Clinical Policy Title: Tonsillectomy and (or) adenoidectomy in children up to 12 years old

Clinical Policy Number: 11.03.04

Effective Date: October 1, 2014
Initial Review Date: April 16, 2014
Most Recent Review Date: May 1, 2018
Next Review Date: May 2019

Related policies:

None.

ABOUT THIS POLICY: Select Health of South Carolina has developed clinical policies to assist with making coverage determinations. Select Health of South Carolina’s clinical policies are based on guidelines from established industry sources, such as the Centers for Medicare & Medicaid Services (CMS), state regulatory agencies, the American Medical Association (AMA), medical specialty professional societies, and peer-reviewed professional literature. These clinical policies, along with other sources, such as plan benefits and state and federal laws and regulatory requirements, including any state- or plan-specific definition of “medically necessary,” and the specific facts of the particular situation are considered by Select Health of South Carolina when making coverage determinations. In the event of conflict between this clinical policy and plan benefits and/or state or federal laws and/or regulatory requirements, the plan benefits and/or state and federal laws and/or regulatory requirements shall control. Select Health of South Carolina’s clinical policies are for informational purposes only and not intended as medical advice or to direct treatment. Physicians and other health care providers are solely responsible for the treatment decisions for their patients. Select Health of South Carolina’s clinical policies are reflective of evidence-based medicine at the time of review. As medical science evolves, Select Health of South Carolina will update its clinical policies as necessary. Select Health of South Carolina’s clinical policies are not guarantees of payment.

Coverage policy

Select Health of South Carolina considers the tonsillectomy and/or adenoidectomy to be clinically proven and, therefore, medically necessary when the following criteria are met:

- A history of recurrent throat infection with a frequency of at least:
  - 7 episodes in the past year; or
  - 5 episodes per year for 2 years; or
  - 3 episodes per year for 3 years;
  AND
  - Documentation in the medical record for each episode of sore throat which includes at least one of the following:
    - Temperature greater than 38.3 °C (100.9 °F); or
    - Cervical adenopathy; or
    - Tonsillar exudates or erythema; or
    - Positive test for Group A β-hemolytic streptococcus.
  OR

Policy contains:

- Adenoidectomy
- Polysomnography.
- Sleep apnea.
- Tonsillectomy.
• A history of recurrent throat infections not meeting criteria above, but individual has additional factors that favor tonsillectomy, including but not limited to:
  o Multiple antibiotic allergy/intolerance; or
  o Periodic fever, aphthous stomatitis, pharyngitis, and adenitis syndrome; or
  o Peritonsillar abscess; or
  o Parapharyngeal abscess.
  OR
• A diagnosis of sleep-disordered breathing with documentation of all of the following:
  o Tonsillar hypertrophy and either of the following:
    ▪ Abnormalities of respiratory pattern or the adequacy of ventilation during sleep, including but not limited to snoring, mouth breathing, and pauses in breathing*; or
    ▪ A condition related to sleep-disordered breathing (including but not limited to growth retardation, poor school performance, enuresis, behavioral problems and/or daytime lethargy) that is likely to improve after tonsillectomy.
  OR
• A diagnosis of sleep-disordered breathing for a child less than three years of age with documentation of all of the following:
  o Tonsillar hypertrophy; and
  o Sleep-disordered breathing is chronic (more than three months in duration); and
  o Child's parent or caregiver reports regular episodes of nocturnal choking, gasping, apnea, or breath holding.
  OR
• A diagnosis of obstructive sleep apnea with documentation of all of the following:
  o Tonsillar hypertrophy; and
  o A polysomnogram with an Apnea-Hypopnea Index greater than 1.0.
  OR
• Suspicion of tonsillar and/or adenoid malignancy (AAFP, 2016; Baugh, 2011).

Limitations:

All other indications for tonsillectomy and/or adenoidectomy are not medically necessary. American Academy of Otolaryngology-Head and Neck Surgery guidelines state the following:

• The above criteria pertain only to complete tonsillectomy, with or without adenoidectomy, and do not apply to tonsillotomy, intracapsular surgery, or any partial removal of a tonsil because of the relatively sparse high-quality published evidence on these techniques and limited long-term follow-up.

• Children with diabetes mellitus, cardiopulmonary disease, craniofacial disorders, congenital anomalies of the head and neck region, sickle cell disease, and other coagulopathies or immunodeficiency disorders. (Baugh, 2011)

Alternative covered services:
Physician visits with watchful waiting, close monitoring, and accurately documenting episodes of pharyngotonsillitis in children with less than seven episodes in the past year, five per year in the past two years, or three per year in the past three years.

