



Paediatric Quality-Based Procedures: Tonsillectomy with and without Adenoidectomy

Dr. Everton Gooden

Otolaryngology/Head and Neck Surgery, North York General Hospital
Co-chair of the Tonsillectomy QBP Expert Panel

Anna Shynlova-Bucciarelli

Senior Project Manager

Provincial Council for Maternal and Child Health

Webinar Objectives

- 1) What are Quality-Based Procedures (QBP)?
- 2) QBP Tonsillectomy Overview
- 3) Clinical Pathway and Recommendations
 - Pre-Operative
 - Intra-Operative
 - Post-Operative
- 4) Evaluation Metrics



What are Quality-Based Procedures?

Quality Based Procedures (QBP)s are part of Ontario's Health System Funding Reform.

Goals:

1. Align incentives to facilitate adoption of best clinical evidence-informed practices
2. Appropriately reduce variation in costs and practice across the province while improving outcomes
3. Ensure we are advancing right care, at the right place, at the right time



What are Quality-Based Procedures?

Clinical Handbooks

- Clinical handbooks serve as a compendium of the evidence-based rationale and clinical consensus guiding QBP implementation
- Handbooks are intended for a broad clinical and administrative audience
- MoHLTC Website



Why Tonsillectomy?

A close-up photograph of a female doctor with blonde hair and glasses, wearing a white lab coat, examining a young child's throat. The doctor is holding a wooden tongue depressor in the child's mouth. The child has blonde hair and is looking up at the doctor. The background is a blurred window with light coming through.

> 14,000 paediatric tonsillectomies performed annually in Ontario

QBP Tonsillectomy Overview

Key Objectives

- Provide clinicians with evidence-based recommendations
- Reduce variations in care
- Reduce post-surgery ED visit rates and/or readmission
- Promote appropriate and timely patient/family education
- Ensure appropriate follow-up care



QBP Tonsillectomy Overview

Clinical Expert Advisory Group

Name	Job title	Organization	LHIN
Murad Husein	Paediatric Otolaryngologist, Co-chair	London Health Sciences Centre	2
Brian Hughes	Otolaryngologist	Stratford	2
Dominic Langley	Manager, Decision Support	London Health Sciences Centre	2
Marina Bayer	RN; Education Practice Lead - Paediatrics	Grand River Hospital	3
Michael Parrish	Paediatric Anesthesiologist	McMaster Childrens' Hospital	4
Laurene Boynton	Clinical Nurse Educator, Paediatrics	William Osler Health System	5
Sandra Vojvodich	Otolaryngologist	Trillium Health Partners	6
Evan Propst	Paediatric Otolaryngologist	The Hospital for Sick Children	7
Rick Fox	Otolaryngologist	St. Josephs Health Centre	7
Sanjay Mahant	Paediatrician	The Hospital for Sick Children	7
Marina Strzelecki	Clinical Pharmacist	The Hospital for Sick Children	7
Everton Gooden	Otolaryngologist, Co-chair	North York General Hospital	8
Akhter Hamid	Paediatrician	Rouge Valley Health System	9
Melinda Fleming	Anesthesiologist	KGH/ Hotel Dieu Hospital	10
Johnna MacCormick	Paediatric Otolaryngologist	CHEO	11
Natalie Dayneka	Clinical Pharmacist	CHEO	11
Kenny Ngo	Otolaryngologist	Orillia Soldiers' Memorial Hospital	12
Kierston Miron	RN; Clinical Educator	Sault Area Hospital	13

QBP Tonsillectomy Overview

Cohort Definition

Inclusion criteria

Sex	<ul style="list-style-type: none">• Male• Female
Age	<ul style="list-style-type: none">• 0 – 18 years
Elective Surgery	<ul style="list-style-type: none">• Inpatient• Same Day Surgery
Intervention	<ul style="list-style-type: none">• <u>Performed without</u> adenoidectomy• <u>Performed with</u> adenoidectomy• Adenoidectomy
Discharge	<ul style="list-style-type: none">• Discharge to home/home setting• Discharge disposition is missing

Exclusion Criteria

Cranio-facial Abnormalities
Chronic Complex Conditions
Previous peritonsillar abscess

“Tonsillectomy is surgical procedure performed with or without adenoidectomy that completely removes the tonsil including its capsule by dissecting the peritonsillar space between the tonsil capsule and the muscular wall.”

