

What is obstructive sleep apnea?

Obstructive sleep apnea (OSA) occurs when a person stops breathing during sleep. "Apnea" means there is lack of breathing for a short time, 15 to 20 seconds or longer. Obstructive apnea occurs when the respiratory efforts continue, such as the chest is moving, but no air is exchanged. (Central apnea occurs when all respiratory effort stops due to lack of the normal respiratory drive that is controlled by the brain.)

The risk for OSA in children with DS is 45 percent. This may be related to the flattened or small midface, low muscle tone in the upper airway, or enlarged tonsils and/or adenoids. Symptoms include snoring, restless sleep, partial or total awakenings during sleep, daytime mouth breathing, behavior changes (i.e., hyperactivity), and daytime sleepiness. Some children may have odd sleeping positions, such as sitting up or positioning their necks extended backward.

Why is this important? If one continues to have apneic periods, the oxygenation levels in the blood decrease due to the inability to circulate air and oxygen in and out of the lungs. This may cause further lung and heart disease, such as pulmonary hypertension, because the blood pressure in the lungs increases as the body is trying to get more oxygen. In addition, OSA can have an effect on one's behavior, causing problems with poor attention and hyperactivity due to lack of sleep.

How is OSA diagnosed? OSA can be diagnosed through medical history and physical exam by obtaining a sleep history and evaluating the upper airway. Children may be referred to an ear, nose and throat (ENT) doctor or a pulmonary doctor specializing in sleep disorders.

The way to test for OSA is through a sleep study, also known as a polysomnography. This is performed overnight in the hospital. It requires the cooperation of the child and may be difficult to perform on younger patients. The sleep study will evaluate for brain activity, electrical activity of the heart, oxygen levels in the blood, chest and abdominal wall movement, muscle activity, amount of air flowing through the nose and mouth, and episodes of apneas and hypopneas.

How is OSA treated? Treatment is determined by the child's physician and is based on the cause. If the child has enlarged tonsils and adenoids that may be blocking the airway, the treatment is

surgical removal of the tonsils and/or adenoids. A sleep study may be recommended after a T&A to determine if the OSA has improved. There may be a risk of reoccurrence of sleep apnea. When surgical treatment has failed or is not warranted, a treatment of choice is CPAP—continuous positive airway pressure. The CPAP machine delivers continuous air through a hose and face mask to keep the airways open and prevent the apnea.

About the Down Syndrome Center

The Center helps with the following:

- Arranging appointments at one location with specialists your child sees.
- Arranging your appointments in an efficient manner so you and your child gain the maximum benefit.
- Using a collaborative approach with caregivers in one location.

The Center accepts patients through age 21, including prenatally diagnosed cases. It offers specialty care in the following areas: genetics, genetic counseling, cardiology, newborn medicine, otolaryngology, ophthalmology, therapies (speech and language, physical, occupational), audiology, diet and social work.

For more information, call 314.454.KIDS or 800.678.KIDS or visit www.stlouischildrens.org/content/medservices/DSC/default.htm



CPAP machine