

Asthma

Care in the Community for People 16 Years
of Age and Older



About This Quality Standard

The following quality standard addresses the **diagnosis and management of asthma in people 16 years of age and older**, with a focus on primary care and community-based settings. A separate quality standard addresses [*Asthma Care in the Community for People Under 16 Years of Age*](#).

What Is a Quality Standard?

Quality standards outline what high-quality care looks like for conditions or processes where there are large variations in how care is delivered, or where there are gaps between the care provided in Ontario and the care patients should receive. They:

- Help patients, families, and caregivers know what to ask for in their care
- Help health care professionals know what care they should be offering, based on evidence and expert consensus
- Help health care organizations measure, assess, and improve their performance in caring for patients

Quality standards are developed by the Quality business unit at Ontario Health, in collaboration with health care professionals, patients, and caregivers across Ontario.

For more information, contact qualitystandards@hqontario.ca.

Values That Are the Foundation of This Quality Standard

This quality standard was created, and should be implemented, according to the [Patient Declaration of Values for Ontario](#). This declaration “is a vision that articulates a path toward patient partnership across the health care system in Ontario. It describes a set of foundational principles that are considered from the perspective of Ontario patients, and serves as a guidance document for those involved in our health care system.”

These values are:

- Respect and dignity
- Empathy and compassion
- Accountability
- Transparency
- Equity and engagement

Health care professionals should acknowledge and work towards addressing the historical and present-day impacts of colonization in the context of the lives of Indigenous Peoples throughout Canada. This work involves being sensitive to the impacts of intergenerational and present-day traumas and the physical, mental, emotional, and social harms experienced by Indigenous people, families, and communities. This quality standard uses existing clinical practice guideline sources developed by groups that may not include culturally relevant care or acknowledge traditional Indigenous beliefs, practices, and models of care.

Quality Statements to Improve Care

These quality statements describe what high-quality care looks like for adults with asthma.

Quality Statement 1: Diagnosis

Adults clinically suspected of having asthma complete spirometry to demonstrate reversible airflow obstruction and, if negative, other lung function testing to confirm the diagnosis of asthma as soon as possible.

Quality Statement 2: Asthma Control

Adults with asthma have a structured assessment at least annually to determine their level of asthma control and reasons for poor control.

Quality Statement 3: Asthma Medication

Adults with asthma receive appropriate medication and devices based on their current level of asthma control, including early initiation of inhaled anti-inflammatory therapy.

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

Adults with asthma and their caregivers receive self-management education and a written personalized asthma action plan that is reviewed regularly with a health care professional.

Quality Statement 5: Referral to Specialized Asthma Care

Adults who meet criteria for severe asthma or have other appropriate indications are referred to specialized asthma care.

Quality Statement 6: Follow-Up After Discharge

Adults who have had an emergency department visit or been hospitalized for an asthma exacerbation have a follow-up assessment within 2 to 7 days after discharge.

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Scope of This Quality Standard

This quality standard addresses the diagnosis and management of asthma in adults 16 years of age and older, with a focus on primary care and community-based settings. It addresses referral to specialized asthma care for adults who meet criteria for 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.

A separate quality standard addresses [Asthma: Care in the Community for People Under 16 Years of Age](#).

Why This Quality Standard Is Needed

Asthma is a chronic inflammatory disorder of the airways in the lungs. In people with asthma, the airways become inflamed and obstructed, usually because they are hyperresponsive to internal and external factors, commonly called triggers (e.g., allergens, irritants).^{1,2} People with asthma typically experience difficulty breathing, shortness of breath, chest tightness, wheezing (a whistling sound produced in the airways during breathing), sputum (mucus) production, and/or cough. These symptoms can be episodic or persistent. As with many chronic conditions, the cause of asthma is not known with certainty, but it is thought to develop from interactions between genetic and environmental factors such as a family history of asthma and exposure to smoke, air pollution, or occupational vapours or particles.³ When asthma appears in adulthood, an estimated 10% to 25% of cases are work related.^{4,5}

Asthma is one of the most common chronic conditions in Canada. In Ontario, it is estimated that more than 2 million people were living with asthma in 2016/17.^{6,7} In recent years, the incidence of asthma in Ontario (the number of people newly diagnosed each year) has been decreasing across all age groups; it dropped from nearly 10 new cases per 1,000 people in 1996/97 to 2.45 per 1,000 in 2016/17.⁸ At the same time, because people are generally living longer, the prevalence of asthma in Ontario (the number of people living with the disease) continued to increase for all ages; it rose from around 90 per 1,000 people in 1996 to 155 per 1,000 in 2016/17.⁹ Both incidence and prevalence vary substantially across the province; in 2016/17, both were highest in the Central West region and lowest in the Waterloo Wellington region.^{8,9}