*American Academy of Otolaryngology
Head and Neck Surgery*



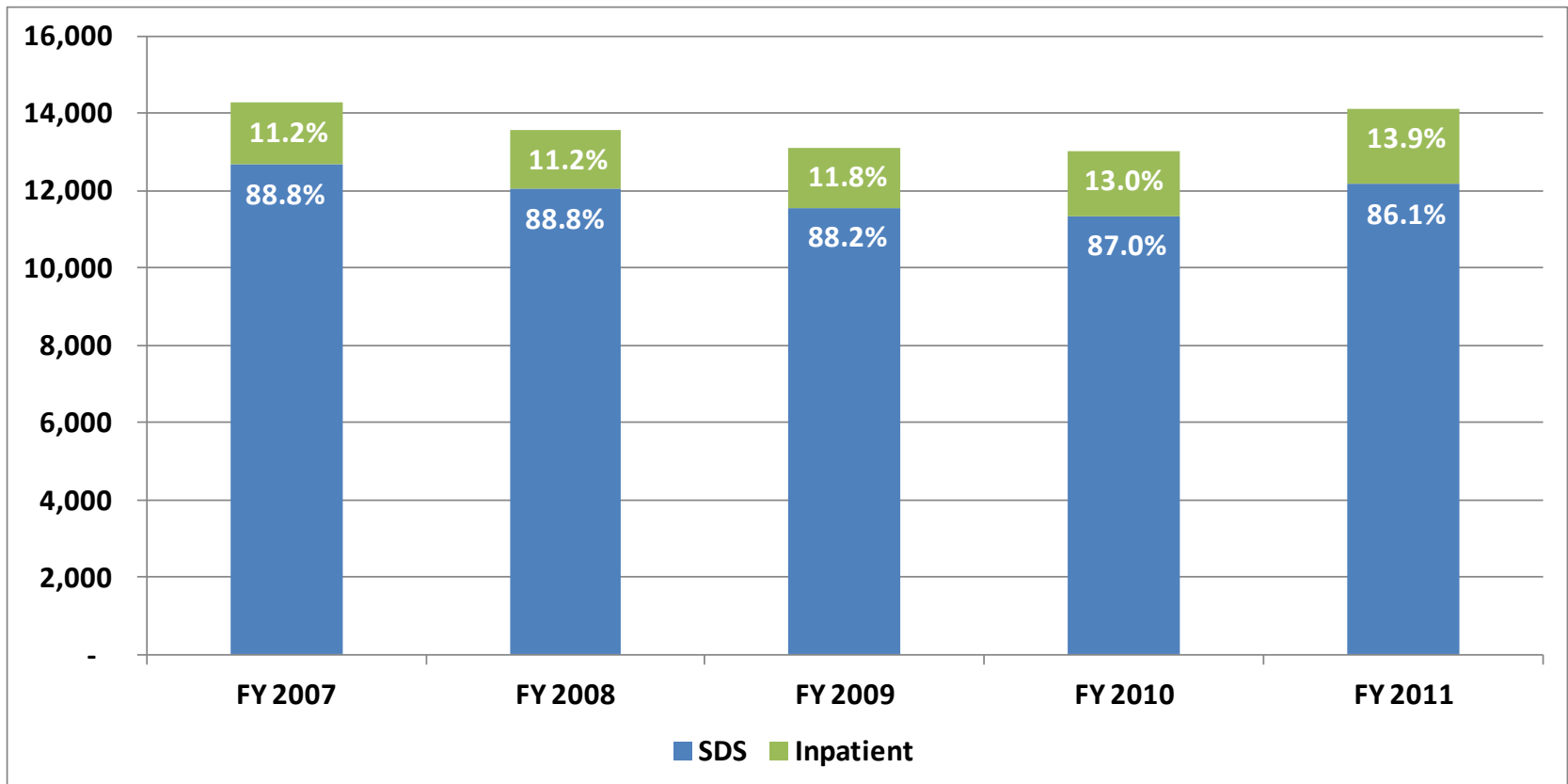
Practice Variation

Key areas

- Inpatient vs SDS
 - Obstructive sleep apnea syndrome diagnosis
- Length of Stay
- Post-op ED visits for tonsillectomy-related complications
- Post-op Hospitalizations for tonsillectomy-related complications



