QUALITY STANDARDS

Asthma in Children and Adolescents

Technical Specifications

2025 UPDATE

Ontario Health

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List of Abbreviations

Abbreviation	Definition
DAD	Discharge Abstract Database
ICD-9	*International Statistical Classification of Diseases, Injuries, and Causes of Death, Ninth Revision*
ICD-10-CA	*International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Canada*
NACRS	National Ambulatory Care Reporting System
OHIP	Ontario Health Insurance Plan
PC-API	Primary Care – Asthma Performance Indicators
RPDB	Registered Persons Database

How to Use the Technical Specifications

This document provides technical specifications to support the implementation of the *Asthma in Children and Adolescents* quality standard. Care for people under 16 years of age with asthma is a critical issue, and there are substantial gaps and variations in the quality of care that people with asthma receive in Ontario. Recognizing this, Ontario Health released the quality standard to identify opportunities that have a high potential for quality improvement.

This document is intended for use by those looking to implement the *Asthma in Children and Adolescents* quality standard, including clinicians working in regional or local roles.

This document has dedicated sections to describe the following:

- Indicators that can be used to measure progress toward the overarching goals of the quality standard as a whole
- Statement-specific indicators that can be used to measure improvement for each quality statement within the quality standard

Indicators may be provincially or locally measurable:

- Provincially measurable indicators: how we can monitor the progress being made to improve care at the provincial level using provincial data sources
- Locally measurable indicators: what you can do to assess the quality of care that you provide locally

The following tools and resources are provided as suggestions to assist in the implementation of the *Asthma in Children and Adolescents* quality standard:

- The *Getting Started Guide* outlines the process for using quality standards as a resource to deliver high-quality care; it contains evidence-based approaches, as well as useful tools and templates to implement change ideas at the practice level
- Our Spotlight Report highlights examples from the field to help you understand what successful quality standard implementation looks like
- The Health Data Branch Web Portal, maintained by the Ontario Ministry of Health, provides annually updated data related to the indicators in the Quality-Based Procedures *Clinical Handbook for Paediatric Asthma*

Measurement to Support Improvement

This document accompanies Ontario Health's *Asthma in Children and Adolescents* quality standard. The Asthma Quality Standard Advisory Committee identified overarching indicators to monitor the progress being made to improve care for people under 16 years of age with asthma in Ontario. Four overarching indicators are provincially measurable (well-defined or validated data sources are available), and 5 are measurable only locally (the indicators are not well defined, and data sources do not currently exist to measure them consistently across health care teams and at the system level).

The *Asthma in Children and Adolescents* quality standard also includes statement-specific indicators that can be used to measure improvement for each quality statement in the quality standard.

Additional information on measuring indicators can be found in the *Measurement Guide*. The measurement guide also includes descriptions of data sources that can be used to support quality standard indicators that are measured consistently across health care teams, health care sectors, and the province.

Equity Considerations

Ontario Health is committed to promoting health equity and reducing disparities, and it encourages collecting data and measuring indicators using equity stratifications that are relevant and appropriate for your population, such as patient socioeconomic and demographic characteristics. These may include age, income, region or geography, education, language, race and ethnicity, gender, and sex. Please refer to Appendix 3, Values and Guiding Principles, in the quality standard for additional equity considerations.

Quality Standard Scope

This quality standard addresses the diagnosis and management of asthma in children and adolescents under 16 years of age, with a focus on primary care and community-based settings. It addresses referral to specialized pediatric asthma care for children and adolescents who have indications characterizing severe asthma, but it does not address the management of severe asthma in specialized care, acute asthma exacerbations, or care provided during emergency department visits or hospitalizations.

The quality standard includes 6 quality statements. They address areas identified by the Asthma Quality Standard Advisory Committee as having high potential for improving the quality of care in Ontario for children and adolescents with asthma.

Cohort Identification

For measurement at the provincial level, people with asthma can be identified using a validated algorithm using administrative data. For local measurement, people with asthma can be identified using local data sources (such as electronic medical records or clinical patient records).

