

Necrotizing Enterocolitis in the Newborn



What is necrotizing enterocolitis in the newborn?

Necrotizing enterocolitis (NEC) is a serious, life-threatening illness in newborns. It happens when tissue in the large intestine (colon) gets inflamed. This inflammation damages and kills tissue in your baby's colon.

Any newborn can get NEC. But it's most common in very sick or premature babies. This is especially true for babies who weigh less than 3 pounds, 4 ounces (1,500 grams). The smaller and earlier the baby, the higher the risk for NEC. NEC in full-term infants is usually associated with an event that causes low oxygen levels, such as a congenital heart defect.

What causes NEC?

No one knows exactly what causes NEC. It may happen if not enough blood and oxygen reach your baby's immature intestinal tissues. Contact between bacteria from the environment and the immature tissues seems to cause the baby's body to respond with an inflammatory response. This can harm the tissues and cause them to die. When this happens, a hole may form in the intestine. This can cause a severe infection in your baby's belly (abdomen).

Which children are at risk for NEC?

Several things may raise your baby's risk for NEC.

Premature birth

Premature babies are less mature than full-term babies. This means they may have trouble with blood and oxygen circulation. Their body is not always ready for digestion and fighting infections. This increases their chance of having NEC.

Formula feeding

Any premature baby is at risk for NEC. But babies who don't get human milk, especially their mother's own milk, are more likely to get NEC. Human milk contains substances that help fight infection and help intestinal cells mature. It's also easier to digest.

Difficult birth or low oxygen levels at birth

Babies who had a difficult birth or low oxygen levels at birth are more likely to get NEC. When there is too little oxygen, the body sends blood and oxygen to the brain and heart first. This reduces the blood flow to the intestinal tract. This can cause less oxygen in blood to reach the colon.

Infections in the intestine

Babies with infections in their intestines are more likely to get NEC.

What are the symptoms of NEC?

Each child may experience symptoms differently. Symptoms often show up in the first few weeks of life. They may include:

- Belly bloating or swelling (abdominal distention)

- Food doesn't move through to the intestines
- Greenish-colored fluid (bile) in the stomach
- Bloody bowel movements

Signs of infection include:

- Breathing that stops and starts (apnea)
- Slow heart rate
- Sluggishness (lethargy)

The symptoms of NEC may be similar to symptoms of other conditions. Make sure your child sees their healthcare provider for a diagnosis.

How is NEC diagnosed?

Your baby's healthcare provider will check them for signs of NEC.

Your child may need an abdominal X-ray, an ultrasound, or both. An X-ray and ultrasound can show if your child's intestine has a bubbly appearance. It can also show signs of air or gas in the large veins of your child's liver. Air may also be on the outside of the intestines in your child's belly. This is a sign of a hole in the intestines.

Your child's healthcare provider (surgeon) may also put a drain into their abdominal cavity. This is to remove fluid in your child's belly that may be infected and causing damage.

How is NEC treated?

Treatment will depend on your child's symptoms, age, and general health. It will also depend on how severe the condition is. NEC may quickly get worse and need surgery. So care of NEC needs a team that includes pediatric surgeons. If your baby is at a hospital that doesn't have pediatric surgeons, they must be transferred right away to one that does. In the U.S., this means a hospital with a level 4 NICU or neonatal intensive care unit.

Initial treatment may include:

- Stopping feedings
- Running a tube from your child's nose to their stomach (nasogastric or NG tube). This is done to keep your child's stomach empty.
- Giving your baby IV (intravenous) fluids and nutrition
- Giving antibiotic medicines for infection
- Taking X-rays to check how the condition is progressing
- Giving extra oxygen or using a breathing machine. This is done if your child's belly is so swollen that it interferes with breathing.
- Isolating your baby. This is done to keep any infection from spreading.

If your baby has severe NEC, they may need:

- Surgery to take out the damaged intestine or bowel
- A procedure that connects part of the intestine or bowel to an opening on the belly (ostomy)
- Draining of the abdominal (peritoneal) cavity

What are possible complications of NEC?

NEC can cause a hole to form in your baby's intestines. This makes bacteria inside the intestinal tract leak into your child's intestinal wall and sometimes out into the abdominal cavity. This causes an infection. This can harm a small or large part of the intestine. It can happen quickly.

An infection in the intestines is hard for a baby to fight. Even with treatment, there may be serious problems. Some of these issues include:

- A hole in the intestine
- Scars or narrow areas (strictures) in the intestine
- Not being able to absorb food and nutrients. This can happen if large amounts of your child's intestine have to be removed.
- Severe infection affecting the entire body (sepsis)
- Death

How can NEC be prevented?

No one knows what causes NEC. This means that it's hard to prevent it. If prematurity could be prevented, that would prevent almost all NEC. Studies do show that premature babies whose mothers were given corticosteroid medicines before delivery are less likely to get NEC. They also show that premature babies who are fed only their own mother's milk are less likely to get this condition. If mom's own milk is not available, donor human milk from a milk bank is safer than formula. Starting to feed a premature baby with a very small amount of milk and slowly increasing the amount may also help.

Key points about NEC

- NEC is a serious illness in very sick, often premature newborns. It happens when tissue in the large intestine (colon) gets inflamed.
- No one knows what causes NEC. High-risk babies, especially premature babies who are fed formula instead of human milk, are more likely to get it.
- Symptoms often show up in the first few weeks of your baby's life (while the baby is in the hospital).
- Your child's healthcare provider may do an abdominal X-ray, an ultrasound, or both to diagnose them.
- Treatment will depend on your child's symptoms, age, and general health. It will also depend on how severe the condition is.

Next steps

Tips to help you get the most from a visit to your child's healthcare provider:

- Know the reason for the visit and what you want to happen.
- Before your visit, write down questions you want answered.
- At the visit, write down the name of a new diagnosis, and any new medicines, treatments, or tests. Also write down any new instructions your provider gives you for your child.
- Know why a new medicine or treatment is prescribed and how it will help your child. Also know what the side effects are.
- Ask if your child's condition can be treated in other ways.
- Know why a test or procedure is recommended and what the results could mean.
- Know what to expect if your child does not take the medicine or have the test or procedure.

- If your child has a follow-up appointment, write down the date, time, and purpose for that visit.
- Know how you can contact your child's provider after office hours. This is important if your child becomes ill and you have questions or need advice.

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