Inpatient vs SDS



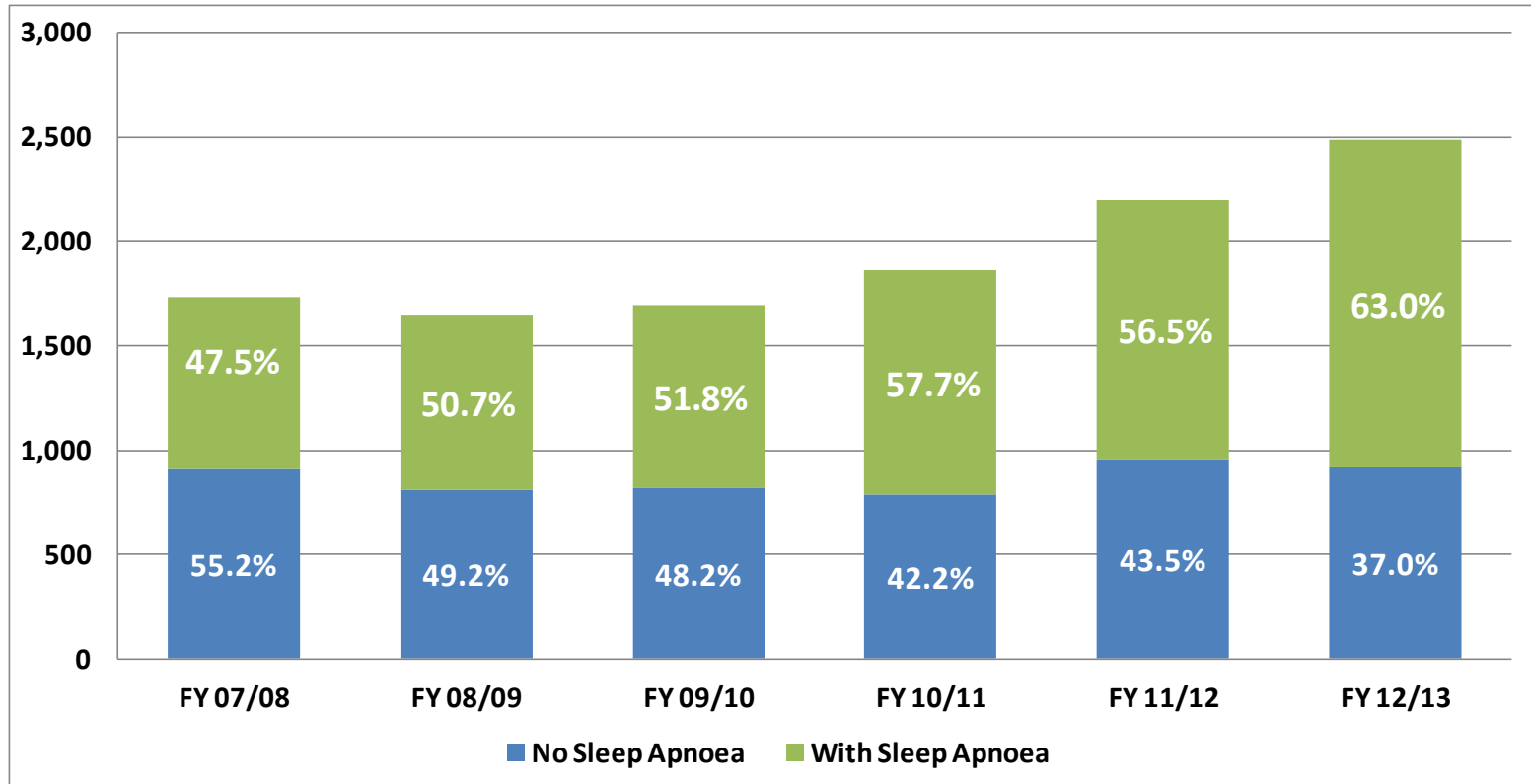
Inpatient vs SDS

Practice Variation

LHIN	FY 2007		FY 2008		FY 2009		FY 2010		FY2011	
	SDS	Inpatient	SDS	Inpatient	SDS	Inpatient	SDS	Inpatient	SDS	Inpatient
Erie St. Clair	92%	7.6%	92%	7.6%	94%	6.3%	91%	8.6%	92%	8.2%
South West	83%	17.0%	85%	15.5%	83%	17.3%	85%	15.1%	86%	14.4%
Waterloo Wellington	96%	3.6%	97%	3.3%	95%	4.8%	94%	5.8%	95%	4.8%
HNHB	92%	7.9%	92%	8.2%	90%	10.0%	92%	8.3%	93%	6.7%
Central West	90%	10.0%	91%	9.5%	87%	12.9%	83%	17.4%	79%	20.8%
Mississauga Halton	93%	6.7%	92%	7.7%	92%	7.7%	92%	7.8%	90%	10.3%
Toronto Central	90%	10.1%	90%	9.7%	90%	9.8%	88%	12.4%	81%	18.9%
Central	85%	14.9%	86%	13.5%	88%	12.1%	82%	18.1%	78%	22.2%
Central East	84%	16.2%	81%	18.6%	81%	19.4%	80%	19.5%	81%	19.1%
South East	88%	12.0%	92%	8.2%	91%	8.8%	95%	5.1%	94%	6.0%
Champlain	91%	8.6%	89%	10.5%	88%	12.2%	86%	13.5%	88%	12.4%
NSM	90%	10.1%	89%	10.5%	90%	10.1%	87%	13.1%	86%	14.2%
North East	88%	12.2%	91%	9.2%	90%	10.0%	89%	10.8%	82%	17.9%
North West	62%	38.3%	63%	37.2%	58%	42.1%	65%	34.9%	65%	34.7%