Cohort Identification Using Administrative Data

To identify people with asthma for the provincially measurable indicators in this quality standard, the DAD, the OHIP Claims Database, and the RPDB can be used. Please refer to the measurement guide for more information on these databases.

DIAGNOSIS CODES

To identify people who had a diagnosis of asthma during a hospitalization, records from DAD can be used. This code is an inclusion from the ICD-10-CA:

- J45: Asthma

To identify people who had a diagnosis of asthma during an outpatient visit, OHIP claims records can be used. This code is an inclusion from the ICD-9:

- 493: Asthma

INCLUSION CRITERIA

The asthma cohort includes patients diagnosed in both outpatient and inpatient care settings, as adapted from the criteria described by To et al and confirmed by the Asthma Quality Standard Advisory Committee. A person is included in the asthma cohort if they had:

- At least 1 hospitalization with asthma identified in any diagnosis field, or
- 2 or more outpatient visits with an asthma diagnosis within 2 consecutive years

The date of diagnosis is the date of first hospitalization or first outpatient visit in which asthma is documented, whichever occurs earlier. Once a person has been identified as having asthma according to either of the case definitions above, they are considered prevalent until death or emigration from Ontario, whichever comes first.

AGE RANGE

The cohort includes people under 16 years of age, in alignment with the scope of the *Asthma in Children and Adolescents* quality standard, unless otherwise stated for specific indicators.

Overarching Indicators That Can Be Measured Using Provincial Data

Indicator 1: Percentage of children and adolescents ≥ 6 to ≤ 15 years of age with incident asthma whose diagnosis is confirmed with lung function testing

DESCRIPTION

Directionality: Higher is better

Measurability: Measurable at the provincial level

Dimension of quality: Effective

Quality statement alignment: Quality Statement 1: Diagnosis

CALCULATION

Denominator

Total number of children and adolescents ≥ 6 to ≤ 15 years of age newly diagnosed with asthma in the year of interest

Inclusion

- People ≥ 6 to ≤ 15 years of age

Exclusions

- Records without a valid health insurance number
- Records with an invalid date of birth and/or invalid age
- Records with a missing sex
- Records without an Ontario residence

Numerator

Number of people in the denominator with a lung function test in 1 year prior to or 2.5 years after the incidence date

The OHIP clinician claim must include 1 of the following interventions:

- J301: Pulmonary Function Testing with Permanent Record Vital Capacity
- J304: Pulmonary Function Flow Volume Loop – Standard Lung Mechanics
- J307: Pulmonary Function Testing – Functional Residual Capacity
- J310: Pulmonary Function Testing – Single Breath Diffusing Capacity
- J324: Pulmonary Function Testing – Repeat J301 After Bronchodilator

- J327: Pulmonary Function Testing – Repeat J304 After Bronchodilator
- J333: Pulmonary Function Testing – Nonspecific Bronchial Provocative Test (Histamine, Methacholine, Thermal Challenge)

Method

Numerator ÷ Denominator × 100

Data Sources

DAD, OHIP Claims Database, RPDB

LIMITATIONS

Lung function testing offered in community health centres or offered by clinicians who do not bill OHIP will not be captured in the numerator.

The asthma cohort may underestimate the number of children and adolescents newly diagnosed with asthma due to limitations associated with OHIP billing for lung function testing.

The quality of the data depends on coding accuracy at the point of care.

Indicator 2: Percentage of children and adolescents ≥ 6 to ≤ 15 years of age with asthma who completed a lung function test in the previous 12 months

DESCRIPTION

Directionality: Higher is better

Measurability: Measurable at the provincial level

Dimension of quality: Effective

Quality statement alignment: Quality Statement 2: Asthma Control

CALCULATION

Denominator

Total number of children and adolescents ≥ 6 to ≤ 15 years of age with asthma who had at least 1 asthma claim (active asthma) in the year of interest

Inclusion

- People ≥ 6 to ≤ 15 years of age

Exclusions

- Records without a valid health insurance number
- Records with an invalid date of birth and/or invalid age
- Records with a missing sex
- Records without an Ontario residence
- Asthma prevalence without whole year OHIP coverage