Although asthma has no cure, most people can control their asthma by using appropriate controller medications, such as inhaled corticosteroids, and reducing their exposure to triggers. The primary goal of asthma care is to help people achieve and maintain asthma control, which reduces their risk of having an exacerbation (a flare-up or asthma attack) and improves their overall health and quality of life.³ Current guidelines stress that, with appropriate management in primary care, most people with asthma should be able to live symptom free. Exacerbations requiring

oral corticosteroids, an emergency department visit, or hospitalization should usually be considered a failure of asthma management. Every asthma death should be considered preventable.¹⁰⁻¹²

However, it is estimated that 50% of people with asthma in Canada have uncontrolled disease, resulting in unnecessary reductions in quality of life and avoidable illness and deaths.^{13,14} In Ontario, about 85 people die from asthma each year (1,272 deaths from 2000 to 2015¹⁵). The age- and sex-adjusted all-cause mortality rate for people living with asthma remains higher than for the population overall (in 2008, there were 852 deaths per 100,000 people with asthma versus 640 per 100,000 in the general population¹⁶).

Uncontrolled asthma also contributes to high health care use and costs. Overall use of health services for people with asthma has been shown to be much higher for people with uncontrolled asthma¹⁷ and particularly high in the year prior to asthma-related deaths.^{1,18} Among people aged 15 years and older in Ontario in 2016/17, there were 21,886 asthma-specific emergency department visits¹⁹ and 8,393 asthma-specific hospitalizations.^{17,20}

Asthma is also associated with substantial indirect costs to society, such as absenteeism from school and work.³ The economic burden of asthma in Ontario (direct health care costs plus indirect social costs) was estimated at \$1.8 billion in 2011.²¹

These data highlight opportunities for improving the management of asthma in primary care and community-based care settings. This standard focuses on helping clinicians diagnose asthma appropriately, recognize and address uncontrolled asthma, escalate and taper medication optimally, empower people with asthma to self-manage using an asthma action plan, and support safe, effective transitions in care. Improving the quality of asthma care can help people better control their disease, preventing acute exacerbations, emergency department visits, hospital admissions, and deaths.

How to Use This Quality Standard

Quality standards inform patients, clinicians, and organizations about what high-quality care looks like for health conditions or processes deemed a priority for quality improvement in Ontario. They are based on the best evidence.

Guidance on how to use quality standards and their associated resources is included below.

For Patients

This quality standard consists of quality statements. These describe what high-quality care looks like for adults with asthma.

Within each quality statement, we've included information on what these statements mean for you, as a patient.

In addition, you may want to download the accompanying [patient guide](#) on asthma, to help you and your family have informed conversations with your health care providers. Inside, you will find questions you may want to ask as you work together to make a plan for your care.

For Clinicians and Organizations

The quality statements within this quality standard describe what high-quality care looks like for adults with asthma.

They are based on the best evidence and designed to help you know what to do to reduce gaps and variations in care.

Many clinicians and organizations are already providing high-quality evidence-based care. However, there may be elements of your care that can be improved. This quality standard can serve as a resource to help you prioritize and measure improvement efforts.

Tools and resources to support you in your quality improvement efforts accompany each quality standard. These resources include indicators and their definitions (Appendix 1) to help you assess the quality of care you are delivering and identify gaps in care and areas for improvement. While it is not mandatory to use or collect data when using a quality standard to improve care, measurement is key to quality improvement.

There are also a number of resources online to help you, including:

- Our [patient guide](#) on adult asthma, which you can share with patients and families to help them have conversations with you and their other health care providers. Please make the patient guide available where you provide care
- Our [measurement resources](#), which include our data tables to help you identify gaps in care and inform your resource planning and improvement efforts; our measurement guide of technical specifications for the indicators in this standard; and our "case for improvement" slide deck to help you to share why this standard was created and the data behind it

- Our [Getting Started Guide](#), which includes links to templates and tools to help you put quality standards into practice. This guide shows you how to plan for, implement, and sustain changes in your practice
- [Quorum](#), an online community dedicated to improving the quality of care across Ontario. This is a place where health care providers can share information, inform, and support each other, and it includes tools and resources to help you implement the quality statements within each standard
- [Quality Improvement Plans](#), which can help your organization outline how it will improve the quality of care provided to your patients, residents, or clients in the coming year

How the Health Care System Can Support Implementation

As you work to implement this quality standard, there may be times when you find it challenging to provide the care outlined due to system-level barriers or gaps. These challenges have been identified and documented as part of the development of the standard, which included extensive consultation with health care professionals and lived experience advisors and careful review of available evidence and existing programs. Many of the levers for system change fall within the purview of Ontario Health, and as such we will continue to work to address these barriers to support the implementation of quality standards. We will also engage and support other provincial partners, including the Ministry of Health or other relevant ministries, on policy-level initiatives to help bridge system-level gaps.

