

stopcock, and a 20-ml syringe. Insert the needle above the second rib as a second paramedic pulls back on the syringe (which is open to the patient). The nerves and blood vessels run below the ribs, so avoid piercing this area. Continue to slowly advance the needle until air is recovered. The butterfly needle is rigid, so be gentle so as to avoid further tearing the lung. If the 20-ml syringe becomes filled with air, turn the stopcock off to the newborn, push out the air from the syringe, open the stopcock to the newborn, and continue withdrawing air. Once no more air can be withdrawn, remove the needle.

Notes from Nancy

Before you lunge for a syringe, recheck the effectiveness of artificial ventilation.



If there is a symptomatic ongoing air leak, a 22-g angiocatheter can be inserted in a similar location, the introducer needle removed, and the angiocatheter attached to the extension tubing. Note that

the angiocatheter may further tear the lung during its initial placement and that it is more likely to kink than the butterfly needle.

Remove as much air as possible with the syringe. At this point, the tubing may be briefly occluded while you place the end of the tubing that had been attached to the syringe in a small bottle of sterile water and release the tubing occlusion. This can relieve the pressure buildup from the pneumothorax until the patient can be transferred to a facility for placement of a chest tube. During transport, monitor the infant very closely for signs of a reaccumulation of the pneumothorax.

While performing the pneumothorax evacuation, continue your ongoing patient assessment—use proper positioning to maintain the airway and avoid aspiration, take steps to maintain thermoregulation, and ensure adequate communication with the family and with the medical team receiving the newborn. Transport rapidly, but safely, and keep the infant warm.

Meconium-Stained Amniotic Fluid

Meconium-stained amniotic fluid, which is present in 10% to 15% of deliveries, carries a high risk of morbidity. Passage of meconium may occur either before or during delivery. It is



At the Scene

While bag-valve-mask positive-pressure ventilation and chest compressions can be performed in a moving emergency vehicle, you should pull the vehicle over to the side of the road while placing and securing an advanced airway.

more common in post-term infants and in those who are small for their gestational age (weigh less than the 10th percentile for their age). Infants do not normally pass stool before birth, but if they do and then inhale the meconium-stained amniotic fluid either in utero or at delivery, their airways may become plugged and hypoxia may ensue. This, in turn, can lead to atelectasis, **persistent pulmonary hypertension** (delayed transition from fetal to neonatal circulation), pneumonitis, or pneumothorax, which may require needle aspiration.

When a newborn is delivered through meconium-stained amniotic fluid, assess the newborn's activity level. If the baby is crying and vigorous, employ standard interventions. If the baby is depressed, it was routine to not dry or stimulate the baby and attempt intubation to clear the meconium: Intubate the trachea, attach a meconium aspirator and suction catheter to the end of the ET tube, and suction the ET tube until cleared of meconium-stained fluid. Continue suctioning while withdrawing the tube from the trachea, if the infant has a good heart rate and has begun to breathe. Be sure to cover the hole of the meconium aspirator with your finger in order to achieve adequate suctioning (**Figure 40-12**). The most current evidence does not support or refute this routine practice, so consult your local or regional protocols for the accepted practice in your service. There is no evidence, however, that an active baby benefits from airway suctioning of meconium, and there is good evidence of risk with this practice. Paramedics should not attempt to suction meconium if the baby is active and not in distress.

After tracheal suctioning, drying and stimulation may be enough to establish adequate breathing and pulse rate; in many cases where oxygen and PPV are needed, it is preferable to establish this prior to elective extubation. PPV with or without

You are the Paramedic Part 3

The baby's head delivers, and shortly thereafter the rest of the baby delivers. It is a little girl. There is no evidence of meconium on the infant's face. You dry the infant, place her in a supine position with her head slightly extended, gently suction her mouth and nose, and perform an assessment.

| Newborn Assessment | Recording Time: 9 Minutes |
|--------------------|---------------------------------------|
| Respiratory effort | Rapid and irregular; strong cry |
| Pulse rate | 130 beats/min, regular |
| Colour | Cyanosis to the trunk and extremities |

5. What prehospital treatment is indicated for this infant?
6. When is positive-pressure ventilation indicated for the newborn?