
PRACTICAL 12 RESUSCITATION

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12.0 OBJECTIVES

After completing this practical, you should be able to:

- list the steps of resuscitation;
- prepare the articles for resuscitation procedure;
- perform the steps of resuscitation procedure correctly and effectively;
- identify conditions requiring referral; and
- record the appropriate information about resuscitation procedure in the newborn record form/card.

12.1 INTRODUCTION

In developing countries where most of the deliveries take place at home, the approach of resuscitation is focused at most basic but essential steps that can be performed at home with minimum articles. Majority of the newborn do **not** require active resuscitation (e.g., Stimulation to breathe). It is been seen that **very few** newborn require active resuscitation to establish vigorous cry, regular respiration, maintain a heart rate of more than 100 Beats per minute, good colour and tone. Birth asphyxia is the most common cause of death among newborn. Newborn having birth asphyxia needs vigorous resuscitation. This means that the newborn death can be prevented by adopting **two** important steps i.e., carrying out basics resuscitation of newborn by trained personnel at home and timely referral of newborns requiring vigorous resuscitation.

In this practical basic steps of active resuscitation are explained. Before reading this practical you should review resuscitation in your theory Course 2, Block 3, Unit 1.

12.2 RESUSCITATION

We shall focus on definition purposes, articles, procedure of resuscitation, referral and recording.

12.2.1 Definition

Resuscitation involves series of steps taken to ensure the stabilization of newborn to life outside the uterus. You have already studied resuscitation in your theory course. To review the TABC of resuscitation look at Table 12.1.

Table 12.1: TABC of Resuscitation

| |
|--|
| T : Maintenance of temperature—by drying and warming. |
| A : Establishment of patent airway—by positioning and suctioning.* |
| B : Initiation of breathing—by stimulation, and if needed assisted ventilation using bag and mask.* |
| C : Maintenance of circulation—by cardiac compression if needed.** |

* All newborns may not require suction and ventilation (using bag and mask) as newborn starts spontaneous respiration with first cry after birth.

** Majority of the newborn do not require chest compressions as clamping of cord initiate events in the body to establish spontaneous circulation.

12.2.2 Purposes

The purposes of resuscitation are to:

- prevent heat loss.
- clear airway of fluid and secretions by suction.
- establish effective circulation.
- stabilize the newborn and avoid complications e.g., brain damage.

12.2.3 Articles

Essential following articles should be kept ready for resuscitation (Fig.12.1):

- Two sheets—Clean, dry and pre warmed; folded blanket to spread on the floor in winter months.
- De-Lee suction trap/mucus sucker
- Face mask of size 0, 1 and 2 and self-inflating resuscitation bag with capacity of 250 ml to 750 ml.
- Clean gauze pieces.
- Table lamp or bulb holder to attach 200 Watt bulb/Room Heater/Angithi for extra warmth.
- Shoulder roll prepared using small towel.
- Wrist watch with second needle.

12.2.4 Steps of Procedure

The steps of neonatal resuscitation based on the principles of basic life support system are given below. It is very important that each one of you practice these basic steps of resuscitation. You should take responsibility to train health worker and TBAs working in your area.