In the meantime, there are many actions you can take on your own, so please read the standard and act where you can.

How to Measure Overall Success

The Asthma Quality Standards Advisory Committee identified some overarching goals for this quality standard. These goals were mapped to indicators that can be used to monitor the progress being made to improve care for adults with asthma in Ontario. Some indicators are provincially measurable, while some can be measured using only locally sourced data.

Collecting and using data associated with this quality standard is optional. However, data will help you assess the quality of care you are delivering and the effectiveness of your quality improvement efforts.

We realize this standard includes a lengthy list of indicators. We've given you this list so you don't have to create your own quality improvement indicators. We recommend you identify areas to focus on in the quality standard and then use one or more of the associated indicators to guide and evaluate your quality improvement efforts.

See Appendix 1 for additional details on how to measure these indicators and our [measurement guide](#) for more information and support.

Indicators That Can Be Measured Using Provincial Data

- Percentage of adults with incident asthma whose diagnosis is confirmed with lung function testing
- Percentage of adults with asthma who visited the emergency department for an asthma-specific reason in the previous 12 months

Indicators That Can Be Measured Using Only Local Data

- Percentage of adults with asthma who had a structured assessment in the previous 6 months
- Percentage of adults with asthma with one or more appropriate indications who are prescribed inhaled anti-inflammatory therapy
- Average number of asthma symptom-free days in the previous 4 weeks among adults with asthma
- Average number of days missed from school or work due to asthma in the previous 4 weeks

Quality Statements to Improve Care: The Details

1

Diagnosis

Adults clinically suspected of having asthma complete spirometry to demonstrate reversible airflow obstruction and, if negative, other lung function testing to confirm the diagnosis of asthma as soon as possible.

Sources: British Thoracic Society and Scottish Intercollegiate Guidelines Network, 2019¹⁸ | Canadian Thoracic Society, 2010,¹⁰ 2012,¹¹ 2017¹² | Global Initiative for Asthma, 2019¹ | National Institute for Health and Care Excellence, 2017²² | Registered Nurses' Association of Ontario, 2017³

Definitions

Clinically suspected of having asthma: Asthma is clinically suspected in the presence of signs and/or symptoms of variable airflow obstruction and in the absence of an alternative diagnosis (e.g., other respiratory conditions, cardiovascular disease). Signs or symptoms of airflow obstruction include shortness of breath, chest tightness, wheezing, and/or cough. The presence of respiratory signs and symptoms should be assessed through a structured clinical history and physical examination, then documented in the medical record. Because an estimated 10% to 25% of adult-onset asthma cases are work related, a detailed occupational exposure history should also be taken to identify any relationship between symptoms and work activities and whether there are allergens or irritants in the workplace that may be causing or contributing to respiratory symptoms.

Respiratory symptoms characteristic of asthma often¹:

- Include more than one symptom (e.g., shortness of breath, chest tightness, wheezing, cough)
- Vary in intensity or over time (e.g., worse at night and/or in the early morning)
- Are caused by allergens (e.g., dust mites, pet dander, cockroaches, pollen, mould), irritants (e.g., infections, smoke, fumes, chemicals, extreme air temperatures, exercise, thunderstorms), workplace exposures (e.g., allergens, irritants), or other triggers (e.g., rhinitis, sinusitis, gastroesophageal reflux, food and drug reactions, laughter, hormonal changes during menstruation and pregnancy)

1

Diagnosis

Spirometry: This is the preferred lung function test to diagnose asthma by assessing for airflow obstruction and its reversibility.¹⁰ The test measures airflow as the ratio of forced expiratory volume in 1 second (FEV₁), which is the volume of air exhaled during the first second of the forced vital capacity (FVC) measurement, and FVC, which is the volume of air forcibly exhaled from the point of maximal inspiration. Results are presented as a percentage of the predicted value or as an absolute value to be compared with the lower limit of normal (LLN) of the FEV₁/FVC ratio. Reference values to interpret the test are generally based on age, sex, and height and can include race.

Spirometry should be performed before and after the administration of an inhaled bronchodilator. A pre-bronchodilator FEV₁/FVC result less than the LLN (approximately < 0.70–0.80) demonstrates airflow obstruction. A post-bronchodilator increase in FEV₁ of at least 12% and 200 mL indicates that airflow obstruction is reversible and supports the diagnosis of asthma. A negative spirometry test does not rule out asthma, especially when asthma is controlled, because of the low sensitivity of the test. In such cases, additional lung function testing is required to confirm the diagnosis of asthma. In situations where people cannot perform spirometry, a referral to specialized asthma care may be considered (see quality statement 5).