Numerator

Number of people in the denominator with a lung function test in the year prior to the date of first asthma health service use in the year

The OHIP clinician claim must include 1 of the following interventions:

- J301: Pulmonary Function Testing with Permanent Record Vital Capacity
- J304: Pulmonary Function Flow Volume Loop – Standard Lung Mechanics
- J307: Pulmonary Function Testing – Functional Residual Capacity
- J310: Pulmonary Function Testing – Single Breath Diffusing Capacity
- J324: Pulmonary Function Testing – Repeat J301 After Bronchodilator
- J327: Pulmonary Function Testing – Repeat J304 After Bronchodilator
- J333: Pulmonary Function Testing – Nonspecific Bronchial Provocative Test (Histamine, Methacholine, Thermal Challenge)

Method

Numerator ÷ Denominator × 100

Data Sources

DAD, NACRS, OHIP Claims Database, RPDB

LIMITATIONS

Lung function testing offered in community health centres or offered by clinicians who do not bill OHIP will not be captured in the numerator.

The asthma cohort may underestimate the number of children and adolescents newly diagnosed with asthma due to limitations associated with OHIP billing for lung function testing.

Data quality depends on coding accuracy at the point of care.

Indicator 3: Percentage of children and adolescents with asthma who visited the emergency department for an asthma-specific reason in the previous 12 months

DESCRIPTION

Directionality: Lower is better

Measurability: Measurable at the provincial level

Dimension of quality: Effective

Quality statement alignment: All quality statements

CALCULATION

Denominator

Total number of children and adolescents under 16 years of age with asthma in the year of interest (see Cohort Identification)

Inclusion

- People under 16 years of age

Exclusions

- Records without a valid health insurance number
- Records with an invalid date of birth and/or invalid age
- Records with a missing sex
- Records without an Ontario residence
- Asthma prevalence without whole year OHIP coverage

Numerator

Number of people in the denominator who had at least 1 unplanned emergency department visit for asthma in the year of interest

Inclusions

- Records with unplanned emergency department visits: VISITTYPE [1,2,4] or SCHEDEDVISIT = N
- Records with a main problem with ICD-10-CA code J45 (asthma)

Exclusions

- Records with an invalid admission date and/or time
- Records with an invalid discharge date and/or time

Method

Numerator ÷ Denominator × 100

Data Sources

DAD, NACRS, OHIP Claims Database, RPDB

LIMITATIONS

The asthma cohort may underestimate the number of children and adolescents newly diagnosed with asthma due to limitations associated with OHIP billing for lung function testing.

The quality of the data depends on coding accuracy at the point of care.

Indicator 4: Percentage of children and adolescents with asthma who were hospitalized for an asthma-specific reason in the previous 12 months

DESCRIPTION

Directionality: Lower is better

Measurability: Measurable at the provincial level

Dimension of quality: Effective

Quality statement alignment: All quality statements

CALCULATION

Denominator

Total number of children and adolescents under 16 years of age with asthma in the year of interest (see Cohort Identification)

Inclusion

- People under 16 years of age

Exclusions

- Records without a valid health insurance number
- Records with an invalid date of birth and/or invalid age
- Records with a missing sex
- Records without an Ontario residence
- Asthma prevalence without whole year OHIP coverage

Numerator

Number of people in the denominator who were hospitalized for asthma in the year of interest

Inclusions

- Nonelective hospitalizations for asthma (most responsible diagnosis: J45)
- Nonelective hospitalizations for asthma (any diagnosis: J45)

Exclusions

- Records with an invalid date of birth
- Records with an invalid admission date and/or time
- Records with an invalid discharge date and/or time

Method

Numerator ÷ Denominator × 100

Data Sources

DAD, OHIP Claims Database, RPDB

LIMITATIONS

The asthma cohort may underestimate the number of children and adolescents newly diagnosed with asthma due to limitations associated with OHIP billing for lung function testing.

The quality of the data depends on coding accuracy at the point of care.

