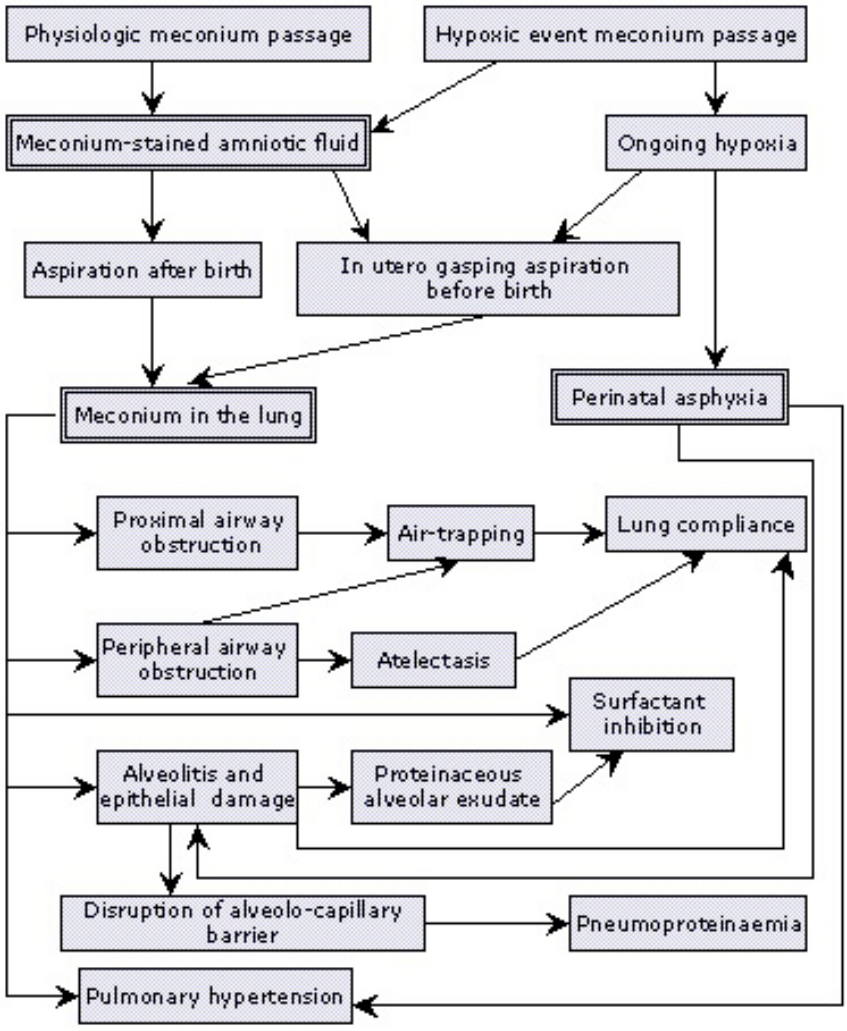
Meconium Aspiration Syndrome

Meconium aspiration syndrome (MAS) happens when fetal stress occurs and the fetus/newborn gasps then aspirates meconium stained amniotic fluid into his or her lungs before, during, or immediately after birth. MAS can be caused by placental insufficiency, maternal hypertension, preeclampsia, tobacco use, maternal infections, and fetal hypoxia, and most commonly postdates pregnancy. MAS can be a serious respiratory condition causing respiratory failure, acute inflammatory response, and air leaks. One-third of infants with MAS will develop persistent pulmonary hypertension. MAS can range from mild to severe.

A team trained in neonatal resuscitation should attend all births with meconium-stained fluid. Not all infants delivered with meconium-stained fluid will develop MAS. Initial resuscitation steps are critical to prevent MAS. Please refer to current Neonatal Resuscitation Program guidelines to manage newborn during delivery, which are available at www2.aap.org/nrp.

Newborns with mild to moderate MAS may present with meconium-stained skin, fingernails, or umbilical cord; tachynpea; rales; cyanosis; nasal flaring; grunting; and retractions. In severe cases of MAS, gasping respirations, pallor, and an increase in the anteroposterior diameter of the chest may be noted. Babies experiencing severe MAS may require oxygen, intubation, and ventilator support; inhaled nitric oxide; hypothermia treatment; and even extracorporeal membrane oxygenation. Newborns will usually require placement of central lines and frequent arterial blood gases to observe for hypoxia and hypercarbia. If your unit does not have these capabilities, a transfer to a higher level of care NICU should be initiated as soon as possible.

Severe complications of MAS may include persistent pulmonary hypertension, pneumomediastinum, pneumothorax, and pulmonary hemorrhage. The infant may require a chest tube if a pneumothorax needs to be evacuated. Although surfactant therapy is not routinely recommended, it may be helpful in certain circumstances, because meconium inactivates surfactant in the baby's lungs.



Pathophysiology of meconium aspiration syndrome. © Tom Wiswell.

Newborns with MAS require a multidisciplinary team approach to manage their many medical challenges, and parents will need support and education throughout their baby's NICU stay to ensure the family's needs are met during this difficult time.

Bibliography

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Meconium Aspiration Syndrome: Information for Parents

A baby's first stool is called meconium. It is green and black in color and thick in consistency. Meconium is an early stool passed by a newborn soon after birth. In some cases, a baby passes stool inside the womb before he or she is born. This can happen when the baby is under stress during labor. If the baby breathes in the stool before or during delivery, the baby can develop meconium aspiration syndrome (MAS). Not all babies who have a bowel movement before birth will develop MAS.

MAS happens when the baby breathes this thick fluid into his or her lungs before, during, or right after birth. MAS babies may develop trouble breathing and will need help to breathe. A skilled team will attend your delivery if you have meconium-stained fluid noted during labor.

If your baby is crying and active, no treatment may be needed. If the baby is not crying or active right after delivery, a tube is placed in the infant's windpipe and suction is applied as the tube is pulled out. This might be repeated until the meconium is no longer seen in the suction tube. If the baby is not breathing or has a low heart rate, he or she may require help to start breathing. At delivery, oxygen and breaths given by face mask will help inflate the baby's lungs.

Your baby may be placed in a special care nursery or newborn intensive care unit (NICU) for close observation. Other treatments may include

- antibiotics to treat possible infections
- breathing machine (ventilator) to keep infant's lungs open
- oxygen
- surfactant
- medicines to help keep their blood pressure stable (vasopressors)
- medicine to help bring the pressure in their lungs down (nitric oxide)
- a chest tube to reinflate a collapsed lung.

This can be a scary time for parents. The special care nursery or NICU team will be there to support you and answer your questions. It may take a few weeks for your baby's lungs to heal so that they can begin to eat, grow, and go home. After you are able to go home, your baby may need frequent follow up with specialized healthcare providers.