Other lung function testing: In Ontario, the following tests are recommended to confirm a diagnosis of asthma¹⁰:

- **Challenge tests** are an alternative method to diagnose asthma when spirometry is negative. They assess for airway hypersensitivity and hyperresponsiveness. Challenge tests are also known as bronchial provocation tests and can be direct, such as the methacholine challenge test, or indirect, such as the exercise challenge test. Methacholine challenge tests should not be performed within several weeks of an active infection. Bronchodilators should be withheld prior to testing in accordance with their duration of action. If safe to do so, inhaled corticosteroid (ICS) treatment should be withheld for 4 to 8 weeks prior to testing to remove the anti-inflammatory effect on the airways²³
- **Peak expiratory flow (PEF) measurement** assesses the presence of airflow variation over the span of 2 weeks. A variation in PEF of greater than 20% supports a diagnosis of asthma

1

Diagnosis

The measurement of airway inflammation, such as by measuring fractional exhaled nitric oxide levels (FeNO), is not yet widely available in Ontario, but there is emerging evidence for its utility in diagnosing asthma.²²

As soon as possible: Spirometry, followed by other lung function testing if spirometry is negative or not possible, should be performed to confirm the diagnosis of asthma as soon as possible and within at most 3 months of a person seeking care for their respiratory symptoms. A trial of medication may be considered if testing cannot be reliably or expediently performed, but confirmatory testing should still be completed, regardless of the outcome of the therapeutic trial.¹⁰ Every attempt should be made to ensure the asthma diagnosis can be confirmed with lung function testing, especially if any changes in the person's condition suggest they may be able to undergo testing. This includes the re-evaluation of an adult diagnosed with asthma in childhood without objective measures.

Rationale

In Ontario, spirometry and other lung function testing to diagnose asthma is increasing but not yet routine. According to available administrative health data, about half of people receive lung function testing to confirm their diagnosis within 3½ years of starting asthma care.²⁴

Often, asthma is diagnosed based on symptoms and history, without spirometry or other lung function testing.^{14,25} There is a risk of misdiagnosis when reversible airflow obstruction is not confirmed with lung function testing, since other conditions can cause asthma-like symptoms.¹⁴ In addition to inappropriate treatment, a false misdiagnosis of asthma can lead to delays in making the correct diagnosis.²⁵

Without lung function testing, an asthma diagnosis may also be missed, leading to inappropriate treatment with non-asthma medications (e.g., antibiotics for chronic cough). Failure to diagnose asthma and begin appropriate medication also increases the risk of the person having a severe asthma exacerbation.¹⁴

1

Diagnosis

What This Quality Statement Means

For Adults Suspected of Having Asthma

If your symptoms include shortness of breath, a feeling of tightness in your chest, wheezing, or cough, your family doctor or nurse practitioner should make sure you have a breathing test before they diagnose you with asthma. They may offer you medication while you wait to have this test done. Once your test results are available, your family doctor or nurse practitioner will review the results with you.

For Clinicians

Administer or order spirometry for adults clinically suspected of having asthma to confirm a diagnosis of asthma. Given the low sensitivity of spirometry with bronchodilator response testing for the diagnosis of asthma, in cases of suspected asthma in which spirometry with bronchodilator response testing is negative, additional lung function testing such as methacholine challenge testing is required to assess possible asthma.

Testing should occur as soon as possible and ideally be completed within at most 3 months of a person seeking care for their respiratory symptoms. Once results are available, review the results with patients. Longer wait times should not deter clinicians from ordering and seeking appropriate lung function testing before confirming a diagnosis of asthma. Document signs and symptoms of variable airflow obstruction obtained from clinical history, physical examinations, and objective measures as the basis for diagnosing asthma.^{18,22}

For Health Services Planners

Ensure lung function testing is locally available and accessible. Ensure health care professionals in primary care and community-based settings are aware of the local availability of lung function testing²² and can order appropriate lung function testing for people clinically suspected of having asthma, including spirometry and challenge tests, without first referring to specialized asthma care. Ensure spirometry is performed within a quality assurance program by trained health care professionals.^{3,18}

QUALITY INDICATORS: HOW TO MEASURE IMPROVEMENT FOR THIS STATEMENT

- Percentage of adults clinically suspected of having asthma who complete lung function testing within 3 months of seeking care for their respiratory symptoms
- Local availability of lung function testing

Measurement details for these indicators, as well as indicators to measure overarching goals for the entire quality standard, are presented in Appendix 1.

2

Asthma Control

Adults with asthma have a structured assessment at least annually to determine their level of asthma control and reasons for poor control.

Sources: British Thoracic Society and Scottish Intercollegiate Guidelines Network, 2019⁸ | Canadian Thoracic Society, 2010,¹⁰ 2012,¹¹ 2017¹² | Global Initiative for Asthma, 2019¹ | National Institute for Health and Care Excellence, 2017²² | Registered Nurses' Association of Ontario, 2017³

Definitions

Structured assessment to determine level of asthma control: Asthma control parameters for adults include measures of symptoms, lung function, and airway inflammation.