**Background**

The palatine tonsils are lymphoepithelial organs located at the junction of the oral cavity and the oropharynx. They are strategically positioned to serve as secondary lymphoid organs, initiating immune responses against antigens entering the body through the mouth or nose. The greatest immunological activity of the tonsils is found between the ages of 3 and 10. As a result, the tonsils are most prominent during this period of childhood and subsequently demonstrate age-dependent involution.

Children with recurrent throat infections have more bodily pain and poorer general health and physical functioning than those who do not. Tonsillectomy may improve quality of life by reducing throat infections, health care provider visits, and the need for antibiotic therapy. Similarly, sleep-disordered breathing is associated with cognitive and behavioral impairment in children that usually improves after tonsillectomy, along with quality of life, sleep-disturbance, and vocal quality.

Until the 1960s, tonsillectomy was the most frequently performed surgical procedure in the United States; in the 12-month period July 1960 – June 1961, a total of 611,000 Americans (501,000 age 6 – 16, underwent a tonsillectomy (NCHS, 1963). Subsequently, the national tonsillectomy rate declined drastically for decades after. The rate has increased since the 1970s, with the percent of patients with upper airway obstruction rising from 12 to 77 percent between 1970 and 2005 (Erickson, 2009). The current annual number of U.S. children under age 15 who undergo tonsillectomy is 530,000 (Baugh, 2011).

While adenotonsillectomy improves polysomnography in children with obstructive sleep apnea, between 13 and 79 percent will have persistent disease. The likelihood of persistent disease is elevated in patients with obesity, more severe obstructive sleep apnea at baseline, craniofacial anomalies, Down syndrome, or mucopolysaccharidoses (Garetz, 2017).

The most-recognized guideline addressing when tonsillectomy is indicated is from the American Academy of Otolaryngology – Head and Neck Surgery, published in 2011. This publication updates a 2000 set of clinical indicators from the Academy; a major difference in the new guideline was the recommendation that children should have at least seven episodes of throat infection each year, or at least five episodes each year for two years, or three episodes annually for three years, before becoming candidates of surgery, a much stricter standard than the earlier version (three cases of swollen and infected tonsils). The guideline, which forms the basis for the coverage section of this policy, also strongly recommends against using antibiotics just before or after tonsillectomy, due to potential allergic reactions (Baugh, 2011). Of 13 pediatric guidelines for certain conditions, the Academy guideline was rated highest, with one exception (Hester, 2014).
All recommendations in the American Academy of Family Physicians 2012 guideline on tonsillectomy were also in the American Academy of Otolaryngology – Head and Neck Surgery guideline (AAFP, 2016).

The American Academy of Otolaryngology – Head and Neck Surgery also issued a practice guideline recommending polysomnography prior to determining need for tonsillectomy if the child has obesity, Down syndrome, and other conditions, and for sleep-disordered children with none of these comorbid conditions. Findings should be communicated to anesthesiologists prior to surgery, and children should be admitted for overnight monitoring after the tonsillectomy if they are under age three or have severe obstructive sleep apnea (Roland, 2011).

The American Academy of Pediatrics issued a guideline in 2012 on diagnosis and management of childhood obstructive sleep apnea syndrome. It recommends adenotonsillectomy as the first-line treatment of patients with adenotonsillar hypertrophy, and that high-risk patients should be monitored as inpatients following surgery (Marcus, 2012).

**Searches**

Select Health of South Carolina searched PubMed and the databases of:
- UK National Health Services Centre for Reviews and Dissemination.
- Agency for Healthcare Research and Quality’s National Guideline Clearinghouse and other evidence-based practice centers.
- The Centers for Medicare & Medicaid Services (CMS).

We conducted searches on March 21, 2018. Search terms were: “tonsillectomy,” “adenoidectomy,” “tonsillitis,” “obstructive sleep apnea,” and “sleep-disordered breathing”.

We included:
- **Systematic reviews**, which pool results from multiple studies to achieve larger sample sizes and greater precision of effect estimation than in smaller primary studies. Systematic reviews use predetermined transparent methods to minimize bias, effectively treating the review as a scientific endeavor, and are thus rated highest in evidence-grading hierarchies.
- **Guidelines based on systematic reviews**.
- **Economic analyses**, such as cost-effectiveness, and benefit or utility studies (but not simple cost studies), reporting both costs and outcomes — sometimes referred to as efficiency studies — which also rank near the top of evidence hierarchies.