Overarching Indicators That Can Be Measured Using Only Local Data

You might want to assess the quality of care you provide to your patients with asthma. You might also want to monitor your own quality improvement efforts. It could be possible to do this using your own clinical records, or you might need to collect additional data. We recommend the following potential indicators, which currently can be measured only using local data collection.

Indicator 1: Percentage of young children ≥ 1 to ≤ 5 years of age clinically suspected of having asthma whose diagnosis of asthma is confirmed after the documentation of signs or symptoms of airflow obstruction and clear improvement of those signs or symptoms with medication

- Denominator: total number of young children ≥ 1 to ≤ 5 years of age clinically suspected of having asthma
- Numerator: number of people in the denominator whose diagnosis of asthma is confirmed after the documentation of signs or symptoms of airflow obstruction and clear improvement of those signs or symptoms with medication
- Potential data sources: local data collection, DAD, OHIP Claims Database, RPDB

Indicator 2: Percentage of children and adolescents with asthma who had a structured assessment in the previous 6 months

- Denominator: total number of children and adolescents under 16 years of age with asthma
- Numerator: number of people in the denominator who had a structured assessment in the previous 6 months
- Data source: local data collection

Indicator 3: Percentage of children and adolescents with asthma with 1 or more appropriate indications who are prescribed regular (daily) inhaled anti-inflammatory therapy

- Denominator: total number of children and adolescents under 16 years of age with asthma with 1 or more appropriate indications
- Numerator: number of people in the denominator who are prescribed regular (daily) inhaled anti-inflammatory therapy
- Potential data sources: local data collection, DAD, OHIP Claims Database

Indicator 4: Average number of asthma symptom–free days in the previous 4 weeks among children and adolescents with asthma

- Population: total number of children and adolescents under 16 years of age with asthma
- Calculation: mean number of symptom-free days in the previous 4 weeks among those in the population
- Data source: local data collection
- Note: This indicator aligns with a performance indicator measured by the PC-API project

Indicator 5: Average number of days missed from school or work due to asthma in the previous 4 weeks

- Population: total number of children and adolescents under 16 years of age with asthma
- Calculation: mean number of days missed from school or work due to asthma in the previous 4 weeks among those in the population (parents included)
- Data source: local data collection
- Note: This indicator aligns with a performance indicator measured by the PC-API project

Statement-Specific Indicators

The *Asthma in Children and Adolescents* quality standard includes statement-specific indicators that are provided as examples; you may wish to create your own quality improvement indicators based on the needs of your population. We recommend that you identify areas to focus on in the quality standard and then use 1 or more of the associated indicators to guide and evaluate your quality improvement efforts.

Quality Statement 1: Diagnosis

Percentage of children and adolescents ≥ 6 to ≤ 15 years of age clinically suspected of having asthma who complete lung function testing within 3 months of seeking care for their respiratory symptoms

- Denominator: total number of children and adolescents ≥ 6 to ≤ 15 years of age clinically suspected of having asthma
- Numerator: number of people in the denominator who complete lung function testing within 3 months of seeking care for their respiratory symptoms
- Data source: local data collection

Percentage of children ≥ 1 to ≤ 5 years of age clinically suspected of having asthma whose diagnosis of asthma is confirmed after the documentation of signs or symptoms of airflow obstruction and clear improvement of those signs or symptoms with asthma medication

- Denominator: total number of children ≥ 1 to ≤ 5 years of age clinically suspected of having asthma
- Numerator: number of people in the denominator whose diagnosis of asthma is confirmed after the documentation of signs or symptoms of airflow obstruction and clear improvement of those signs or symptoms with asthma medication
- Data source: local data collection

Local availability of lung function testing

- Description: availability of lung function testing in the health facility, region, or other setting of interest
- Data source: local data collection

Quality Statement 2: Asthma Control and Risk of Exacerbations

Percentage of children and adolescents with asthma who had a structured assessment in the previous 6 months

- Denominator: total number of children and adolescents under 16 years of age with asthma