Symptom control

Symptom control over the previous 4 weeks should be assessed at least annually, using validated symptom-control questionnaires and tools (e.g., the Asthma Control Test [ACT], the Asthma Control Questionnaire [ACQ]) to evaluate the following criteria¹⁰:

- Daytime symptoms (target < 4 days/week)
- Nighttime symptoms (target < 1 night/week)
- Frequency of need for rescue or reliever medication (target < 4 doses/week)
- Physical activity (target normal)
- Absence from work or school due to asthma (target none)

Frequency and severity of exacerbations (target infrequent and mild) should be assessed since the last health care encounter in which they were assessed.²⁶

2

Asthma Control

Lung function

Lung function should be assessed with spirometry and other lung function testing as needed (1) at the start of treatment; (2) after 3 to 6 months of treatment to identify and document response to treatment and the person's personal best forced expiratory volume in 1 second (FEV₁); and (3) annually for ongoing assessment of asthma control and risk of exacerbation.¹ The following measures of lung function should be assessed:

- FEV₁ (target \geq 90% of personal best)
- If spirometry is unavailable, peak expiratory flow (PEF) can be used (target diurnal variation < 10%–15%)¹⁰

Airway inflammation

Airway inflammation should also be assessed for adults with uncontrolled moderate to severe asthma receiving care in specialist centres:

- Sputum eosinophils (target < 2%–3%)

At least annually: Symptom control and any reasons for poor control should be assessed at least annually using a structured assessment, and in some cases more frequently: (1) at every asthma-related health care encounter; (2) after a severe exacerbation of symptoms; (3) when there is a change in treatment; (4) when a pattern of short-acting β 2-agonist (SABA) overuse is detected within a year (defined as \geq 3 SABA inhalers used in \leq 1 year)^{27,28}; and (5) when there are complex health needs. In some cases, a phone or virtual health care encounter may be sufficient to assess asthma symptom control. Lung function should be assessed at least annually as described above.

Reasons for poor control: Health care professionals should explore the following reasons for poor control, as these factors can increase the risk of more severe asthma exacerbations and contribute to poor quality of life:

- Inadequate adherence to controller medication (e.g., inhaled corticosteroid [ICS] underuse due to side effects, attitudes and goals for asthma treatment, affordability)
- Incorrect inhaler technique

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Asthma Control

- Exposure to allergic triggers and irritants, including workplace exposures (e.g., colds, allergens, smoke, cigarette smoke, electronic cigarette vapours, inhaled cannabis, chemicals, perfumes/scents)
- Symptomatic comorbidities (e.g., rhinitis, chronic rhinosinusitis, gastroesophageal reflux, obesity, obstructive sleep apnea, depression, anxiety)^{1,12}
- Impacts of social determinants of health and the challenges with accessing supports to address these impacts (e.g., education, employment, ethnicity and culture, family and social support, housing, geographic location, income, transportation, and access to care)

Rationale

Asthma control should be assessed at least annually in primary care.^{10,18,29} Assessing control is an important gap in care for adults with asthma. A longitudinal audit of primary care practice in Ontario in 2012 and 2013 found that only 15% of patients had had an assessment to determine their level of asthma control at least once during the study period.³⁰ Health care professionals assessed asthma symptom control with at least one question from guideline recommendations in only 6% of visits (261 of 4,122 visits). Among these visits, they asked 1.6 of a recommended five questions, on average. They asked about daytime symptoms in 61% of visits with any asthma control assessment; frequency of need for reliever medication (45%); nighttime symptoms (27%); physical activity limitations (23%); and school or work absenteeism (4%). All five asthma control criteria were assessed in only 1.5% (n = 4) of these visits.³⁰

In addition, there is a widening gap between current practice and the recommended annual assessment of lung function (see definition in this statement). The percentage of people who received asthma-related care and had lung function testing within that same year decreased by more than half in Ontario, from 14% in 1996/97 to 7% in 2016/17.²⁴

The lack of ongoing assessment of asthma control is concerning because an estimated 50% of people with the disease have uncontrolled asthma.^{13,14} Uncontrolled asthma is most commonly associated with nonadherence to medication, incorrect inhaler technique, lack of objective diagnosis (see quality statement 1), and poor management of comorbidities.¹² These and other reasons for poor control can be identified and addressed to help people achieve and maintain asthma control.¹²

2

Asthma Control

What This Quality Statement Means For Adults With Asthma

A health care professional should see you at least annually to check on your asthma. If you have a severe flare-up or you have a change in your medication, your health care professional may need to see you more often. At these appointments, they should explain how you can expect to feel when your asthma is controlled, and they should ask you about:

- Your asthma symptoms and what makes them worse
- Your use of medications
- Anything else that might be affecting how you feel

You can help by keeping track of these details between appointments.

