**Tonsillectomy** is a surgical procedure that completely removes the tonsil, including its capsule, by dissecting the peritonsillar space between the tonsil capsule and the muscular wall. (1) Adenoidectomy or removal of the adenoids is often performed at the same time as tonsillectomy. Indications for tonsillectomy include recurrent tonsilitis and obstructive sleep apnea (OSA).

**Epidemiology:** Tonsillectomy (with or without adenoidectomy) is one of the most common surgical procedures performed in children. (1) At TCH, over 2,500 tonsillectomies are performed each year.

### Evidence Supports
- Consider dexmedetomidine or midazolam for children with documented severe OSA if premedication is needed. Use midazolam with caution in children with documented severe OSA, children with undocumented but suspected OSA, or other children at increased risk for OSA (i.e., those requiring admission). If dexmedetomidine is administered preoperatively, do not administer intraoperatively. (2-3) – Weak recommendation, low quality evidence
- **Administer 0.5 mg/kg dexamethasone (max: 16 mg) intraoperatively to reduce pain and postoperative nausea and vomiting. Lower doses (to 0.15 mg/kg) may be equally effective if concerned for hypertension or hyperglycemia.** (1,2,20-22,26-46) – Strong recommendation, moderate quality evidence
- **Administer dexamethasone intraoperatively to reduce opioid requirements.** (1,2,20-22,26-46) – Strong recommendation, moderate quality evidence
- **Administer dexamethasone intraoperatively to reduce minor airway complications in high risk patients with documented severe OSA.** (24,29,45,47-49) – Strong recommendation, moderate quality evidence
- **Utilize a reduced dose of opioids or eliminate the use of opioids altogether in children with documented severe OSA, children with undocumented but suspected OSA, or other children at increased risk for OSA (i.e., those requiring admission), as these children may have a heightened sensitivity to opioids.** (24,45,47,48,50) – Strong recommendation, low quality evidence
- **Administer 0.1 mg/kg ondansetron intraoperatively to reduce postoperative nausea and vomiting.** Ondansetron may be given postoperatively as a rescue medication if the previous dose was given ≥6 hours prior; otherwise, metoclopramide should be given. (6,10,20,23,25,51,52) – Strong recommendation, high quality evidence
- **Consider administering 1 teaspoon of honey 3-4 times per day as an adjunct therapy for children ≥1 year.** (67) – Weak recommendation, low quality evidence
- **Consider scheduled dosing of ibuprofen for 48-72 hours to ensure consistent administration of analgesia.** Acetaminophen may be given PRN for breakthrough pain (up to 5 doses/day). (1,3,20-22,31-33,41,53-65) – Weak recommendation, low quality evidence
- **Admit patients with the following: age <3 years OR >3 years with comorbid conditions (e.g., craniofacial anomaly. Down syndrome, neuromuscular disease, chronic lung disease, sickle cell disease, metabolic disease, obesity), BMI >95th percentile, or severe obstructive sleep apnea (AHI ≥10 obstructive events/hour, O₂ saturation nadir <80%, or both).** (1,2,21,22,47,49,65,66-91) – Strong recommendation, very low quality evidence

### Critical Points of Evidence*

*Evidence-Based Guideline

**Inclusion Criteria**
- Children 0-18 years

**Exclusion Criteria**
- Sickle cell disease or known bleeding disorder

**Definition:** Tonsillectomy is a surgical procedure that completely removes the tonsil, including its capsule, by dissecting the peritonsillar space between the tonsil capsule and the muscular wall. (1) Adenoidectomy or removal of the adenoids is often performed at the same time as tonsillectomy. Indications for tonsillectomy include recurrent tonsilitis and obstructive sleep apnea (OSA).

**Inclusion Criteria**
- Children 0-18 years

**Exclusion Criteria**
- Sickle cell disease or known bleeding disorder

Remarks: This recommendation was adapted from the American Academy of Otolaryngology: Clinical Practice Guideline: Tonsillectomy in Children (2019 Update).
Consider a phone call on postoperative day 1. (21,22,92-93) – Weak recommendation, low quality evidence
Remarks: If resources permit, a phone call on postoperative day 1 will likely improve patient experience.
Consider administering steroids to patients with uncontrolled pain after 24 hours. (22,94-97) – Weak recommendation, moderate quality evidence
Remarks: Although the evidence is conflicting, administering steroids postoperatively is not contraindicated and may provide some benefit for patients with uncontrolled pain after 24 hours.

