

## What is heart failure?

Heart failure happens when the heart does not fill or pump like it should. This may affect your child's growth and development. The heart needs to pump enough blood to the body, so all organs get the blood flow and oxygen they need to work well. This includes your child's brain, liver, lungs, kidneys and other organs.

## What causes it?

Heart failure can happen at any age and for many reasons. The doctor will talk with you about the cause of your child's heart failure. Common causes include:

- Congenital heart defect – this happens when the heart or blood vessels near the heart do not form as they should before birth. This can cause the heart muscle to not work normally.
- Cardiomyopathy – this is a heart muscle problem that a child can be born with or can be caused by other diseases. There are many types of cardiomyopathy.
- Myocarditis – this happens when infections or inflammatory disorders injure the heart muscle.
- Cardiotoxicity – this is a muscle injury caused by certain medicines or treatments, such as chemotherapy (chemo) and radiation.

## What are the possible symptoms?

Your child may have 1 or more of these symptoms. The most common symptoms of heart failure are listed below.

Possible symptoms	Babies and toddlers	Older children and teens
Feeding problems	<ul style="list-style-type: none"><li>• Will not eat</li><li>• Falls asleep while eating or taking a bottle</li><li>• Needs breaks often while feeding</li><li>• Takes longer to feed than normal</li><li>• Has trouble breathing while eating</li><li>• Sweats while feeding</li><li>• Has nausea (upset stomach)</li><li>• Vomits (throws up)</li><li>• Has belly pain</li></ul>	<ul style="list-style-type: none"><li>• Will not eat</li><li>• Does not eat as much as normal</li><li>• Has nausea (upset stomach)</li><li>• Vomits (throws up)</li><li>• Has belly pain</li></ul>

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

# Heart failure, continued

Possible symptoms	Babies and toddlers	Older children and teens
Breathing problems	<ul style="list-style-type: none"> <li>Breathes faster than normal</li> <li>Has signs of trouble breathing, such as:               <ul style="list-style-type: none"> <li>Heavy breathing</li> <li>Grunting noises when your child breathes air out of their nose or mouth</li> <li>Head bobbing</li> <li>Flaring nostrils</li> <li>Retractions, which is when the skin pulls in their neck, between the ribs or below the ribs with each breath</li> <li>Lasting cough that is not from allergies or sickness with fever</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Breathes faster than normal</li> <li>Has signs of trouble breathing, such as:               <ul style="list-style-type: none"> <li>Heavy breathing</li> <li>Grunting noises when your child breathes air out of their nose or mouth</li> <li>Flaring nostrils</li> <li>Retractions, which is when the skin pulls in their neck, between the ribs or below the ribs with each breath</li> <li>Not able to lie flat to sleep</li> <li>Lasting cough that is not from allergies or sickness with fever</li> </ul> </li> </ul>
Skin and weight changes	<ul style="list-style-type: none"> <li>Has pale, blue, gray or blotchy skin</li> <li>Has sweaty skin, most often around your child's hairline</li> <li>Has swelling of the eyelids, face, hands, belly, legs, ankles or feet</li> <li>Does not gain weight</li> </ul>	<ul style="list-style-type: none"> <li>Has pale, blue, gray or blotchy skin</li> <li>Has swelling of the face, hands, belly, legs, ankles or feet</li> <li>Unexplained weight gain</li> <li>Unexplained weight loss</li> </ul>
Energy level changes	<ul style="list-style-type: none"> <li>Sleeps more than normal</li> <li>Does not wake up to play like normal</li> <li>Falls asleep while eating or taking a bottle</li> </ul>	<ul style="list-style-type: none"> <li>Feels so tired that they do not play like they would on a good day</li> <li>Cannot keep up with other kids their age when playing or doing activities</li> <li>Needs breaks often when playing or doing activities</li> </ul>
Unexplained fever	Call for any fever of 100.5°F or higher	Call for any fever of 100.5°F or higher

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# Heart failure, continued

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## What tests could my child have?

Your child's care team will first:

- Ask about your child's medical history.
- Do a physical exam.
- Ask questions about your child's appetite (how well they eat and drink), breathing and energy level.

Your child may have 1 or more of these tests. The most common tests are listed below.

Possible tests	What they do
Blood and urine tests	Checks heart function and inflammation
Chest X-ray	Takes a picture of the heart size and lungs
Electrocardiogram (EKG)	Shows the electrical activity (rhythm) of your child's heart
Echocardiogram (echo)	Takes pictures of the heart using sound waves. It: <ul style="list-style-type: none"><li>• Is an ultrasound of the heart.</li><li>• Shows the heart structure.</li><li>• Measures the strength of the heart muscle.</li></ul>
Cardiac catheterization (cardiac cath)	Is an invasive procedure done in the cardiac cath lab. The doctor will: <ul style="list-style-type: none"><li>• Use X-ray to thread (move) special catheters inside the heart. The catheter is a thin, soft, long tube that is put into a vein in your child's leg or neck area while your child is asleep.</li><li>• See the heart structure and measure the pressure and oxygen levels in the heart.</li></ul>
Exercise test	Looks at the heart and body's response to exercise. <ul style="list-style-type: none"><li>• Your child will pedal a bike or run on a treadmill. They will do this while connected to an EKG and oxygen mask.</li><li>• Sometimes an echo is also done while your child exercises.</li></ul>
Cardiac MRI	Uses a large magnet, radio waves and a computer to take pictures of the heart and heart structures that cannot easily be seen by other tests
ZioPatch	Records the electrical activity of the heart all the time for up to 14 days. It looks for abnormal heart rhythms (arrhythmias). Your child will wear a patch on their chest.

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# Heart failure, continued

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## What is the treatment?

Your child's doctor will talk with you about specific care for your child. Your child's doctor may advise for:

- Rest.
- Medicines to help your child's heart pump better and help their body get rid of the fluid. Give medicines as advised by your child's doctor.
- Surgery if needed to improve how the heart works.

## When should I call the doctor?

Call your child's cardiologist (heart doctor) **right away** if:

- Your child complains of pain in their chest.
- Your child has:
  - Any breathing or feeding problems.
  - Changes in skin color.
  - Swelling of the eyelids, hands or feet.
  - Unexplained fever.
  - Changes in energy level or ability to do activities.
- You have any questions or concerns about how your child looks or feels.

**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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