

## My Child Is Snoring. When Do They Need a Sleep Study/Tonsillectomy?

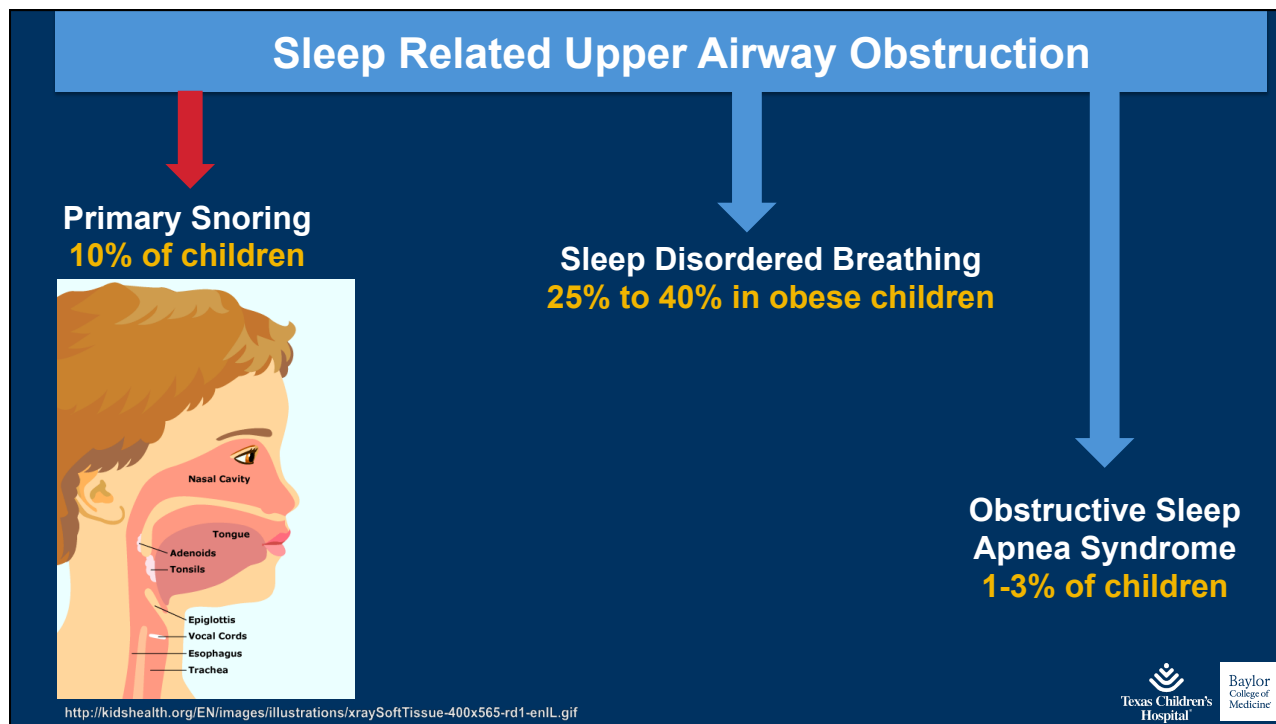
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## Objectives


- 1 Discuss the difference among snoring, sleep disordered breathing and obstructive sleep apnea
- 2 Indications to consider a sleep study prior to surgery
- 3 List type of patients at higher risk for persistent obstructive sleep apnea after tonsillectomy





## Nighttime Symptoms of OSA

### Snoring along with.....obstruction

- Sleep disturbances
  - Restless sleep
  - Frequent awakening
  - Unusual sleeping positions
  - Increased sweating
  - Enuresis (after > 6 months of continence)



## Daytime Symptoms

### Cognitive Delay

- Poor school performance
- Lower scores on standardized tests

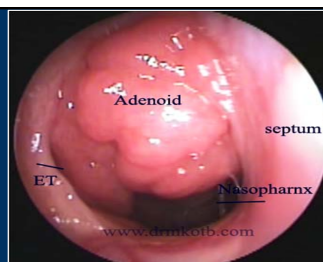


### Behavioral Problems

- Shyness
- Social withdrawal
- Hyperactivity
- Aggressiveness
- Lethargy
- Excessive daydreaming or "phasing out"
- Rebelliousness

## Physical Exam Findings

- Mouthbreathing
- Nasal congestion
- Hyponasal voice
- Failure to thrive
- Daytime sleepiness (older children)



## Is My Child Getting Enough Sleep??

Age	# of Hours of Sleep	# of Naps
1-3 years	12-13	1-2
3-5 years	11-12	1
6-12 years	10-11	0
12-18 years	9-9.5	
Adults	7.5-9	<b>Siesta would be nice!</b>

