Learning that your baby has supraventricular tachycardia (SVT) can bring about many questions. This handout may help you understand how the heart works and what happens during an episode of SVT.

Supraventricular Tachycardia in Infants

Your baby has been diagnosed with and is in the hospital for SVT, or supraventricular tachycardia. Learning that your baby has SVT can bring about many questions. This handout may help you understand how the heart works and what happens during an episode of SVT. There are different forms of SVT. It is important to ask your child's doctor or nurse any questions you have about their SVT that may not be answered in this handout.

How does the heart work?

The heart has four chambers that work like a pump. The atria are the two chambers at the top of the heart, which receive blood from the body. The two chambers on the bottom of the heart, called ventricles, pump blood out to the body. It is important for all four chambers of the heart to work in sequence with one another to create an effective pump.

The sinus node (see above diagram) is located at the top of the right atrium. This node is known as the “pacemaker” of the heart and it works to control the normal heart rate. It makes the heart beat slower during times of rest or sleep, and beat faster with exercise, or when you are scared or excited.
Each heartbeat begins with an electrical wave (signal) that passes from the sinus node through the atria. This signal travels through the atria much like the ripples created in water when a pebble is thrown in (see below diagram). This electrical signal makes the atria contract and squeeze, causing them to beat.

Next, the electrical signal moves from the atria into the junction between the atria and ventricles. This junction is known as the atrioventricular node (AV node), and is part of the normal conduction system. For the signal to travel from the atria down to the ventricles, it must move through the AV node. The heart’s conduction system is similar to a cable that runs from the atria to the ventricle, and helps to transmit the signal. The electrical signal will pass through the AV node. The AV node will delay the signal slightly then pass it on to the ventricles, making them beat.

After the ventricles beat there should be no way for the electrical signal to travel backwards up to the atria. This completes the heartbeat cycle and the next heartbeat is started in the sinus node and follows the same path.

**What is Tachycardia?**

Tachycardia is a broad term used to describe fast heart rates and rhythms (“tachy” means fast and “cardia” means heart). There are many different types of tachycardia. Sinus tachycardia is a normal increase in heart rate, in response to activity (running or playing), or fear and excitement.

Abnormal tachycardias can occur in different places in the heart. Some occur only in the atria (atrial flutter, atrial tachycardia) and some occur only in the ventricles (ventricular tachycardia). SVT involves both the atria and the ventricles. This handout will describe the most common type of SVT to occur in infants.
**Supraventricular Tachycardia in Infants**

*SVT using an accessory connection*

In the normal conduction system, the only way for an electrical signal to get from the atria down to the ventricles is through the AV node. When an accessory connection is present, this creates a “shortcut” for the electrical signal, also known as an “accessory pathway.” This shortcut causes the electrical signal to travel through the heart without going through the AV node.

The accessory connection is made up of a tiny fiber of muscle (smaller than a hair), which connects the atria and ventricles in a way that it is not supposed to. The connection can allow the signal to move from top to bottom, as well as from bottom to top without traveling through the AV node. After the conduction travels from the ventricles backward to the atria, the signal can then travel through the AV node back to the ventricles and continue around in a circle until the SVT has stopped.

The diagram above shows an example of an accessory connection on the left side of the heart. These connections can be almost anywhere that the atria meet the ventricles - on the right, left or middle part of the heart.

One specific type of SVT using an accessory connection is called Wolff-Parkinson-White Syndrome (WPW). In WPW the electrical signal arrives at the ventricles too soon. An ECG (electrocardiogram) will show that an extra pathway or shortcut exists from the atria to the ventricles.
Supraventricular Tachycardia in Infants

How can I tell if my baby is having SVT?

Your baby may have short episodes of SVT without you ever knowing. Babies’ hearts will tolerate short episodes of tachycardia without any visible symptoms.

You may see signs of your baby’s heart becoming fatigued if they have a long episode of SVT. This does not mean that your baby’s heart has been damaged. It means that your baby’s heart is getting tired of pumping too fast. You may notice that your baby is:

• Sweaty
• Pale
• Spitting up more than usual
• Unable to nurse or bottle feed
• Increasingly fussy

Try putting your hand on your baby’s chest and count how fast the heart is beating. A baby’s heart normally beats fast (sometimes up to 180 beats per minute) when crying or active. If the heart beat is too fast to count or greater than 200 beats per minute while resting, your baby may be having SVT.

What should I do if I think my baby is having SVT?

Sometimes SVT can be stopped by using “vagal maneuvers.” These maneuvers increase the stimulation to the vagus nerve which has branches that go into the heart. This slows the conduction of electrical signals through the AV node. This makes the heart rate slow down and can make the SVT stop.

If your baby is having an episode of SVT, try one or all of these vagal maneuvers to help slow down their heart rate:

• Blow a puff of air on your baby’s face.
• Bend your baby’s legs and bring their knees to their chest.
• You may try holding them upside down by their ankles while supporting the head and neck, but never shake your baby.
• Putting something cold, like a bag of frozen peas or an ice pack, to your baby’s face. The ice pack should be placed over the bridge of your baby’s nose. Do not cover the infant’s nose and mouth or stop the infant from breathing.

Sometimes these maneuvers will not be able to stop the SVT and your child may need medicine. If the vagal maneuvers do not work to stop the episode of SVT after 20 minutes, you should call your child’s cardiologist (heart doctor) and take your child to the emergency room.
To Learn More

- Heart Center
  206-987-2015

- Electrophysiology Nurse Line
  206-987-3563

- After hours and on weekends (hospital operator)
  206-987-2000

- Pediatric Cardiology of Alaska
  907-339-1945

- Ask your child’s nurse or doctor

- www.seattlechildrens.org

What are the treatments for SVT?

The treatment for SVT includes these two steps:

1. Stop the SVT episode. Most infants need to stay in the hospital to stop the SVT.

2. Prevent the SVT from returning. Medicine may be used to prevent further episodes.

There are many medicines that can control the episodes of SVT. Many infants will stop having episodes of SVT after they have passed the infant stage of growth and development. Your cardiologist will decide how long to keep your baby on medicine.

Cardiac ablation may be an option for treating SVT when your baby is older (usually more that 5 years of age). Cardiac ablation uses catheters, thin plastic tubes that look like spaghetti, to destroy the small pieces of tissue that are causing the heart rhythm problem. The success rate for curing SVT is very high, but some families may not want their child to have a procedure to treat SVT.

In most cases, there is not one right answer for choosing how to treat SVT. You should talk about these options with your child’s cardiologist to help decide what will be best for your family.

Free Interpreter Services

- In the hospital, ask your child’s nurse.

- From outside the hospital, call the toll-free Family Interpreting Line 1-866-583-1527. Tell the interpreter the name or extension you need.

Seattle Children’s offers interpreter services for Deaf, hard of hearing or non-English speaking patients, family members and legal representatives free of charge. Seattle Children’s will make this information available in alternate formats upon request. Call the Family Resource Center at 206-987-2201. This handout has been reviewed by clinical staff at Seattle Children’s. However, your child’s needs are unique. Before you act or rely upon this information, please talk with your child’s healthcare provider. © 2009, 2012, 2013, 2014, 2016 Seattle Children’s, Seattle, Washington. All rights reserved.