Sleep apnea diagnosis for paediatric tonsillectomies

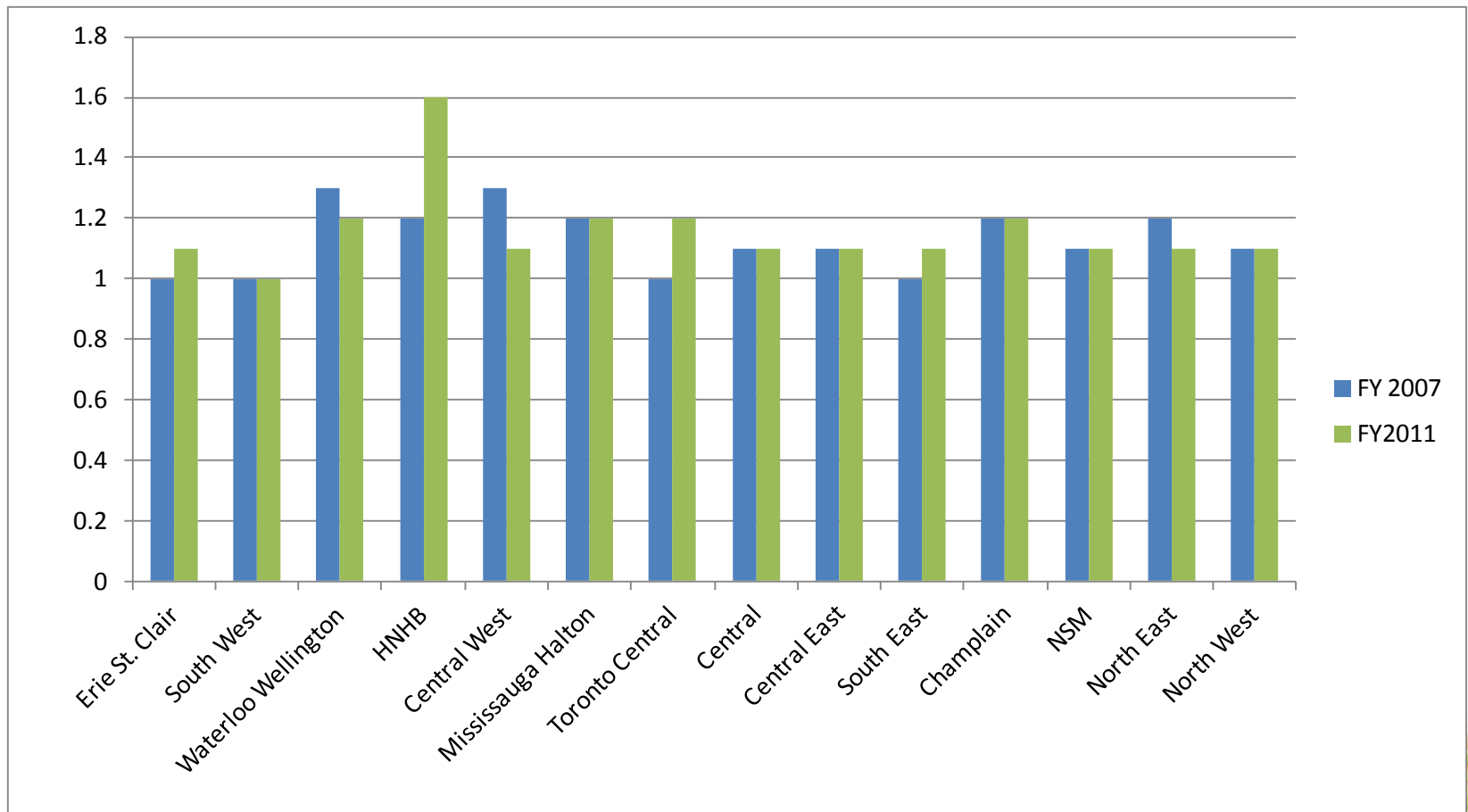


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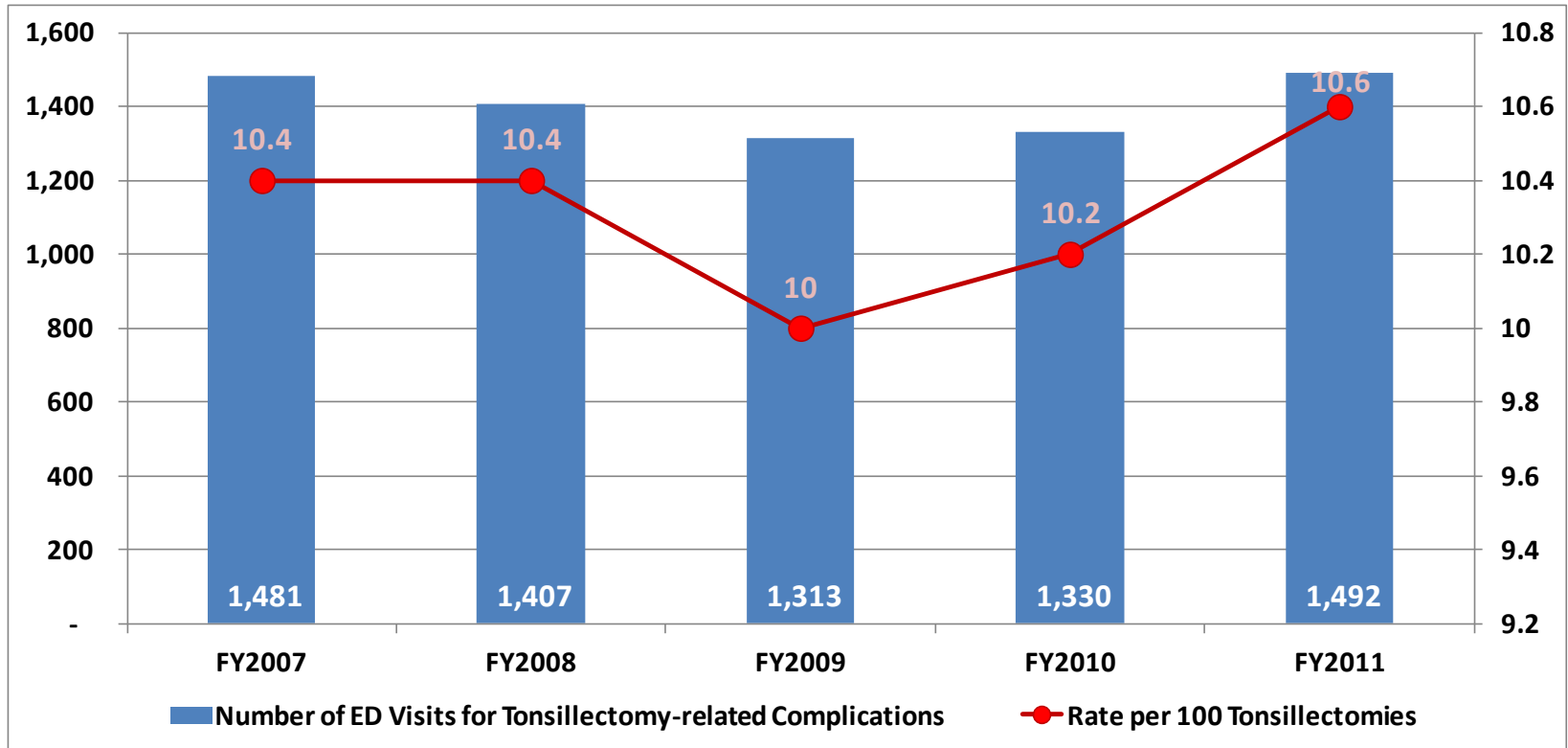
building a brighter future

Mean Annual LOS (days)