**Findings**

One of the earlier meta-analyses on tonsillectomy/adenoidectomy including 23 reports (n=1079) affirmed it to be a valuable first-line treatment for pediatric obstructive sleep apnea/hypopnea syndrome, based on the finding of 59.8 percent cured, i.e., apnea-hypopnea index <1 after surgery, but that the procedure does not cure the apnea (Friedman, 2009). One of the more recent meta-analyses of three reviews observed a
significant (p<.001) improvement in Obstructive Sleep Apnea-18 scores after adenotonsillectomy in pediatric patients, both short- and long-term (Todd, 2017).

A review of 218 studies by the Agency for Healthcare Research and Quality, 141 of which were randomized controlled trials, found in the first postoperative year tonsillectomy reduced the number of throat infections, sleep problems, and work/school absences, but these benefits did not persist over time (Francis, 2017). A systematic review of seven studies (n=2,414) of children with at least three infections in the previous 1 - 3 years found the same temporary-only benefits after comparing children with recurrent throat infections who underwent tonsillectomy versus those assigned to “watchful waiting” (Morad, 2017).

Another systematic review of seven studies (n=1133) documented moderately fewer sore throat episodes in the first year after tonsillectomy surgery, i.e., 3.0 versus 3.6 for controls (Burton, 2014). Reductions of sore throat episodes in German children after tonsillectomy have been modest; authors note the proportion of tonsillotomy versus tonsillectomy is rising (Windfuhr, 2016b). Tonsillectomy’s ability to improve sleep problems is especially great in non-obese children, in a 51-study review of 3,413 children undergoing the procedure (Lee, 2016).

Long-term benefits of tonsillectomy have been demonstrated in a review of 15 studies (n=3059) of patients with IgA nephropathy, who had a significantly greater chance of clinical remission and inhibited development of end stage renal disease (Duan, 2017), which matched results of a 14-study meta-analysis (n=1794) several years earlier (Liu, 2015).

A Cochrane review of three studies (n=453) noted that adenotonsillectomy is associated with improved quality of life, symptoms, and behavior for children age 5 – 9 with mild to moderate obstructive sleep apnea. Seven months after surgery, scores for the surgical group were lower (better) than the watchful waiting group, at 31.8 to 49.5, and had a higher percent (79 versus 46) of normalization of respiratory events during sleep. However, almost half of the children assigned to be watched rather than undergo surgery returned to normal within seven months, suggesting that watchful waiting be carefully considered as an option to surgery in certain cases (Venekamp, 2015).

A meta-analysis of three studies comparing quality of life changes for those with versus without tonsillectomy (less than 12 months after surgery) found significant improvements for the surgery group in apnea-hypopnea index, sleep quality, and behavioral outcomes; insufficient strength of evidence was found for cognitive changes, executive function, cardio-metabolic outcomes, and health care utilization (Chinnandurai, 2017).

Another systematic review of 14 reviews (n=418) suggested that cardiovascular morbidities involving blood pressure, heart rate, cardiac morphology, and cardiac function, especially common in children with obstructive sleep apnea, are reduced in the short term after adenotonsillectomy (Teo, 2013).

A systematic review of 57 studies found that tonsillectomy is not indicated to treat otitis media with effusion or periodic fever, aphthous stomatitis, pharyngitis, and cervical adenitis syndrome. It is effective in resolving sleep-related breathing disorders, but the benefit is offset by comorbidities such as obesity,
requiring further research (Windfuhr, 2016a).

A systematic review of 18 articles determined that adenotonsillectomy consistently decreased severity of asthma, as expressed by use of respiratory medicine, asthma-related emergency room visits, overall asthma symptoms, and asthma-related exacerbations (Kohli, 2016).

Tonsillotomy, also known as intracapsular tonsillectomy, is a modern technique to remove tonsil tissue in the treatment of obstructive sleep apnea that produces less bleeding and dehydration and requires less analgesic use than tonsillectomy (Acevedo, 2012). A review of 20 studies (four on tonsillotomy, 16 on tonsillectomy) found both improved sleep apnea symptoms with no significant differences, suggesting potential wider use of tonsillotomy may be merited (Gorman, 2017). Another systematic review of 10 studies (n=1029) that compared the two procedures for children with sleep-disordered breathing documented a significantly greater reduction in breathing problems for those undergoing tonsillotomy in the short term, but a significantly greater reduction for tonsillectomy in the long term, i.e., 31 months after surgery (Wang, 2015).