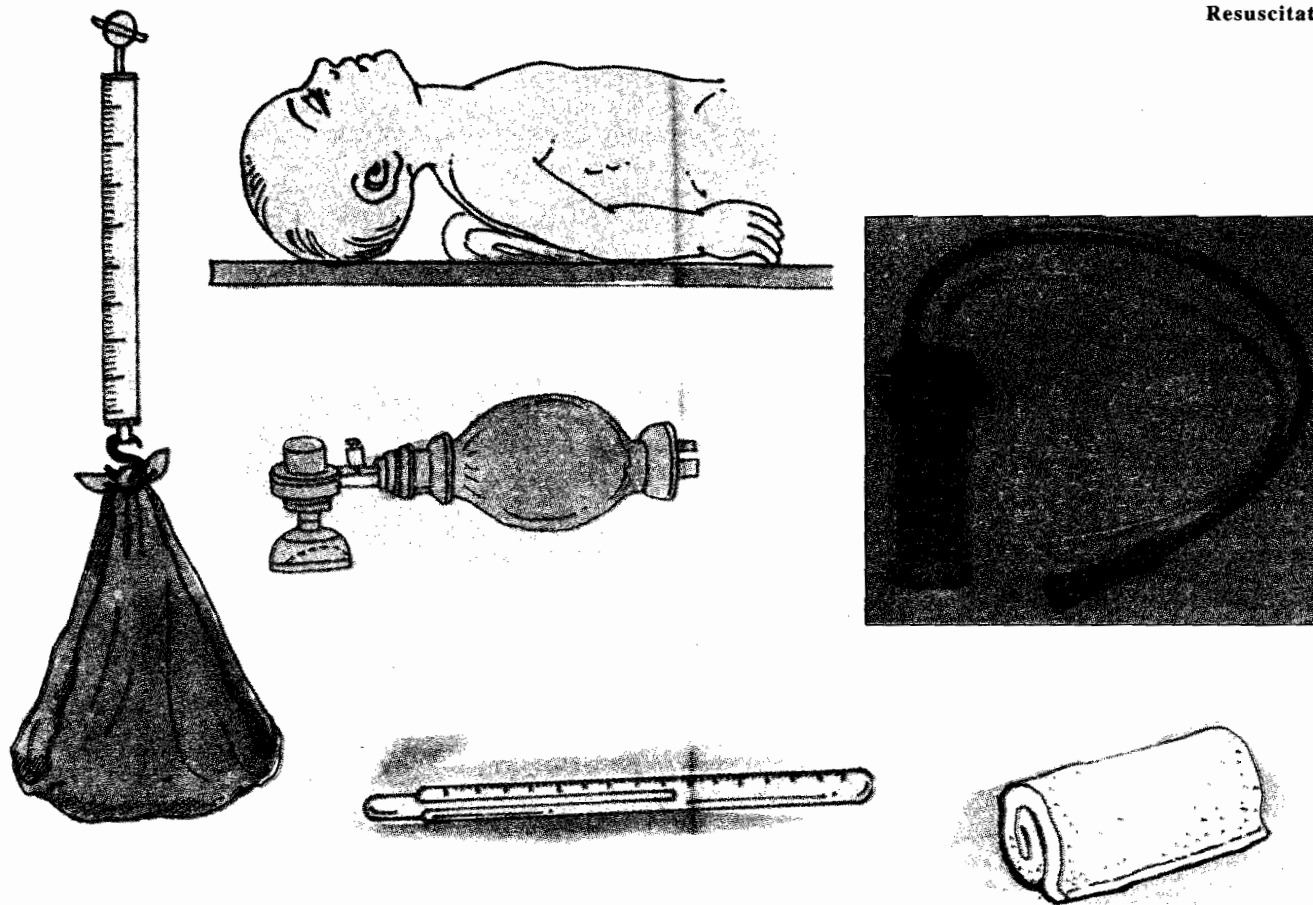


Fig. 12.1: Articles for resuscitation

Step I: Resuscitation Corner

Prepare resuscitation corner in a room where mother is delivering.

- Spread an old newspaper on the cot/floor/ or table.
- Arrange your articles.
- Attach the electric bulb at a height of 18 inches, and switch it on. You can also arrange for other sources of heat such as Room Heater/Angithi etc.
- Spread the folded blanket on the floor/table/cot in winter months.
- Spread one of the sheets on the blanket in winter months.
- Attach face mask to the ventilation bag and check for effective functioning as detailed below:
 - Inflate the bag and release, the bag should inflate immediately.
 - Place the rim of the mask on your palm and firmly press it against your palm with fingers and compress the bag and feel for the flow of air on your palm.

The above mentioned two steps confirm the effective functioning of bag and mask.

If the bag does not inflate immediately and you do not feel the flow of air on your palm then your equipment is not in functioning order and needs replacement. Always ensure effective functioning of bag and mask by frequent checks.

- Always keep the sources of heat far away from the newborn.
- Do not use hot water bottle as it may cause burn.