Practice Variation

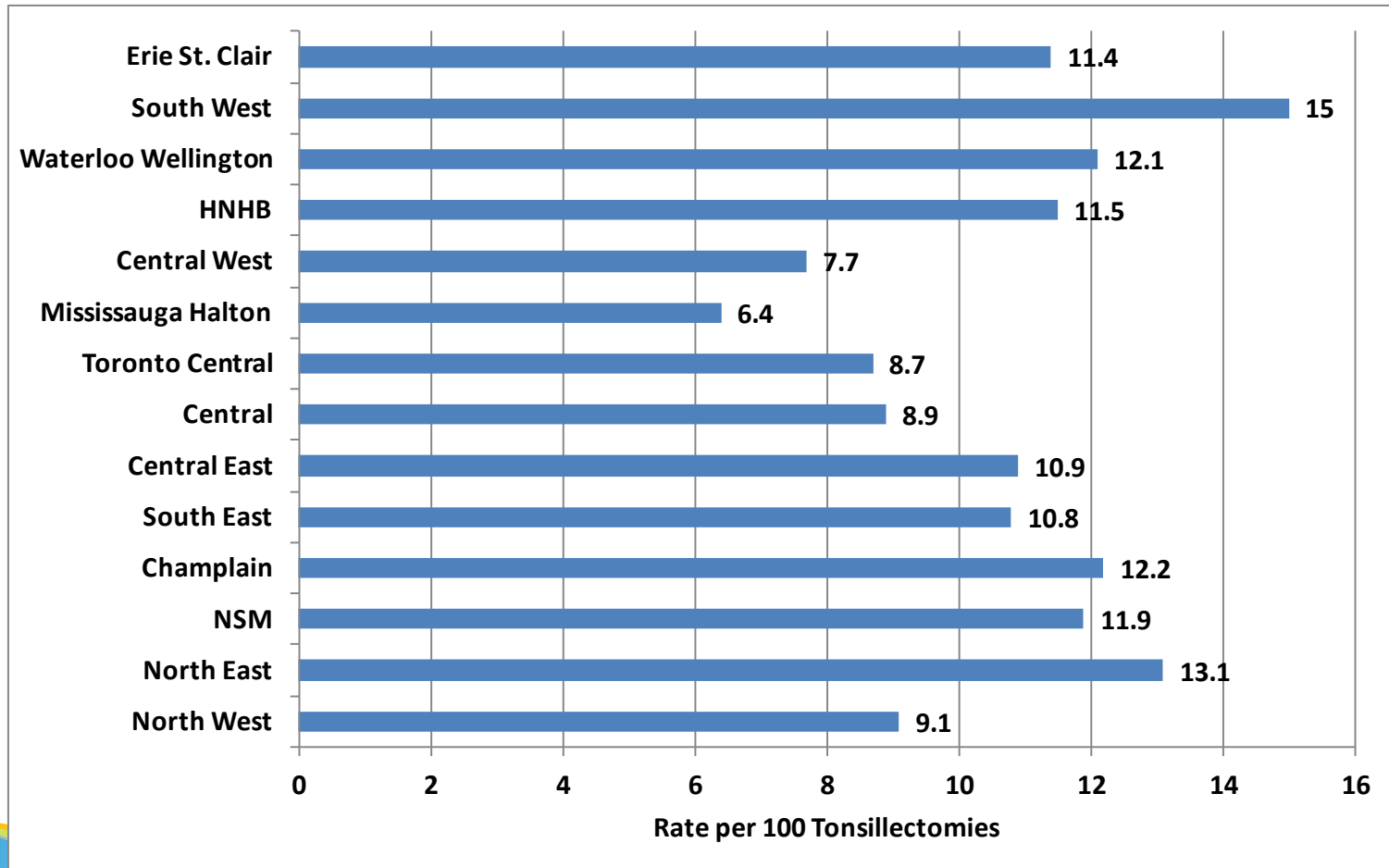


ED Visits for Tonsillectomy-related Complications



ED Visits for Tonsillectomy-related Complications

Practice Variation (FY 2011)



Hospitalizations for Tonsillectomy-related Complications

Practice Variation

LHIN	Rate per 100 Tonsillectomies				
	FY2007	FY2008	FY2009	FY2010	FY2011
Erie St. Clair	2.4	3.1	2.6	3	2.6
South West	2.7	3.6	2.2	2.9	2.8
Waterloo Wellington	2.3	1.6	1.6	1.2	1
Hamilton Niagara Haldimand Brant	2.4	2.6	2.5	2.5	2.7
Central West	1.4	1.2	1.5	2.1	2.2
Mississauga Halton	1.8	1.9	1.5	2.3	1.8
Toronto Central	2.3	3.4	1.7	2.2	1.9
Central	1.4	1.7	2.1	1.4	1.9
Central East	2.4	1.8	2.5	2	2.4
South East	*	*	1.6	1.9	1.8
Champlain	2.2	3.4	3.1	3.2	3.2
North Simcoe Muskoka	2.4	2.2	1.7	1.9	2.4
North East	1.4	2.7	*	1.6	2.2
North West	*	*	*	4.2	1

Clinical Pathway Recommendations



Recommendations

Pre-Operative

1.1 Pre-Operative Assessment

1.1.1 Risk factors for post-operative bleeding

1.1.2 Diagnosis of Obstructive Sleep Apnea Syndrome (OSAS)

1.1.3 Pre-operative assessment of patients with known or suspected OSAS

1.1.4 Indications for paediatric respiratory investigation

1.1.5 Investigation of pre-operative fever

1.2 Pre-Operative Hydration and Fasting

1.2.1 Hydration and fasting guidelines

1.2.2 Prescription of intravenous (IV) fluids

1.3 Pre-Operative Parental/Caregiver and Patient Education

1.3.1 Counseling topics (medication, nutrition, anesthesia care, activity etc)

1.3.2 Management of pre-operative anxiety in children

1.3.3 Pre-surgical OR tours



Recommendation 1.1.1

Risk Factors for Post-Operative Bleeding

Prior to operative intervention patients should undergo a risk assessment for post-operative hemorrhage:

- Both a patient history and family history of bleeding disorders. Patients with a negative bleeding history do not require routine coagulation screening prior to surgery.
- Medication history assessment to determine potential risks for increased post-operative hemorrhage in children who are taking Over the Counter (OTC) and/or natural health products and/or prescription medications.

Recommendation 1.1.2

Diagnosis of Obstructive Sleep Apnea Syndrome (OSAS)

- OSAS is one of the major risk factors contributing to the occurrence of postoperative respiratory complications. An overnight sleep study (polysomnography) is considered to be the gold standard for diagnosis of OSAS. In Ontario access to polysomnography services for children is a challenge due to limited paediatric sleep laboratory availability in the province.

Recommendation 1.1.3

Pre-operative assessment of patients with known or suspected OSAS

- History
- Frequent snoring (≥ 3 nights/wk)
- Labored breathing during sleep
- Gasps/snorting noises/observed
- Episodes of apnea
- Sleep enuresis (especially secondary enuresis after at least 6 months of continence)
- Sleeping in a seated position or with the neck hyper extended
- Cyanosis
- Headaches on awakening
- Daytime sleepiness
- Attention-deficit/hyperactivity disorder
- Learning problems
- Physical examination
- Underweight or overweight
- Tonsillar hypertrophy
- Adenoidal facies
- Micrognathia/retrognathia
- High-arched palate
- Failure to thrive
- Hypertension

Patients with suspected severe OSAS should be considered for admission to hospital for their surgery. The accepted criterion for severe OSAS is defined as an apnea-hypopnea index (AHI) greater than 10 events per hour (Robb, et al., 2009). Other markers that should be considered for surgery as an inpatient include oxygen saturation nadir $< 80\%$ and carbon dioxide retention.