For Clinicians

Inform patients they can expect to live symptom free when asthma is controlled. Assess asthma symptom control according to recommended criteria regularly, and at least annually. The structured assessment should determine the person's level of asthma symptom control and any reasons for poor control so they can be addressed before modifying medication (see quality statement 3). Whenever possible, ensure spirometry and other lung function testing as needed are done as described above.

For Health Services Planners

Ensure people with asthma are informed that they can expect to live symptom free when their asthma is controlled. Ensure training, systems, processes, and resources are in place in primary care and community-based settings for health care professionals to—at least annually and according to recommended criteria—assess asthma symptom control and reasons for poor control. Ensure the local availability and accessibility of lung function testing to monitor asthma control.

QUALITY INDICATORS: HOW TO MEASURE IMPROVEMENT FOR THIS STATEMENT

- Percentage of adults with asthma who had a structured assessment in the previous 6 months
- Percentage of adults with asthma who completed a lung function test in the previous 12 months

Measurement details for these indicators, as well as indicators to measure overarching goals for the entire quality standard, are presented in Appendix 1.

3

Asthma Medication

Adults with asthma receive appropriate medication and devices based on their current level of asthma control, including early initiation of inhaled anti-inflammatory therapy.

Sources: British Thoracic Society and Scottish Intercollegiate Guidelines Network, 2019¹⁸ | Canadian Thoracic Society, 2017¹² | Global Initiative for Asthma, 2019¹ | National Institute for Health and Care Excellence, 2017²² | Registered Nurses' Association of Ontario, 2017³

Definitions

Appropriate medication and devices: All adults with a confirmed diagnosis of asthma should be offered medication based on their current level of asthma control (see quality statement 2) and the most appropriate inhaler devices and spacer device to meet their needs. (A spacer device is a long tube with a valve that can be attached to metered dose inhalers to make it easier to inhale the medication.) Those with one or more criteria of uncontrolled asthma should have their medication escalated to help them gain control, but only after addressing other reasons for poor control (e.g., by counselling on smoking cessation, elimination of tobacco and cannabis smoke exposure, and allergen avoidance or immunotherapy [if indicated]). Reasons for poor control include, but are not limited to, symptoms of comorbid conditions, trigger exposures (e.g., colds, allergens, cigarette smoke, electronic cigarette vapours, workplace irritants), incorrect inhaler technique, overreliance on rescue or reliever medication with inadequate use of controller medication (see quality statement 2).

Once the person with asthma has achieved control with at least 3 to 6 months of daily anti-inflammatory medication, medication should be reduced to the lowest effective dose required to maintain asthma control, prevent future exacerbations, and minimize side effects unless previous recent attempts have failed.

Medication should be offered, escalated, and de-escalated as follows:

- **Step 1:** Adults who experience symptoms less than two times per week and have no risk factors for exacerbations may use as-needed inhaled short-acting reliever medication in the form of a short-acting β_2 -agonist (SABA).¹² As-needed use of a combined inhaled anti-inflammatory and fast/long-acting reliever medication in the form of low-dose inhaled corticosteroid (ICS)-formoterol may be an alternative step 1 therapy³¹⁻³⁴

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Asthma Medication

- **Step 2:** Adults who experience symptoms two or more times per week or meet other criteria for uncontrolled asthma should be offered a daily inhaled anti-inflammatory medication in the form of a low-dose ICS with as-needed SABA reliever medication.^{12,18,22,35} Recent evidence suggests that the as-needed use of a combined inhaled anti-inflammatory and fast/long-acting reliever medication in the form of low-dose ICS-formoterol may be an alternative step 2 therapy.³¹⁻³⁴ Daily use of an oral anti-inflammatory medication in the form of a leukotriene receptor antagonist (LTRA) with as-needed SABA reliever medication is a second-line step 2 therapy¹²
- **Step 3:** Adults who have uncontrolled asthma while using a daily inhaled anti-inflammatory medication in the form of a low-dose ICS should be offered a daily combined inhaled anti-inflammatory and long-acting reliever medication at a low dose (i.e., an ICS/long-acting β_2 -agonist [LABA]) with as-needed SABA reliever medication. Those who have uncontrolled asthma while using as-needed low-dose ICS-formoterol should similarly be switched to daily use of this medication (with as-needed low-dose ICS-formoterol also used as a reliever medication). Second-line step 3 therapies include continuing to take daily low-dose ICS and adding a daily LTRA, or escalating to a medium-dose ICS¹²
- **Step 4:** Adults who have uncontrolled asthma while using a daily combined inhaled anti-inflammatory and long-acting reliever medication in the form of low-dose ICS/LABA should be offered a daily medium-dose ICS/LABA (with as-needed SABA or medium-dose ICS-formoterol used as a reliever medication). Second-line step 4 therapies include continuing to take a daily low-dose ICS/LABA and adding a daily LTRA or continuing to take a daily low-dose ICS/LABA and adding daily tiotropium¹²
- **Step 5:** Adults who have uncontrolled asthma while using daily step 4 medications should be offered daily high-dose ICS/LABA (with as-needed SABA or high-dose ICS-formoterol used as a reliever medication) and should be referred to specialized asthma care (see quality statement 5)