**Evidence Against**
- Do not routinely administer ketamine intraoperatively. (1,3,20-22,26-46) – Strong recommendation, moderate quality evidence
- Do not administer or prescribe perioperative antibiotics. (1,98-105) – Strong recommendation, moderate quality evidence
Remarks: This recommendation was adopted from the American Academy of Otolaryngology: Clinical Practice Guideline: Tonsillectomy in Children (2019 Update).
The potential benefit of administering prophylactic antibiotics (i.e., a possible reduction in postoperative fever) is outweighed by the risks of increasing bacterial resistance, allergic reactions and other side effects, cost, and patient burden of swallowing another medication.
Exceptions to this recommendation include patients with cardiac conditions requiring perioperative antibiotics for prophylaxis and patients undergoing tonsillectomy with concurrent peritonsillar abscess.
- Do not routinely administer opioids postoperatively for pain. Tramadol and acetaminophen/codeine are contraindicated in all children following tonsillectomy and/or adenoidectomy. (1,3,20-22,33,36,41,53-65) – Strong recommendation, low quality evidence
- Do not administer opioids postoperatively to children with documented severe OSA. (22,47,49,50,66) – Strong recommendation, low quality evidence
- Do not routinely admit patients to the PICU. (24,49,65,71,88,106) – Strong recommendation, very low quality evidence
- Do not routinely administer steroids postoperatively for pain. (22,94-97) – Strong recommendation, moderate quality evidence

**Evidence Lacking/Inconclusive**
- Do not routinely administer ketorolac, the only NSAID available for intraoperative administration at TCH, due to an associated increase in risk of bleeding. – Consensus recommendation
- Unable to make a recommendation regarding the use of local anesthetics due to conflicting evidence. (2,20-22,26-46)
- Discharge patients at increased risk from OSA from the recovery area to an unmonitored setting (i.e., home or unmonitored hospital bed) only after they are no longer at risk of postoperative respiratory depression. (49) – Consensus recommendation
- Consider a higher level of care for patients with the following: Need for noninvasive ventilation or nasopharyngeal airway, higher oxygen requirement, known difficult/critical airway, tracheostomy, baseline home ventilator or BiPAP/CPAP dependence. (66) – Consensus recommendation
- Use continuous pulse oximetry monitoring after discharge from the recovery room for hospitalized patients who are at increased risk of respiratory compromise from OSA. (49,91) – Consensus recommendation
- Educate practitioners caring for patients postoperatively on the management/expectations of postoperative pain and respiratory complications. (106) – Consensus recommendation

*NOTE: The references cited represent the entire body of evidence reviewed to make each recommendation.*

### Condition-Specific Elements of Clinical Management

#### Admission Criteria
- Age <3 years
- Comorbid conditions (e.g., craniofacial anomaly, Down syndrome, neuromuscular disease, chronic lung disease, sickle cell disease, metabolic disease, obesity)
- BMI ≥95th percentile
- Severe obstructive sleep apnea (AHI ≥10 obstructive events/hour, O2 saturation nadir <80%, or both)

#### Measures

##### Process
- Proportion of patients receiving antibiotics

##### Outcome
- EC visit within 30 days postoperatively for condition related to tonsillectomy/adenoidectomy
- Proportion of patients experiencing postoperative respiratory compromise (O2 required on the floor, RRT or escalation of care required, reintubation)
- Proportion of patients experiencing postoperative hemorrhage
- Proportion of patients requiring return to OR for postoperative hemorrhage
- Admission rate
- Length of PACU stay
- Proportion of postoperative phone calls from patients
**TCH Evidence-Based Outcomes Center**

**Clinical Algorithm for Tonsillectomy & Adenoidectomy: Perioperative Medical Management**

**Admission Criteria**
- Age <3 years
- Comorbid conditions (e.g., craniofacial anomaly, Down syndrome, neuromuscular disease, chronic lung disease, sickle cell disease, metabolic disease, obesity)
- BMI >95th percentile
- Severe obstructive sleep apnea (AHI ≥10 obstructive events/hour, O₂ saturation nadir <80%, or both)

Consider a higher level of care for patients with the following: a need for noninvasive ventilation or nasopharyngeal airway, higher oxygen requirement, known difficult/critical airway, tracheostomy, baseline home ventilator or BiPAP/CPAP dependence.