Ten trials (n=1035) of post-tonsillectomy patients given antibiotics revealed a significant reduction in subjects with fever, but insignificant reductions in significant and secondary hemorrhage rates (p=.45 and p=.66) and pain, leading authors to advocate against routine prescription of antibiotics to tonsillectomy patients after surgery (Dhiwakar, 2010).

A comparison between January 2009 and January 2013 at 29 U.S. children’s hospitals evaluated any changes in utilization and outcomes before and after implementation of the American Academy of Otolaryngology – Head and Neck Surgery guideline. The number of children undergoing the procedure rose from 54,043 to 57,770. Antibiotic use decreased from 34.7 to 21.8 percent from 2009-2010 to 2011-2013, before and after the American Academy of Otolaryngology – Head and Neck Surgery guidelines took place. Revisits for bleeding remained unchanged; however, total revisits to the hospital increased from 8.2 to 9.0 percent due to revisits for pain (Mahant, 2015).

A review of 24 articles on disparities for prevalence and treatment of child sleep-disordered breathing found (racial, ethnic, and socioeconomic) minorities had higher prevalence for the disorder, but white children or children with private insurance were more likely to undergo adenotonsillectomy (Boss, 2011).

Because some pediatric patients continue to experience obstructive sleep apnea after adeontonsillectomy, new methods are being developed to reduce these cases. A meta-analysis of four studies (n=73) of lingual tonsillectomies after adenotonsillectomy documented a success rate of 17 percent (postoperative apnea-hypopnea index <1), while 51 percent had an index <5. Authors judged the technique to be effective in reducing sleep apnea (Kang, 2017), a result matched by another meta-analysis (Rivero, 2017). An earlier review found that lingual tonsillectomy patients had a significantly lower apnea-hypopnea index than did supraglottoplasty patients; studies were of children who were overweight, a known risk factor for the persistence of sleep apnea after tonsillectomy (Chan, 2012).

Intracapsular tonsillectomy, which removes tonsil tissue but not the capsule, is another relatively new type
of the procedure. A meta-analysis of 15 randomized controlled trials found significantly better outcomes for the intracapsular procedure, compared to extracapsular tonsillectomy, for postoperative bleeding ($p=.01$), residual tonsils ($p=.002$), postoperative pain ($p=.0022$), need for analgesics ($p<.0001$), days to normal diet ($p=.006$) and days to normal activity ($p<.0001$) (Kim, 2017).

Policy updates:

A total of one guideline/other and eight peer-reviewed references were added to, and one guideline/other removed from, this policy in March 2018.

Summary of clinical evidence:

<table>
<thead>
<tr>
<th>Citation</th>
<th>Content, Methods, Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kim (2017)</strong></td>
<td><strong>Key points:</strong></td>
</tr>
</tbody>
</table>
| Outcomes, tonsillotomy vs. tonsillectomy | - Meta-analysis of 15 randomized controlled trials.  
- Comparison of outcomes after tonsillectomy vs. tonsillotomy (intracapsular tonsillectomy).  
- Significantly better outcomes observed for tonsillotomy, for postoperative bleeding ($p=.01$), residual tonsils ($p=.002$), postoperative pain ($p=.0022$), need for analgesics ($p<.0001$), days to normal diet ($p=.006$) and days to normal activity ($p<.0001$). |

| **Francis (2017)** | **Key points:**                   |
| Tonsillectomy for obstructive sleep disordered breathing or recurrent throat infection in children | - Systematic review of 218 studies (141 of which are randomized controlled trials).  
- Most children with obstructive sleep-disordered breathing undergoing tonsillectomy (vs. no surgery) reported better sleep-related outcomes.  
- Tonsillectomy in children with recurrent throat infections reduced the number of infections and work/school absences in the first year after surgery, but the reduction did not continue after the first year.  
- Bleeding associated with perioperative dexamethasone vs. placebo did not indicate increased risk of bleeding with steroids.  
- Post-tonsillectomy hemorrhage was <4%, bleeding associated revisits or reoperations was <8%. |

