscitating the Newborn

- Check for a brachial pulse.
- If you cannot feel a brachial pulse, begin closed-chest cardiac compressions.
- Continue CPR.
Chest compression

*If*: HR < 60 after 30 seconds ventilation and stimulation

- Thumb technique: Place your thumbs side by side or, on a small baby, one over the other, immediately above xyphoid. The other fingers provide support needed for the back.

- 90 compressions + 30 breaths per min

"One and two and three and breath, and one and two and three and breath …"
Drugs are seldom needed to:

1. Stimulate the heart.
2. Increase tissue perfusion
Routes of Drug Administration

- Drugs are rarely indicated in the resuscitation of a newborn.
- Drugs should be administered only if the heart rate remains $< 60$ bpm despite adequate ventilation with 100% oxygen and chest compressions.
- The tracheal route is generally the most rapidly accessible route.
- The umbilical vein is the most rapidly accessible venous route.
- Peripheral sites (scalp or peripheral vein) may be adequate but more difficult to cannulate.
Epinephrine dose

The recommended IV or endotracheal dose of epinephrine is 0.1 to 0.3 mL/kg repeated every 3 to 5 minutes as indicated.

Higher doses have been associated with increased risk of intracranial hemorrhage and myocardial damage. **No different dose for premature infants.**
Sodium bicarbonate is not recommended in the immediate postnatal period if there is no documented metabolic acidosis.
Respiratory depression caused by narcotic drugs

- If there are **signs of respiratory depression**, begin resuscitation immediately:
  - Give naloxone 0.1 mg/kg body weight IV to the newborn;
  - Naloxone may be given IM after successful resuscitation. Repeated doses may be required to prevent recurrent respiratory depression.

- If **there are no signs of respiratory depression**, but pethidine or morphine was given within 4 hours of delivery, observe the baby
Volume expansion

Volume expansion may be accomplished with (1) isotonic crystalloid such as normal saline or Ringer’s lactate.
Inverted Pyramid

• Inverted pyramid reflecting approximate relative frequency of neonatal resuscitative efforts
Important Points to Remember in Neonatal Resuscitation

• Prevent heat loss and avoid hypothermia
• If a newborn has a heart rate of < 100 bpm and is unresponsive to stimulation, the primary concern is adequate ventilation
• Provide chest compressions if the heart rate is absent or remains < 60 bpm despite adequate assisted ventilations with 100% oxygen for 30 seconds
• Coordinate chest compressions at a ratio of 3:1 and a rate of 120 events per minute
• Administer epinephrine (Adrenalin) when the heart rate remains < 60 bpm despite 30 seconds of effective assisted ventilation and chest compression
Psychological and Emotional Support

As a rule, emergency responders should:

- Never discuss the infant’s chances of survival with a parent or family member
- Not give “false hope” about the infant’s condition
- Assure the family that everything that can be done for the child is being done
- Assure the family that their baby will receive the best possible care during transport and while at the emergency department
Documentation

Written documentation of

• Personal involved
• All procedures including drugs
• Timing
Thank you