**Premedication required**
- Yes: Administer dexmedetomidine or midazolam.
- No

**Begin**

- Perform tonsillectomy and adenoidectomy.
- Administer 0.15-0.5 mg/kg dexamethasone (max: 16 mg) intraoperatively.
- Administer dexmedetomidine intraoperatively, if not given preoperatively.
- Consider intraoperative administration of acetaminophen.
- Administer 0.1 mg/kg ondansetron intraoperatively.

**Documented severe OSA, undocumented but suspected OSA, or increased risk for OSA (i.e., requiring admission)**
- Yes: Monitor patients with OSA or high-risk patients until they are no longer at risk of postoperative respiratory depression.
- Utilize continuous pulse oximetry monitoring after discharge from the recovery room for hospitalized patients who are at increased risk of respiratory compromise from OSA.
- Postoperatively, consider scheduled dosing of ibuprofen for 48-72 hours. Acetaminophen may be given PRN for breakthrough pain (up to 5 doses per day).
- Consider administering 1 teaspoon of honey 3-4 times per day as an adjunct for children ≥1 year.

**Breakthrough pain**
- Yes: Consider administering steroids to patients with uncontrolled pain after 24 hours.
- Consider a rescue dose of hydrocodone or oxycodone for non-OSA patients ≥14 years.
- No

Patient to follow up as needed.

**No**

- Consider administering steroids to patients with uncontrolled pain after 24 hours.
- Postoperatively, consider scheduled dosing of ibuprofen for 48-72 hours. Acetaminophen may be given PRN for breakthrough pain (up to 5 doses/day).

**Patient to follow up as needed.**

**No**

- Postoperatively, consider scheduled dosing of ibuprofen for 48-72 hours. Acetaminophen may be given PRN for breakthrough pain (up to 5 doses per day).
- Consider administering 1 teaspoon of honey 3-4 times per day as an adjunct for children ≥1 year.

**Breakthrough pain**
- Yes: Consider administering steroids to patients with uncontrolled pain after 24 hours.
- No

Patient to follow up as needed.
References


14. Kim, M. S., Cote, C. J., Cristoloveanu, C., Roth, A. G., Vornov, P., Jennings, M. A., et al. (2007). There is no dose-escalation response to dexamethasone (0.0625-1.0 mg/kg) in pediatric tonsillectomy or adenotonsillectomy patients for preventing vomiting, reducing pain, shortening time to first liquid intake, or the incidence of voice change. Anesthesia & Analgesia, 104(5), 1052-1058.


65. Children’s Hospital of Philadelphia. (2016). Tonsillectomy and/or adenotonsillectomy pathway to triage patients with or without preoperative polysomnography.


Clinical Standards Preparation
This clinical standard was prepared by the Evidence-Based Outcomes Center (EBOC) team in collaboration with content experts at Texas Children’s Hospital. Development of this clinical standard supports the TCH Quality and Patient Safety Program initiative to promote clinical standards and outcomes that build a culture of quality and safety within the organization.

Tonsillectomy & Adenoidectomy Content Expert Team
Rahul Bajjal, MD, Anesthesiology
Joshua Bedwell, MD, Otolaryngology
Chadwicke Chuyou, RN
Alexandria Donahue, RN
Carla Giannoni, MD, Otolaryngology
Charles Hughes, MD, Otolaryngology
John Jones, MD, Otolaryngology
Manish Kumar
Brady Moffett, PharmD, Pharmacy
Matthew Sitton, MD, Otolaryngology
Imelda Tija, MD, Anesthesiology

EBOC Team
Jennifer Loveless, MPH, Research Specialist
Ellis Arjmand, MD, PhD, MMM, Associate Medical Director
Charles Macias, MD, MPH, Medical Director

Additional EBOC Support
Tom Burke, Research Assistant
Sherin Titus, Research Assistant
Karen Gibbs, MSN/MPH, RN, Research Specialist
Andrea Jackson, MBA, RN, Research Specialist
Betsy Lewis, MSN, RN, Research Specialist
Sheesha Porter, MS, RN, Research Specialist
Christina Davidson, MD, Associate Medical Director
Anne Dykes, MSN, RN, Assistant Director
Kathy Carberry, MPH, RN, Director

No relevant financial or intellectual conflicts to report.