**<10 hrs prior to 4 y/o = hyperactivity**

Guideline

### Clinical Practice Guideline: Polysomnography for Sleep-Disordered Breathing Prior to Tonsillectomy in Children

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Jacqueline Jones, MD<sup>5</sup>, Tae W. Kim, MD<sup>6</sup>,  
Siobhan Kuhar, MD, PhD, DABSM<sup>7</sup>, Ron B. Mitchell, MD<sup>8</sup>,  
Michael D. Seidman, MD<sup>9</sup>, Stephen H. Sheldon, DO<sup>10</sup>,  
Stephanie Jones<sup>11</sup>, and Peter Robertson, MPA<sup>11</sup>

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## Statement 1. Indications For PSG

Before performing tonsillectomy, the clinician should refer children with SDB for PSG if they exhibit any of the following:

- Obesity (BMI  $\geq$  95%)
- Down syndrome
- Craniofacial abnormalities
- Neuromuscular disorders
- Sickle cell disease
- Mucopolysaccharidoses

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## Statement 2. Advocating for PSG

- The need for surgery is uncertain
- Physical exam findings do not correlate with history of obstruction
- Consideration for child younger than 2 years of age

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CLINICAL PRACTICE GUIDELINE

## Diagnosis and Management of Childhood Obstructive Sleep Apnea Syndrome

*Pediatrics* 2012;130:576

Spruyt, Sally Davidson Ward, Christopher Lehmann and Richard N. Shiffman  
Halbower, Jacqueline Jones, Michael S. Schechter, Stephen Howard Sheldon, Karen  
Carole L. Marcus, Lee Jay Brooks, Karl A. Draper, David Gozal, Ann Carol



### AAP Guidelines

### AAOHNS Guidelines

**Perform PSG in children/adolescents with snoring/OSA symptoms  
If PSG not available referral to specialist**

**PSG for higher risk patients/  
persistent OSA**

Adenotonsillectomy first line treatment for patients with adenotonsillar hypertrophy

SAME

High risk patients should be monitored as inpatients postoperatively

SAME

Reevaluate postoperatively for persistent OSA

SAME

Offer CPAP for persistent OSA or if surgical intervention not performed

SAME

If patient overweight or obese recommend weight loss

SAME



## Tonsillectomy Indications for OSA



### Abnormal PSG in a child:

- Pulse oximetry levels less than 92%
- AHI >1
- AHI >5 may warrant tonsillectomy



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## Changes in Central Apnea Index following Pediatric Adenotonsillectomy

Cristina M. Baldassari, MD<sup>1</sup>, Jessica Kepchar, MD<sup>2</sup>, Lucas Bryant<sup>1</sup>, Hind Beydoun, PhD<sup>3</sup>, and Sukgi Choi, MD<sup>4</sup>

- 101 children with OSA had preop & postop PSG
- 90% of patients with mild CSA on preop PSG had complete resolution postop

Table 1. Polysomnography Indexes before and after Adenotonsillectomy

	Preoperative	Postoperative	P Value
Mean CAI (range)	3.9 (1.1-11.1)	1.9 (0-18.5)	.008 <sup>a</sup>
Mean AHI (range)	22.8 (2-68.5)	5.4 (0-21)	.03 <sup>a</sup>
Mean oxygen saturation nadir	72 (28-93)	86 (63-96)	.03 <sup>a</sup>

Abbreviations: AHI, obstructive apnea hypopnea index; CAI, central apnea index.

<sup>a</sup>P < .05 indicates statistical significance.

## Residual OSA Post T&A

Author	# of participants	AHI $\leq$ 1 postop	AHI $>$ 5 postop	RDI $<$ 5 postop
Trautman et al. 2006	110	25%	29%	-----
O'Brien et al. 2006	69	-----	-----	77%, obese 45%
Mitchell 2007	79	29%	16%	27%
Bhattacharjee et al. 2010	560	27%	21%	-----
Merrell et al. 2007- DS pts	37	43%	-----	-----

## Risk Factors for Persistent OSA after T&A

- Obesity
- Older age at time of surgery (varies per article  $>$ 7 y/o)
- More severe sleep apnea preoperatively
- Asthma in non-obese children
- Craniofacial & mandibular anomalies
- Cerebral palsy
- Genetic disorders – DS





## Treatment of Persistent OSA

- CPAP
- Sleep endoscopy
- CINE MRI
- Weight loss