Step II: Temperature

- Open the second sheet and hold it.
- Receive and wrap the newborn in the sheet held by you. Hold the newborn with his head slightly lower than his body.
- Dry the newborn by gently dabbing his body and head using sheet, and take the newborn to resuscitation corner.
- Discard the wet sheet used to dab the newborn and place the newborn on sheet that you had spread earlier. Wrap the newborn as shown in Fig. 12.2.

Remember

- Most of the newborns cry spontaneously after birth and suction of the mouth and throat is not needed.
- Do not use gauze or cloth to clear secretions.



Fig. 12.2: Dressing the newborn

Step III: Airway

If the baby has not cried till the time taken to wipe dry and wrap in a clean linen (about 15-20 seconds after birth), following steps must be initiated immediately:

- Position the newborn on his back and shift the shoulder roll under his shoulders so as to keep his neck slightly extended.
- Pick-up De-Lee trap/mucus sucker and put the suction tube into your mouth.
- Use the second tube to suck the mouth and then nose of newborn (Fig. 12.3).

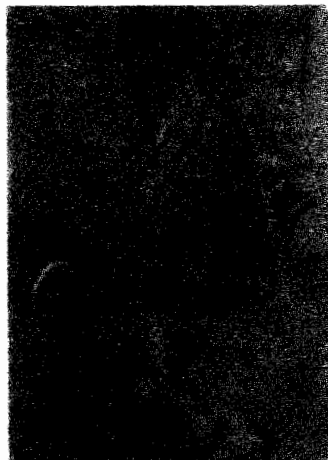


Fig. 12.3: Suction of newborn

- This ensures the establishment of spontaneous breathing and by now the newborn would start crying vigorously. You can terminate resuscitation here.

However if the newborn has gasping respiration, go to step IV BREATHING.

Remember

Carry out mouth and throat suction at delivery of head of those newborns where amniotic fluid is meconium stained.

Step IV: Breathing

When the newborn is breathing poorly and slowly, provide stimulation by using any one step given below:

- Flick the sole twice or thrice [Fig. 12.4(a)].

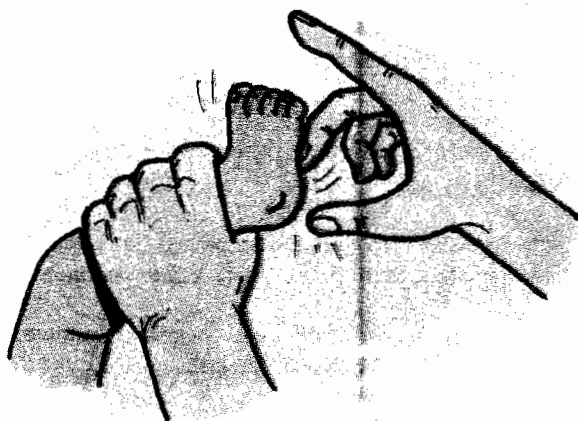


Fig. 12.4(a): Flicking the sole

- Turn the newborn to the side and rub the back twice or thrice [Fig. 12.4(b)].



Fig. 12.4(b): Rubbing the back

If the newborn has gasping respiration immediately start bag and mask ventilation as follows:

- Position yourself at the head end of the newborn. You may kneel down if the newborn is on the floor.
- Assess airway for patency and if needed carry out suction of mouth and nose as given in Step III: Airway.
- Hold bag and mask in your left hand. Attach appropriate size of facemask to the bag.
- Place the mask on the chin first and secure it tightly to cover mouth and nose with your right hand as shown in Fig. 12.4(c).
- Hold the bag perpendicular to the body of the newborn in your left hand as shown in Fig. 12.4(c).

