

Necrotizing enterocolitis (NEC)



What is NEC?

NEC is a disease that affects newborns. It is mostly seen in premature babies (preemies).

Most often, NEC happens in the first few weeks of life once a baby starts getting formula. (For many preemies, feedings are first given through a tube that goes to the baby's stomach.) Babies who get breast milk can have NEC, but the risk is lower.

NEC means:

- Necrotizing – damage and death of cells
- Entero – the small intestines
- Colitis – infection and inflammation (swelling) in the large intestines (colon or bowel)

It is the most common and most serious disease of the gastrointestinal (GI) tract in preemies.

What causes NEC?

The exact cause of NEC is not known. It involves problems with:

- Blood getting to the intestines
- Oxygen levels in the blood
- Digestion
- Infection

Some groups of babies are more likely to have NEC. This includes:

- Preemies. They have immature bowels that can react to decreased blood flow. This can cause swelling and tissue death. Preemies are also at higher risk for infection.
 - When feedings start, the added stress of food moving through the bowel can cause damage to the inside wall of the intestine.
 - The damage may affect only a short part of the bowel, or it may affect a much larger part.
 - NEC can even cause a hole to form in the bowel (perforation).
- Babies who had lower oxygen levels at birth from problems with delivery. When there is not enough oxygen:
 - The body sends the blood and oxygen it has to vital organs, such as the brain and heart, instead of the GI tract.
 - The GI tract does not get enough oxygen. This can cause NEC.
- Babies who have too many red blood cells (polycythemia). Too many red blood cells thicken the blood. This can decrease oxygen levels in the bowels.
- Babies who have problems with GI infections, breathing problems, heart disease or jaundice (yellowing of the skin).

In case of an urgent concern or emergency, call 911 or go to the nearest emergency department right away.

Necrotizing enterocolitis, continued

- Babies born with a heart defect known as PDA (patent ductus arteriosus) and who are treated with the medicine indomethacin (Indocin). They are at greater risk for a hole in the bowel.
- Babies with infections

What are the possible symptoms?

Each baby is different. The symptoms of NEC may look like other GI problems. Your baby may have one or more of these:

- Cannot tolerate feedings
- Vomiting (throwing up), which may be green
- Increased residual (the amount of feeding left in the stomach from the last feeding)
- Decreased bowel sounds
- Bloating and tenderness
- Redness around the belly button
- Increase in stools or lack of stools
- Blood in stools

Other signs of NEC may include:

- Breathing problems
- Slow heart rate
- Lethargy
- Changes in body temperature
- Less urine than normal
- If NEC gets very bad, it may cause peritonitis (infection of the membrane lining the abdomen) or shock.

What tests could my child have?

Your baby may have one or more of these:

- An X-ray of the stomach area. Doctors look for gas in the walls of the bowel and large veins of the liver. They also check for air in the space outside of the bowels (the abdominal cavity).
- Blood tests to check for signs of infection
- Abdominocentesis. This is when a surgeon places a tiny needle into the space around the bowel to check for fluid. This helps them decide if there is a hole in the bowels.

Your baby may need X-rays and blood tests 2 to 3 times each day.

What is the treatment?

Not all babies with NEC need surgery. Talk with the doctor about specific care for your baby.

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Necrotizing enterocolitis, continued

Some guidelines may include:

- Stopping feedings. This may happen for 7 to 10 days or longer. It helps the intestines to rest.
- A nasogastric (NG) tube to help remove air and fluid from the stomach. This can also help prevent vomiting (throwing up).
- Intravenous (I.V.) fluids to provide fluids and nutrition.
- Antibiotics to help treat infection.
- Extra oxygen or a ventilator (a machine to help with breathing and provide oxygen) if your baby has breathing problems.

Your baby may need surgery if there is a hole in the bowel or if tissue death (gangrene) happens.

- If NEC is very bad, a surgeon may need to remove part of the bowel. Sometimes, they can put healthy areas back together.
- Your baby may need an ostomy if they are very sick or if stool gets in the space around the intestines.
 - An ostomy is when a part of the bowel is pulled out to the surface of the belly through an opening.
 - Most often, the ostomy is closed when your baby is healthy and keeps gaining weight. It will not be closed for at least 6 weeks after the first surgery.

The doctors will watch to see if NEC is getting better. Your baby may need:

- X-rays of the stomach area
- Blood tests

Does my baby need follow-up care?

The doctor will let you know if your baby needs any follow-up care. Many babies who have NEC recover fully and do not have problems with feeding in the future. NEC can happen more than one time in the same child.

If NEC is very bad, problems may happen that need more treatment. These could include:

- The bowel scars. This can cause a narrowing of the bowel, which leads to blockage.
- Problems with how food absorbs if part of the intestines has been removed.
- Very bad infection.

If any of these problems happen, the doctor will talk with you about specific care for your child.

This teaching sheet contains general information only. Talk with your child's doctor or a member of your child's healthcare team about specific care of your child.

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