What is meconium aspiration syndrome? Meconium aspiration syndrome may affect a baby’s lungs and occurs mainly in babies who are born at term or post-term (42 weeks or more). This syndrome occurs if the baby breathes in a waste substance, called meconium [mi-KOH-nee-uhm], before birth or during delivery, which then causes injury to the lung tissue.

How does meconium aspiration syndrome occur? In order to understand meconium aspiration syndrome it is helpful to look at what happens during delivery.

Meconium is the first stool (bowel movement) a baby usually passes after birth. It is a thick, tar-like substance with no odor, so it is not like the later stools (called feces) the baby passes. Meconium is formed during gestation by the fetus from amniotic fluid that is swallowed, intestinal cells that are shed as the bowel grows before birth, and some digestive enzymes. Sometimes a baby may pass this substance into the amniotic fluid while still in the womb during a normal delivery or if the baby has some type of stress during the delivery, such as reduced oxygen. If the baby passes meconium before or during birth, the amniotic fluid becomes greenish in color. The baby’s skin and nails may also have a greenish stain. Staining of the skin and nails does not harm the baby.

Aspiration [as-puh-REY-shuhn] means to breathe in (inhale) material or fluid in the lungs. Normally, babies do not take a breath until after they are born. If they have reduced oxygen before birth, however, they may start to gasp as they mistakenly think that it is time to begin breathing on their own. If the baby inhales the meconium stained fluid, the mixture of meconium and amniotic fluid may enter the lungs and cause injury.

What happens if my baby has passed meconium before delivery? It depends upon how the baby acts at birth.

- If the amniotic fluid is stained and the baby is crying and active, the health care team gently suctions the baby’s mouth and nose to remove any meconium from this area using a small bulb syringe.
- If the amniotic fluid is stained and the baby has other signs of problems (such as trouble breathing) the health care team may insert a tube through the baby’s mouth and into his or her windpipe (trachea) to remove any meconium and assist the baby’s breathing.

How do we know if the meconium has injured the baby’s lungs? If the baby has breathing problems and other risk factors (such as post-term birth), doctors may suspect some lung injury. Meconium aspiration syndrome can be confirmed if an x-ray of the baby’s chest shows fluffy patches in the lungs.
What is the treatment for meconium aspiration syndrome? For mild cases, doctors may give the baby extra oxygen with either a plastic hood placed over the head or through small prongs placed in the baby’s nose to help with breathing. For more severe cases, the baby may need to be placed on a ventilator to help the lungs work. If this is not enough, the infant may be placed on a special high frequency ventilator that breathes for the baby at rates of up to 600 breaths per minute. In addition, inhaled medications such as surfactant or nitric oxide may be tried, which can make breathing easier by increasing oxygen in the lungs. Finally, if these approaches fail to produce improvement, an extracorporeal membrane oxygenation (ECMO) machine may be needed to help both the heart and lungs work. ECMO can’t be used if the baby weighs less than 4 pounds. The baby may be given medicines to help prevent infection too. For some of these therapies, the baby may need to be sent to another hospital, depending on the circumstances.

Are there long-term effects from this problem? The effects of this syndrome range from mild to severe, with more severe cases occurring in babies who have been exposed to meconium the longest or who have very thick meconium. In severe cases, this syndrome may lead to other lung problems, such as air leak syndrome, or persistent pulmonary hypertension of the newborn (PPHN).

What can parents do? The most important thing you can do is to be an active member of your baby’s care team. You are a vital part of your baby’s care and the health care team will work with you to meet your baby’s needs. To be an active partner, learn about your baby’s unique needs and how you can help. The topic sheets and sources listed below can help with this.

Find the research

- NICHD Cochrane Neonatal Review Group
  www.nichd.nih.gov/cochrane/default.cfm
- NICHD Neonatal Research Network
  https://neonatal.rti.org
- Neonatology on the Web
  www.neonatology.org

Find out more: these websites may be helpful

- American Lung Association
  www.lungusa.org
- Health on the Net Foundation
  www.hon.ch
- Healthy Steps for Young Children
  www.healthysteps.org
- National Institute of Child Health and Human Development
  www.nichd.nih.gov/health/education
- Medline Plus®
  www.nlm.nih.gov/medlineplus
- Sidelines National Support Network
  www.sidelines.org
- U.S. Department of Health & Human Services
  www.healthfinder.gov