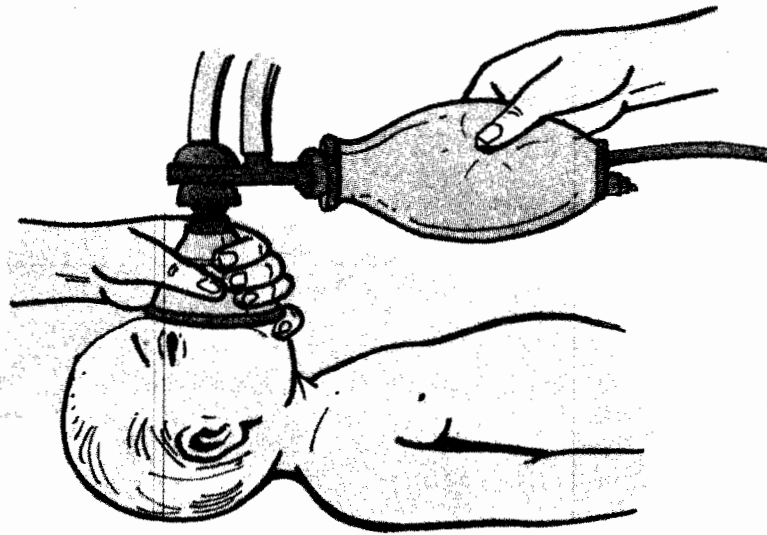


Fig. 12.4 (c): Placement of face mask

- Compress the bag with three fingers (thumb, index finger and middle finger) and release using sufficient pressure to raise the chest. You should be able to notice the rise of chest with each compression.

If the chest is not rising with compression recheck the position of shoulder roll, position of face mask and also if there is need to do mouth and nose suction again.

- Compress the bag at the rate of 40 compressions per minute. This rate can be achieved by following the rhythm of 1, 2, squeeze 1, 2, squeeze...
- Continue the compression for **thirty seconds** and evaluate the newborn's effort to spontaneous breathing (Fig. 12.5).

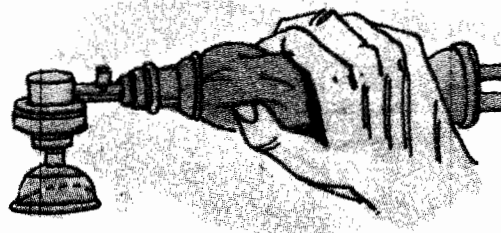


Fig. 12.5: Compressing the bag

Keep bag and mask in position during ventilations and remove only when you finally stop ventilations.

- Assess colour of the newborn
- When there is improvement in the breathing effort and colour of the newborn. Stop ventilations. Otherwise go to Step V: Circulation.

Remember you are using oxygen (21%) present in the room air to resuscitate the newborn. Oxygen in the room air is sufficient to resuscitate the newborn. If you have oxygen cylinder at the health centre, attach oxygen to the inlet valve of the bag to give 100% oxygen. At health center you can also provide free flow oxygen.

If bag and mask is not available use mouth to mouth ventilation (Respiration) as given below:

Mouth-to-mouth Technique of Ventilation

- Place a piece of clean gauze on the mouth of newborn.
- Take deep breath and fill your mouth with air.

- Cover the mouth and nose tightly with your mouth (Fig. 12.6).
- Blow the mouthful of air gently into the baby's mouth.
- Let the newborn breathe out.
- While you blow the air, look at the chest. Chest should rise noticeably with each blow.
- Repeat the mouth-to-mouth breathing about 40 times a minute till the baby starts breathing on its own and becomes pink.



Fig. 12.6: Mouth-to-mouth breathing

Step V: Circulation

Most of the newborn will maintain a heart rate of more than 100 beats per minute (bpm). However, very few newborn may show heart rate of less than 60 bpm. You can count the heart rate by holding the umbilical cord in your hand or placing the two fingers on chest just below the nipple towards left side. Count the heart rate for **ten** seconds and multiply by **six** to get rate per 60 seconds (one minute)

Cardiac compressions and ventilations are done simultaneously and therefore you need an assistant now.