| **Gorman (2017)** | **Key points:**                   |
| Tonsillectomy vs. tonsillotomy in children with obstructive sleep apnea | - Meta-analysis of 20 studies, 16 on tonsillectomy and four on tonsillotomy.  
- Improvement in obstructive sleep apnea was not significantly different between the two methods.  
- Wider use of tonsillotomy vs. tonsillectomy should be considered. |

| **Kohli (2016)** | **Key points:**                   |
| Effects of adenotonsillectomy on childhood asthma | - Systematic review of four articles on asthma outcomes after adenotonsillectomy for children.  
- Markers of asthma severity included respiratory medication use, emergency room visits for asthma-related symptoms, overall asthma symptoms, and asthma-related exacerbations.  
- All of the above markers were reduced following adenotonsillectomy. |
More prospective trials are needed to better understand causal relationship between the procedure and asthma.

Key points:
- Cochrane review of three studies (n=562 children), results could not be pooled.
- Trials compared adenotonsillectomy vs. no surgery or continuous positive airway pressure (CPAP).
- Quality of life improved significantly for surgical vs. watchful waiting groups.
- No significant difference in improvements for surgical vs. CPAP groups.

References

Professional society guidelines/other:


Peer-reviewed references:


Windfuhr JP. Indications for tonsillectomy stratified by the level of evidence. *GMS Curr Top*

**CMS National Coverage Determinations (NCDs):**

No NCDs identified as of the writing of this policy.

**Local Coverage Determinations (LCDs):**

No LCDs identified as of the writing of this policy.

**Commonly submitted codes**

Below are the most commonly submitted codes for the service(s)/item(s) subject to this policy. This is not an exhaustive list of codes. Providers are expected to consult the appropriate coding manuals and bill accordingly.

<table>
<thead>
<tr>
<th>CPT Code</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>42820</td>
<td>Tonsillectomy and adenoidectomy; younger than age 12.</td>
<td></td>
</tr>
<tr>
<td>42821</td>
<td>Tonsillectomy and adenoidectomy; age 12 or over.</td>
<td></td>
</tr>
<tr>
<td>42825</td>
<td>Tonsillectomy, primary or secondary; younger than age 12.</td>
<td></td>
</tr>
<tr>
<td>42826</td>
<td>Tonsillectomy, primary or secondary; age 12 or over.</td>
<td></td>
</tr>
<tr>
<td>42830</td>
<td>Adenoidectomy, primary; younger than age 12.</td>
<td></td>
</tr>
<tr>
<td>42835</td>
<td>Adenoidectomy, secondary; younger than age 12.</td>
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</tr>
<tr>
<td>42870</td>
<td>Excision or destruction lingual tonsil, any method (separate procedure).</td>
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<table>
<thead>
<tr>
<th>ICD-10 Code</th>
<th>Description</th>
<th>Comments</th>
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<tbody>
<tr>
<td>G47.33</td>
<td>Obstructive sleep apnea (adult) (pediatric).</td>
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<tr>
<td>J03.90</td>
<td>Acute tonsillitis, unspecified.</td>
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<tr>
<td>J03.91</td>
<td>Acute recurrent tonsillitis, unspecified.</td>
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<tr>
<td>J35.01</td>
<td>Chronic tonsillitis.</td>
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</tr>
<tr>
<td>J35.02</td>
<td>Chronic adenoiditis.</td>
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<tr>
<td>J35.1</td>
<td>Hypertrophy of tonsils.</td>
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<tr>
<td>J35.2</td>
<td>Hypertrophy of adenoids.</td>
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<td>J35.3</td>
<td>Hypertrophy of tonsils with hypertrophy of adenoids.</td>
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<tr>
<td>J35.8</td>
<td>Other chronic disease of tonsils and adenoids.</td>
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<tr>
<td>J35.9</td>
<td>Chronic disease of tonsils and adenoids, unspecified.</td>
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<tr>
<td>J36</td>
<td>Peritonsillar abscess</td>
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<tr>
<td>HCPCS Level II Code</td>
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</tr>
<tr>
<td>N/A</td>
<td>No applicable codes</td>
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Note: The American Academy of Otolaryngology–Head and Neck Surgery has published a multidisciplinary, evidence-based clinical practice guideline, "Tonsillectomy in Children." The new guideline provides evidence-based recommendations on the preoperative, intraoperative, and postoperative care and management of children ages 1 to 18 years under consideration for tonsillectomy and is intended for all clinicians in any setting who care for these patients. This guideline also addresses practice variation in medicine and the significant public health implications of tonsillectomy (Hayes, Jan. 5, 2011).