



## Pediatric Obstructive Sleep Apnea

Sleep disordered breathing (SDB) is a common problem for adults leading to hypertension, heart attack, stroke, and early death. Other consequences are bedroom disharmony, excessive daytime sleepiness, weight gain, poor performance at work, failing personal relationships, and increased risk for accidents, including motor vehicle accidents.

Sleep disordered breathing in children, from infancy through puberty, is in some ways a similar condition but has different causes, consequences, and treatments. A child with SDB does not necessarily have this condition as an adult.

### Pediatric obstructive sleep apnea

The premiere symptom of sleep disordered breathing is snoring that is loud, present every night regardless of sleep position, and is ultimately interrupted by complete obstruction of breathing with gasping and snorting noises. Approximately 10 percent of children are reported to snore. Ten percent of these children (one percent of the total pediatric population) have obstructive sleep apnea.

When an individual, young or old, obstructs breathing during sleep, the body perceives this as a choking phenomenon. The heart rate slows, the sympathetic nervous system is stimulated, blood pressure rises, the brain is aroused, and sleep is disrupted. In most cases a child's vascular system can tolerate the changes in blood pressure and heart rate. However, a child's brain does not tolerate the repeated interruptions to sleep, leading to a child that is sleep deprived, cranky, and ill behaved.

### Consequences of untreated pediatric sleep disordered breathing

**Snoring:** A problem if a child shares a room with a sibling and during sleepovers.

**Sleep deprivation:** The child may become moody, inattentive, and disruptive both at home and at school. Classroom and athletic performance may decrease along with overall happiness. The child will lack energy, often preferring to sit in front of the television rather than participate in school and other activities. This may contribute to obesity.

**Abnormal urine production:** SDB also causes increased nighttime urine production, and in children, this may lead to bedwetting.

**Growth:** Growth hormone is secreted at night. Those with SDB may suffer interruptions in hormone secretion, resulting in slow growth or development.

**Attention deficit disorder (ADD) / attention deficit hyperactivity disorder (ADHD):** There are research findings that identify sleep disordered breathing as a contributing factor to attention deficit disorders.

### Diagnosis of sleep disordered breathing

The first diagnosis of sleep disordered breathing in children is made by the parent's observation of snoring. Other observations may include obstructions to breathing, gasping, snorting, and thrashing in bed as well as unexplained bedwetting. Social symptoms are difficult to diagnose but include alteration in mood, misbehavior, and poor school performance. (Note: Every child who has sub par academic and social skills may not have SDB, but if a child is a serious snorer and is experiencing mood, behavior, and performance problems, sleep disordered breathing should be considered.)

A child with suspected SDB should be evaluated by an otolaryngologist / head and neck surgeon. If the symptoms are significant and the tonsils are enlarged, the child is strongly recommended for T&A, or tonsillectomy and adenoidectomy (removal of the tonsils and adenoids). Conversely, if the symptoms are mild, academic performance remains excellent, the tonsils are small, and puberty is eminent (tonsils and adenoids shrink at puberty), it may be recommended that SDB be treated only if matters worsen. The majority of cases fall somewhere in between, and physicians must evaluate each child on a case-by-case basis.

There are other pediatric sleep disorder diagnoses. Sudden infant death syndrome (SIDS) and apparent life threatening episode (ALTE) are considered forms of sleep disordered breathing. Children with these conditions warrant thorough evaluation by a pediatric sleep specialist. Children with craniofacial abnormalities, primarily abnormalities of the jaw bones, tongue, and associated structures, often have sleep disordered breathing. This must be managed and the deformities treated as the child grows.

The sleep test is the standard diagnostic test for sleep disordered breathing. This test can be performed in a sleep laboratory or at home. Sleep tests can produce inaccurate results, especially in children. Borderline or normal sleep test results may still result in a diagnosis of SDB based on parental observation and clinical evaluation.

### Treatment for sleep disordered breathing

Enlarged tonsils are the most common cause for SDB, thus tonsillectomy/adenoidectomy is the most effective treatment for pediatric sleep disordered breathing. T&A achieves a 90 percent success rate for childhood SDB. Of the nearly 400,000 T&As performed in the U.S. each year, 75 percent are performed to treat sleep disordered breathing.

Not every child with snoring should undergo T&A. The procedure does have risks and possible complications. Aside from the mental anguish experienced by the parent and child, potential problems include: anesthesia risks, bleeding, and infection.