- Call another person to help (assistant).
- Let the assistant take position at the side of the newborn to do cardiac compressions. The assistant may have to kneel down if the newborn is on the floor.
- Start chest compressions when the heart rate is below 60 bpm despite effective ventilation. Chest compressions should always be accompanied with bag and mask ventilation.
- Place your both hands as shown in Fig. 12.7 so as to encircle the chest of newborn and both the thumbs are on the **lower one third** of sternum. This is the preferred technique of chest compression.
- Compress the chest with downward pressure of both the thumbs. The depth of the compression should be $\frac{1}{2}$ - $\frac{3}{4}$ inch or $\frac{1}{3}$ rd of the chest diameter from front to back.
- Compress the chest in rhythm with bag and mask ventilations. The recommended ratio is 3 compressions and 1 ventilation. This ratio ensures heart rate of 90 bpm and respiratory rate of 30 per minute. Maintain the rhythm of chest compressions by counting 1-2 squeeze, 1-2 squeeze. Squeeze is for bag and mask ventilation. The counting of 1-2 is for each chest compression.

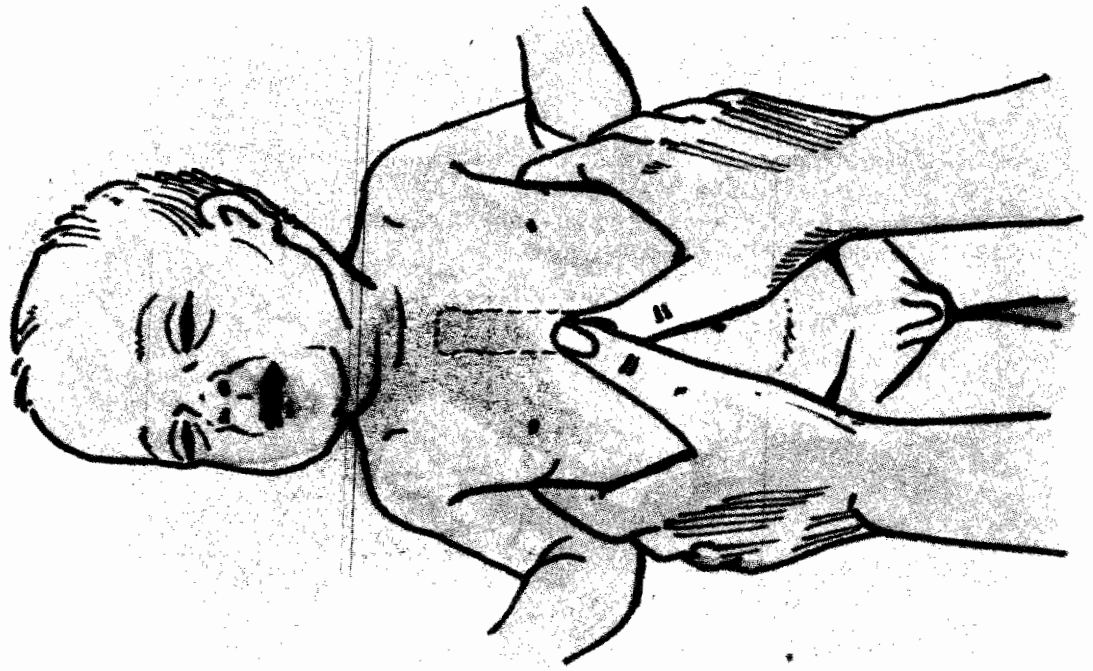


Fig. 12.7: Chest compressions using two thumbs and hands encircling the chest

- Evaluate the colour, breathing effort, and heart rate of newborn after every 30 seconds.
- Continue resuscitation till the colour and respiratory effort, and heart rate (above 80 bpm) of newborn improves.
- Discontinue resuscitation if the newborn does **not** show any sign of improvement in 15 minutes.

Throughout the procedure of chest compressions keep your hands and thumbs in position.

When you are alone to resuscitate then you can adopt following steps for ventilation and chest compression.

Chest Compression Using Two Fingers of One Hand

- Locate the point of compression—one finger below left nipple on sternum.
- Place your two fingers (index and middle) of right hand at right angle at the located point of compression. Keep your arm straight (Fig. 12.8).
- Compress the sternum downward without bending your elbow to a depth of $\frac{1}{2}$ - $\frac{3}{4}$ inch or $\frac{1}{3}$ rd of chest diameter from front to back.
- Maintain the rate of 90 compressions to 30 ventilations per minute (3:1 ratio) mentioned under Step V: Circulation.
- Keep contact of the fingers with sternum during chest compressions.