Recommendation 1.1.4

Indications for paediatric respiratory investigation

As outlined in the Consensus Statement of a UK Multidisciplinary Working Party:

- Diagnosis of OSAS unclear or inconsistent
- Down syndrome
- Cerebral palsy
- Hypotonia or neuromuscular disorders
- Significant Craniofacial anomalies
- Mucopolysaccharidosis
- Obesity (body mass index > 2.5 standard deviation scores or > 99th %ile for age and gender)
- Significant co-morbidity such as congenital heart disease, chronic lung disease
- Residual symptoms after adenotonsillectomy

Other indications based on the Clinical Expert Advisory Group consensus:

- Age < 2 years
- Failure to thrive
- Pulmonary hypertension
- Sickle cell disease

Recommendation 1.1.5

Investigation of Pre-Operative Fever

- Fever is an indication for cancelling paediatric surgery.

Recommendation 1.3.1

Pre-Operative Parental/Caregiver and Patient Education

The following topics should be incorporated into the routine pre-operative counseling:

- Medication
 - Acknowledgement/ warning regarding potential risks associated with over-the-counter, natural health products and prescription medications.
- Nutrition
 - Fasting guidelines for the child.
 - Counseling regarding appropriate nutrition for parents on the day of surgery (to ensure they remember to manage their own nutritional needs).
- Anaesthesia Care
 - Information regarding the risks associated with specific pain management options, such as morphine, in order to allay potential anxiety in parents / caregivers.
- Activity
 - Post-operative complications, particularly bleeding, are most likely to occur in the 2 weeks after surgery. Therefore, parents should be advised not to plan long trips out of town for a minimum of 2 weeks after the operation.

Recommendation 1.3.2

Management of Pre-Operative Anxiety in Children

- Surgery has been shown to cause anxiety in children, which in turn may result in short and long term negative outcomes. Consideration should be given by the clinical team to providing targeted resources to facilitate patient comfort and to reduce perceived and actual psychological trauma, anxiety, and behavioral issues in children preparing for surgery.
- Strategies may include, but are not limited to: music therapy, video games, behavioral preparation programs (e.g.: playful dramatization of the operative procedure, manipulation of medical instruments), psychologist's support.

Recommendation 1.3.3

Pre-Surgical OR Tours

- The availability of pre-operative Operating Room (OR) tours is recommended. OR tours (either real or virtual) are strongly advised in order to help children prepare for surgery, reduce family uneasiness, increase satisfaction and contribute to establishing an improved service.

Recommendations

Intra-Operative

2.1 Anaesthesia

2.1.1 Topical Anesthetics for IV placement

2.1.2 Local Anesthesia

2.2 Medication

2.2.1 Intra-Operative Steroids

2.2.2 Acetaminophen

2.2.3 Ketamine

2.2.4 Intra-Operative NSAIDs

2.2.5 Analgesia for patients with known or suspected OSAS

Recommendation 2.1.1

Topical Anesthetics for IV placement

- Topical anesthetic is recommended for IV placement prior to anesthesia induction in order to minimize pain associated with line insertion.

Recommendation 2.1.2

Local Anesthesia

- Local intra-operative anaesthetic may be used as a method of reducing post-operative pain. Due to increased risk of bleeding associated with infiltration, topical application of local anesthetic is preferred.

Recommendation 2.2.1

Intra-Operative Steroids

- Based on available evidence, a single intra-operative dose of intravenous steroids (dexamethasone) is strongly recommended as a safe and effective treatment for reducing morbidity from paediatric tonsillectomy/adenoidectomy.

Recommendation 2.2.5

Analgesia for patients with known or suspected OSAS

- Evidence indicates increased sensitivity to narcotics and other anesthetic drugs with central respiratory and sedating effects, among patients with OSAS and obesity. An individualized anesthesia plan should be recommended for this population in order to avoid respiratory function compromise.
- The use of opioids should be minimized in diagnosed or suspected patients with OSAS.

Recommendations

Post-Operative

3.1 Medication

3.1.1. Acetaminophen, Ibuprofen and Morphine

3.1.2 Codeine

3.1.3 Cox-2 Inhibitors

3.1.4 Post-Operative NSAIDs

3.1.5 Antibiotics

3.2 Post-Discharge Planning and Complication Management

3.2.1 Post-operative Bleeding

3.2.2 Post-operative Fever

3.2.3 Guidelines for Observation due to Respiratory Complications

3.2.4 Guidelines for Pre-op Referral due to Respiratory Complications

3.2.5 Guidelines for Hospital Admission due to Respiratory Complications Post-Operatively

3.3 Patient and Parental/Caregiver Education

3.3.1 Pain Management

3.3.2 Other Counseling Topics

3.3.3 Action Plan for Parents/Caregivers

Recommendation 3.1.1

Acetaminophen, Ibuprofen and Morphine

- Acetaminophen and morphine are recommended as primary pharmacologic agents for treatment of post-operative pain. Ibuprofen may be used if there are tolerance issues with morphine or if pain control is inadequate with acetaminophen and morphine.