Medication de-escalation can be attempted once the person with asthma has achieved control for at least 3 to 6 months.

Adults with clinically suspected asthma not yet confirmed with lung function testing may be prescribed a trial of therapy if testing cannot be reliably or expediently performed, but confirmatory lung function testing should still be completed as soon as possible, regardless of the outcome of the therapeutic trial (see quality statement 1).¹⁰

Asthma control: Parameters include measures of symptoms, lung function, and airway inflammation, as described in quality statement 2.

3

Asthma Medication

Rationale

Asthma management aims to control the disease and, by doing so, prevent or minimize the risk of short- and long-term complications and death.¹⁰ Because uncontrolled asthma is commonly associated with overreliance on rescue or reliever medication and inadequate use of controller medication, care delivery that follows guideline recommendations for medication escalation can help to improve asthma control.

However, appropriate medication as a component of asthma management often depends on other key components of high-quality asthma care, such as regular assessment of asthma control and reasons for poor control (see quality statement 2) and the use of asthma action plans along with asthma education (see quality statement 4).¹ Therefore, discussions about appropriate medication and devices between the person with asthma and their health care professional should promote patient empowerment, shared decision-making, and self-management. This can include discussions of the patient's preferences, such as goals, beliefs, and concerns about asthma and medications; their preferences for strategies to achieve control and to reduce the risk of asthma exacerbations (while considering individual characteristics or phenotype); and practical issues, such as inhaler technique, controller medication adherence, and the affordability of medications.¹

The need for increased knowledge among prescribers about optimal escalation and tapering of asthma medication continues to be an important part of appropriate prescribing. Despite recommendations for the early initiation of inhaled anti-inflammatory therapy and for escalating or tapering the controller medication based on patients' asthma control level, a longitudinal practice audit in Ontario found large gaps in care.³⁰ Many people with uncontrolled asthma (55%) were not prescribed any inhaled anti-inflammatory medication, and, among those who were prescribed anti-inflammatory medication, only half had it escalated from ICS alone to ICS with a LABA or ICS with an LTRA.³⁰

What This Quality Statement Means

For Adults With Asthma

Most adults with asthma can live symptom free by regularly using their controller puffer and by avoiding triggers as much as possible. Your family doctor or nurse practitioner should talk with you about your goals, beliefs, and concerns about asthma and medications so you can decide together what asthma medication and devices would work best for you.

They should:

- Explain when to use your puffers and show you how to use them
- Ask you to show them how you use your puffers to make sure you are confident using them

There are many different types of asthma medication. If you continue to have asthma symptoms while using your current medications, talk with your family doctor or nurse practitioner about trying a different dose or a different asthma medication. When you fill prescriptions, your pharmacist will teach you to use the medication and answer any questions you have. It is important to take your controller medication every day if your doctor or nurse practitioner has prescribed it this way.

For Clinicians

Prescribe medications based on the person's level of asthma control. Escalate medication according to the steps described in this statement's definitions, only after addressing other reasons for poor control (see quality statement 2). Initiate a low-dose ICS as a regular controller medication for adults with a confirmed diagnosis of asthma who experience asthma symptoms two

QUALITY INDICATORS: HOW TO MEASURE IMPROVEMENT FOR THIS STATEMENT

- Percentage of adults with asthma with one or more appropriate indications who are prescribed inhaled anti-inflammatory therapy
- Percentage of adults with uncontrolled asthma who have had all their reasons for poor control addressed
- Percentage of adults with uncontrolled asthma who have their medication escalated after other reasons for poor control have been addressed

Measurement details for these indicators, as well as indicators to measure overarching goals for the entire quality standard, are presented in Appendix 1.

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Asthma Medication

or more times per week or meet other criteria for uncontrolled asthma. As an alternative, ICS-formoterol, to be taken as needed, may be prescribed for the same indications. Once the person with asthma has achieved control with at least 3 to 6 months of daily anti-inflammatory medication, medication should be reduced to the lowest effective dose required to maintain asthma control, prevent future exacerbations, and minimize side effects unless previous recent attempts have failed.