12.2.5 Referral

Mothers with high risk pregnancy should always be advised for institutional delivery. However, you may find that all mothers may not listen to your advice and still prefer delivering at home. At times some unforeseen circumstances during intranatal period like cord around neck can result into delivery of asphyxiated newborn.

In such instances newborn require vigorous resuscitation. Vigorous resuscitation includes tracheal suctioning through mouth-to tube-to bag and mask ventilation, administration of drugs in addition to the basic resuscitative measure as explained earlier. When you come across conditions where vigorous resuscitation might be needed then refer the newborn.

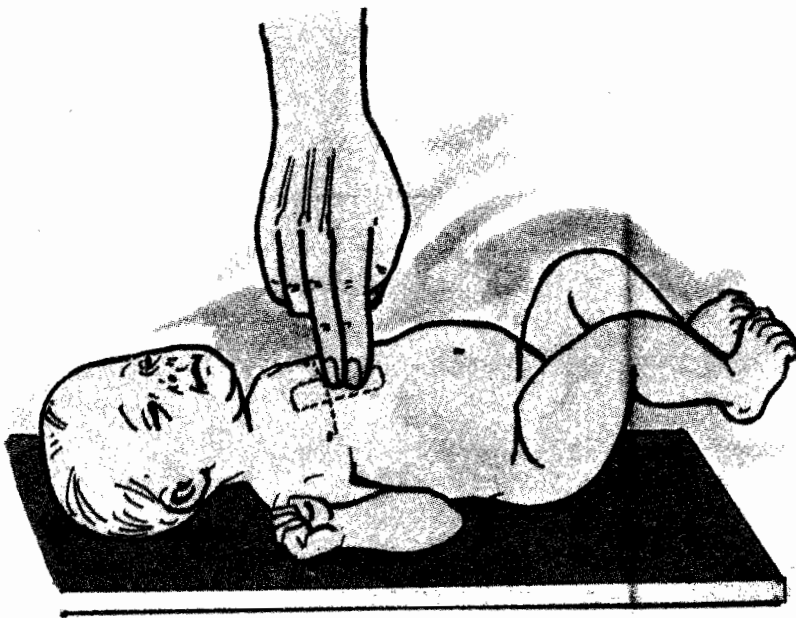


Fig. 12.8: Chest compression: Two finger method

Some of the conditions requiring vigorous resuscitation are listed below:

- Prolonged labour (more than 24 hours)
- Prolonged second stage (more than 2 hours)
- Premature rupture of membrane (more than 12 hours)
- Maternal exhaustion
- Cord around neck, cord prolapse
- Meconium stained amniotic fluid
- Pre-ter
- LBW
- Birth asphyxia

Newborns requiring vigorous resuscitation should be immediately referred with referral note.

12.2.6 Recording

Record the resuscitation steps in health record:

- The date and time of starting and ending the procedure.
- The main steps of resuscitative procedure performed.
- The general condition and vital signs (breathing and heart rate) of newborn before and after the procedure.
- Whether referred to PHC.
- Any instructions given to mother and/or family.

12.3 ADMINISTRATION OF FREE FLOW OXYGEN

The newborn may need administration of free flow oxygen. The child should be referred immediately to a health centre where oxygen facility is available.

12.4 LET US SUM UP

In this practical on resuscitation you have learned the meaning of resuscitation, purposes, articles required, and TABC of resuscitation. The TABC of resuscitation includes: T – Maintenance

of temperature by drying and warming, A Establishment of patent airway by positioning and suctioning, B – Initiation of breathing by stimulation, and if needed assisted ventilation using bag and mask, C – Maintenance of circulation by cardiac compression if needed.