- Numerator: number of people in the denominator who had a structured assessment in the previous 6 months
- Data source: local data collection

Percentage of children and adolescents ≥ 6 to ≤ 15 years of age with asthma who completed a lung function test in the previous 12 months

- Denominator: total number of children and adolescents ≥ 6 to ≤ 15 years of age with asthma
- Numerator: number of people in the denominator who completed a lung function test in the previous 12 months
- Data sources: local data collection, DAD, OHIP Claims Database

Quality Statement 3: Asthma Medication

Percentage of children and adolescents with asthma with 1 or more appropriate indications who are prescribed regular (daily) inhaled anti-inflammatory therapy

- Denominator: total number of children and adolescents under 16 years of age with asthma with 1 or more appropriate indications
- Numerator: number of people in the denominator who are prescribed regular (daily) inhaled anti-inflammatory therapy
- Data sources: local data collection, DAD, OHIP Claims Database

Percentage of children and adolescents with uncontrolled asthma who have had all their reasons for poor control addressed

- Denominator: total number of children and adolescents under 16 years of age with uncontrolled asthma
- Numerator: number of people in the denominator who have had all their reasons for poor control addressed
- Data source: local data collection

Percentage of children and adolescents with uncontrolled asthma who have their medication escalated after other reasons for poor control have been addressed

- Denominator: total number of children and adolescents under 16 years of age with uncontrolled asthma who have had other reasons for poor control addressed
- Numerator: number of people in the denominator who have their medication escalated
- Data source: local data collection

Quality Statement 4: Self-Management Education and Asthma Action Plan

Percentage of children and adolescents with asthma who have ever received asthma self-management education from a trained clinician

- Denominator: total number of children and adolescents under 16 years of age with asthma
- Numerator: number of people in the denominator who have received asthma self-management education from a trained clinician at least once
- Data source: local data collection

Percentage of children and adolescents with asthma who have received a written personalized asthma action plan

- Denominator: total number of children and adolescents under 16 years of age with asthma
- Numerator: number of people in the denominator who have received a written personalized asthma action plan
- Data source: local data collection

Percentage of children and adolescents with asthma who have a written personalized asthma action plan and who have had their asthma action plan reviewed in the previous 12 months

- Denominator: total number of children and adolescents under 16 years of age with asthma who have a written personalized asthma action plan
- Numerator: number of people in the denominator who have had their asthma action plan reviewed in the previous 12 months
- Data source: local data collection

Quality Statement 5: Referral to Specialized Pediatric Asthma Care

Percentage of children and adolescents with 1 or more appropriate indications who are referred to specialized pediatric asthma care

- Denominator: total number of children and adolescents under 16 years of age with 1 or more appropriate indications
- Numerator: number of people in the denominator who are referred to specialized pediatric asthma care
- Data source: local data collection

Percentage of children and adolescents with asthma who have 2 or more asthma-specific emergency department visits or 1 or more asthma-specific hospitalizations and who then have a consultation with a relevant specialist clinician within 3 months of the index event

- Denominator: total number of children and adolescents under 16 years of age with asthma who have 2 or more asthma-specific emergency department visits or 1 or more asthma-specific hospitalizations
- Numerator: number of people in the denominator who have a consultation with a relevant specialist clinician within 3 months of the index event
- Data sources: local data collection, DAD, NACRS, OHIP Claims Database, RPDB

Quality Statement 6: Follow-Up After Discharge

Percentage of children and adolescents who have a follow-up assessment in primary care or an asthma clinic within 7 days following an emergency department visit or hospitalization for an asthma exacerbation

- Denominator: total number of children and adolescents under 16 years of age who visit the emergency department or are hospitalized for an asthma exacerbation
- Numerator: number of people in the denominator who have a follow-up assessment in primary care or an asthma clinic within 7 days following their discharge from the emergency department or hospitalization
- Data sources: local data collection, DAD, NACRS, OHIP Claims Database, RPDB

Looking for More Information?

Visit hqontario.ca or contact us at QualityStandards@OntarioHealth.ca if you have any questions or feedback about this quality standard.

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