Development Process
This clinical standard was developed using the process outlined in the EBOC Manual. The literature appraisal documents the following steps:

1. Review Preparation
   - PICO questions established
   - Evidence search confirmed with content experts

2. Review of Existing External Guidelines

3. Literature Review of Relevant Evidence
   - Searched: PubMed, Cochrane Library

4. Critically Analyze the Evidence
   - 21 meta-analyses, 39 randomized controlled trials, and 31 nonrandomized studies

5. Summarize the Evidence
   - Materials used in the development of the clinical standard, literature appraisal, and any order sets are maintained in a Tonsillectomy & Adenoidectomy evidence-based review manual within EBOC.

Evaluating the Quality of the Evidence
Published clinical guidelines were evaluated for this review using the AGREE II criteria. The summary of these guidelines are included in the literature appraisal. AGREE II criteria evaluate Guideline Scope and Purpose, Stakeholder Involvement, Rigor of Development, Clarity and Presentation, Applicability, and Editorial Independence using a 4-point Likert scale. The higher the score, the more comprehensive the guideline.

This clinical standard specifically summarizes the evidence in support of or against specific interventions and identifies where evidence is lacking/inconclusive. The following categories describe how research findings provide support for treatment interventions.

- **Evidence Supports** provides evidence to support an intervention
- **Evidence Against** provides evidence against an intervention.
- **Evidence Lacking/Inconclusive** indicates there is insufficient evidence to support or refute an intervention and no conclusion can be drawn from the evidence.

The GRADE criteria were utilized to evaluate the body of evidence used to make practice recommendations. The table below defines how the quality of the evidence is rated and how a strong versus weak recommendation is established. The literature appraisal reflects the critical points of evidence.

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Quality</th>
<th>Type of Evidence</th>
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<tr>
<td>STRONG</td>
<td>Desirable effects clearly outweigh undesirable effects or vice versa</td>
<td></td>
</tr>
<tr>
<td>WEAK</td>
<td>Desirable effects closely balanced with undesirable effects</td>
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</table>

**Quality**

- High  Consistent evidence from well-performed RCTs or exceptionally strong evidence from unbiased observational studies
- Moderate Evidence from RCTs with important limitations (e.g., inconsistent results, methodological flaws, indirect evidence, or imprecise results) or unusually strong evidence from unbiased observational studies
- Low   Evidence for at least 1 critical outcome from observational studies, RCTs with serious flaws or indirect evidence
- Very Low Evidence for at least 1 critical outcome from unsystematic clinical observations or very indirect evidence

**Recommendations**

Practice recommendations were directed by the existing evidence and consensus amongst the content experts. Patient and family preferences were included when possible. The Content Expert Team and EBOC team remain aware of the controversies in the perioperative medical management of tonsillectomy and adenoidectomy in children. When evidence is lacking, options in care are provided in the clinical standard and the accompanying order sets (if applicable).
Approval Process
Clinical standards are reviewed and approved by hospital committees as deemed appropriate for its intended use. Clinical standards are reviewed as necessary within EBOC at Texas Children's Hospital. Content Expert Teams are involved with every review and update.

Disclaimer
Practice recommendations are based upon the evidence available at the time the clinical standard was developed. Clinical standards (guidelines, summaries, or pathways) do not set out the standard of care and are not intended to be used to dictate a course of care. Each physician/practitioner must use his or her independent judgment in the management of any specific patient and is responsible, in consultation with the patient and/or the patient's family, to make the ultimate judgment regarding care.

Version History

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<th>Date</th>
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<tr>
<td>Jul 2019</td>
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