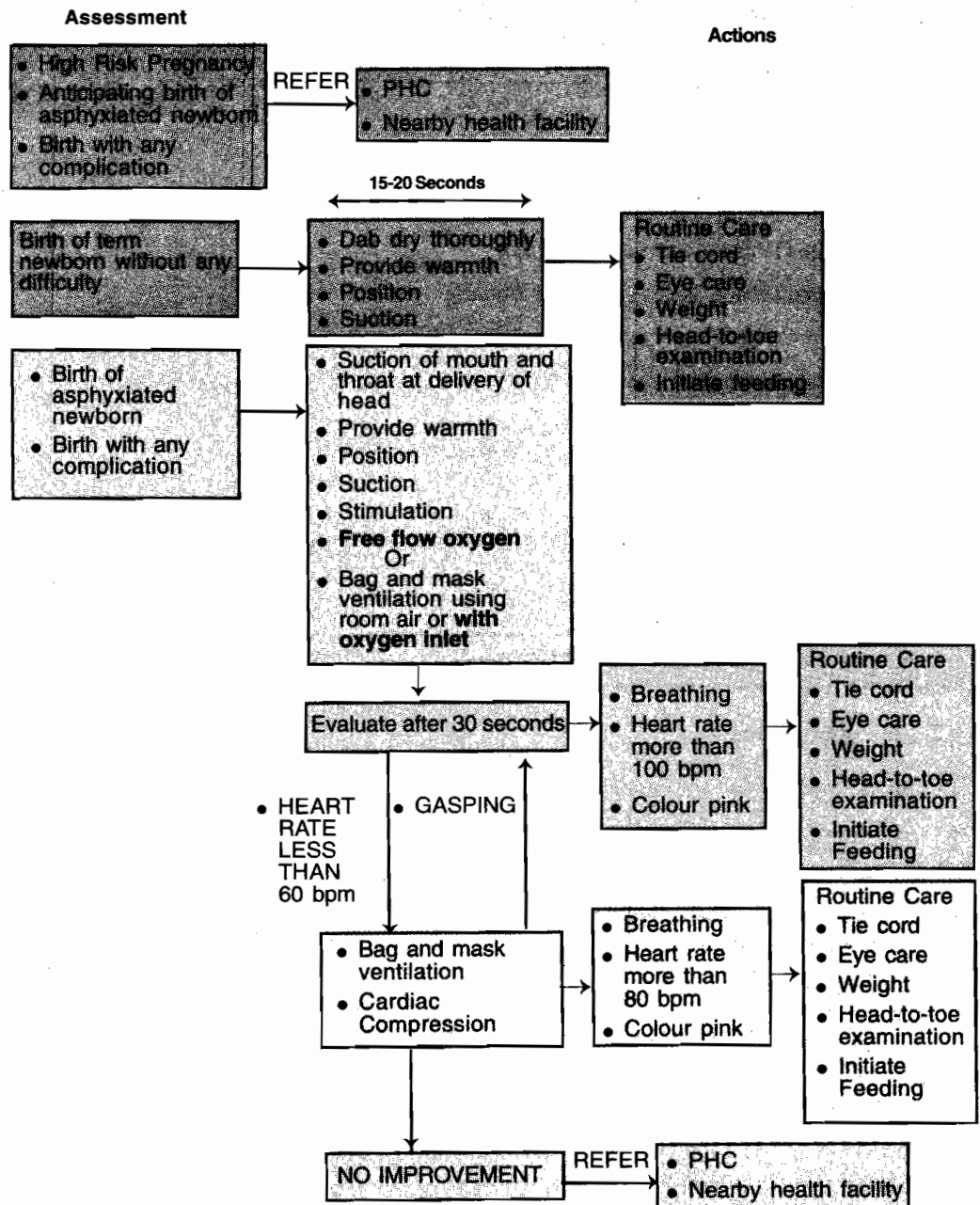
The summary of the assessment and steps to be taken in TABC is explained after activity.

12.5 ACTIVITY

Obtain the articles of resuscitation mentioned under sub-section 12.2.3. Attach the face mask to the self-inflating bag and check it for effective functioning as mentioned in sub-section 12.2.4.

Practice the steps of resuscitation given under Step I, II, III, IV and V of sub-section 12.2.4 on manikin under supervision.

Summary of Neonatal Resuscitation Procedure



Free flow oxygen can be given in PHC/Health Centre where oxygen is available.