Recommendation 3.1.2

Codeine

- Due to the pharmacogenetic variability in the CYP 2D6 enzyme and the unpredictable response to codeine, avoid codeine use in children less than 18 years of age undergoing tonsillectomy or adenoidectomy for the treatment of post-operative pain.

Recommendation 3.1.4

Post-Operative NSAIDs

- NSAIDs (excluding ketorolac) can be safely used for the management of pain following tonsillectomy.

Recommendation 3.1.5

Antibiotics

- There is no evidence to support the routine use of antibiotics for infection prevention or to reduce post-operative bleeding.
- Individual consideration should be taken into account in instances where other co-morbidities may require the use of antibiotics in facilitating post-tonsillectomy recovery.

Recommendation 3.2.1

Management of Post-Operative Bleeding

- Follow-up assessment and potential referral to a paediatrician should be considered in cases of bleeding that require readmission/hospital intervention for investigation of underlying causes of bleeding.

Recommendation 3.2.2

Management of Post-Operative Fever

- Most cases of fever post-tonsillectomy are the result of dehydration based on clinical assessment. Therefore, dehydration should be ruled out as the first approach in children who present to ER after tonsillectomy. Further investigation may be required.

Recommendation 3.2.3

Guidelines for Observation due to Respiratory Complications

- Consideration should be given to an extended period of post-operative observation if there is a significant co-morbidity, which may include:
 - Age <2
 - Obesity (body mass index > 2.5 standard deviation scores or > 99th percentile for age and gender)
 - OSAS without pulmonary hypertension or co-morbidities
 - Sickle cell anemia
 - Carbon dioxide retention

Recommendation 3.3.1

Post-Operative Pain Management Counseling

The following topics should be incorporated into the routine post-operative counseling on pain management:

- Dosing instructions and timing
- Mixing food with medication
- Medication Side-Effects
- Pain Scale
- Homeopathic and/or naturopathic medications
- Oral Rinses and non-pharmacological alternatives

Recommendation 3.3.2

Other Post-Operative Counseling Topics

- Nutrition & Hydration
 - The importance of adequate liquid intake should be reinforced ***in order to prevent dehydration***
 - ***The link between appropriate pain management and hydration should be emphasized.***
 - Information regarding the appropriate post-operative diet, including the list of foods that should be avoided
 - Information regarding the importance of hydration, including the list of liquids that should be avoided
- Mouth Care
 - Information regarding the importance of appropriate mouth care, including rinsing and gentle tooth brushing, should be provided. Gargling and/or swishing anything around in the back of the throat is not recommended.
- Activity
 - Information regarding the appropriate level of activity, including bathing, should be provided. Rough sports or contact sports that may affect the throat are not recommended. Post-operative complications, particularly bleeding, are most likely to occur in the 2 weeks after surgery. Therefore, parents should be advised not take their child on long trips during this time.

Recommendation 3.3.3

Action Plan for Parents/Caregivers

- An Action Plan for Parents/Caregivers should be developed in order to facilitate appropriate management of post-operative complications including bleeding, fever, nausea and pain.
- Relevant contact information should be provided to ensure an effective 24/7/365 response, particularly in cases of bleeding and/or fever that require hospital intervention. The information that is provided should specify if the number to call varies according to hour or day. Depending on the facility, this may include a number of avenues, including a “Number to Call” at the hospital, Emergency Department, or a family physician.
- It is recommended that families remain within 1 hour travel-time from an acute care facility for a period of 14 days.

Evaluation Metrics

For Immediate Implementation

- Percentage of Inpatient vs. Same Day Surgeries
- Number of ED visits and/or readmissions and due to the following tonsillectomy-related complications:
 - Hemorrhage
 - Pain
 - Dehydration
- Broken down by:
 - Age: 0-3, 4-10, and 11-18 years
 - Time frame: within 24 hours, 48 hours, 7 days, 14 days and 28 days



Evaluation Metrics

For Future Development

- Percentage of planned vs. unplanned admissions broken down by reason for admission
- Appropriate administration of dexamethasone
- Inappropriate administration of antibiotics
- Inappropriate administration of codeine



Online Toolkit



<http://www.pcmch.on.ca/initiatives/qbp-tonsillectomy>

Questions?



To Ask a Question:



You can either press the star “*1” on your touch tone phone, the operator will open your line when it is your turn to ask a question

OR



Enter your question on the right hand side in the chat box to Q&A group.



If there are any questions not being answered during this session, please send your question(s) to:
anna.shynlova@pcmch.on.ca