For people without a confirmed asthma diagnosis, prescribe a trial of medication only if lung function testing cannot be reliably or expediently performed (see quality statement 1). Confirmatory testing should still be completed, regardless of the outcome of the therapeutic trial¹⁰

When prescribing or dispensing asthma medication, provide clear instructions about when and how to properly use the medication and its delivery system. Teach proper inhaler technique and use of a spacer device, if needed, and ask people to demonstrate how they use their inhaler to ensure proper technique. (This patient education method is called “teach back.”)

For Health Services Planners

Ensure training, systems, processes, and resources are in place in primary care and community-based settings for health care professionals to prescribe appropriate medication and devices based on the level of asthma control. Ensure adults with asthma can access and afford the medication and devices most appropriate for them.

4

Self-Management Education and Asthma Action Plan

Adults with asthma and their caregivers receive self-management education and a written personalized asthma action plan that is reviewed regularly with a health care professional.

Sources: British Thoracic Society and Scottish Intercollegiate Guidelines Network, 2019¹⁸ | Canadian Thoracic Society, 2010,¹⁰ 2012,¹¹ 2017¹² | Global Initiative for Asthma, 2019¹ | National Institute for Health and Care Excellence, 2017²² | Registered Nurses' Association of Ontario, 2017³

Definitions

Self-management education: This is tailored to the person's learning needs and provided by a trained health care professional. It should include information and support related to the following issues³:

- Medication adherence (e.g., side effects, attitudes and goals for asthma treatment, affordability)
- Medication delivery device and inhaler technique
- Identification and avoidance or reduction of exposure to allergic and irritant triggers (e.g., pet dander, mould, colds, smoke, air pollution, extreme air temperatures, chemicals, perfumes/scents)
- Smoking prevention and cessation for the person with asthma and other people in their household (e.g., vaping, tobacco, cannabis)
- Impact of comorbidities on asthma symptoms and importance of management of comorbidities (e.g., rhinitis, chronic rhinosinusitis, gastroesophageal reflux, obesity, obstructive sleep apnea, depression, anxiety)^{1,12}
- Use of peak flow meters when indicated

To ensure people are empowered to self-manage their asthma, health care professionals who

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Self-Management Education and Asthma Action Plan

provide self-management education and supports should consider the social determinants of health and the person's circumstances (e.g., education, employment, ethnicity and culture, family and social support, housing, geographic location, income, transportation, and access to care).

Asthma action plan: A written personalized asthma action plan (sometimes referred to as an AAP) is provided alongside self-management education. It typically uses three "zones" (similar to traffic light colours: green, yellow, and red) to describe the level of asthma control. It is a collaboratively written set of instructions that is explained and provided to the person with asthma and/or their caregiver(s) to assist them with the following:

- How to assess their asthma control (self-monitoring)
- How to maintain good control and prevent asthma exacerbations by regularly using controller medication
- How to identify signs, symptoms, and/or peak flow rate indicating uncontrolled asthma
- What to do during periods of uncontrolled asthma, such as adding medications or increasing the dose of medication; how much medication to take and for how long; and when and how to seek help (e.g., when to call their health care professional or go to the hospital)

Reviewed regularly: The written personalized asthma action plan should be reviewed at every asthma-related health care encounter, after a severe exacerbation of symptoms, when there is a change in the person's level of asthma control or a change in treatment, or at least annually.

Health care professional: Many types of health care professionals may be involved in providing and reviewing asthma action plans and providing self-management education. Asthma action plans can be provided by primary care providers, such as family doctors or nurse practitioners, or by respirologists, allergists, and other physicians. In addition, nurses, respiratory therapists, pharmacists, and other health care professionals who are certified respiratory educators (CREs) or certified asthma educators (CAEs) can review asthma action plans and provide self-management education.

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Self-Management Education and Asthma Action Plan

Rationale

Providing self-management education on inhaler technique, along with written personalized asthma action plans that reinforce understanding of medication and are regularly reviewed by a health care professional, can significantly improve people's asthma management and their health outcomes.^{11,36,37} In practice currently, self-management education remains poorly implemented and patients rarely receive written asthma action plans. For example, in a 2004 survey, only 22% of Canadian physicians reported consistently providing written asthma action plans, while 11% of patients reported receiving one.¹³ Chart audits of primary and emergency department care in Ontario and Alberta have shown that the overwhelming majority of patients with asthma do not have asthma action plans.^{8,36,38}

What This Quality Statement Means

For Adults With Asthma

Your health care professional should explain asthma to you, including what you can do to take care of yourself. You, your caregivers (if you want them involved), and your health care professional should work together to write your personal asthma action plan. This plan describes:

- Your medications and how to take them
- Things you can do each day to stay healthy
- What to do if your symptoms flare up

QUALITY INDICATORS: HOW TO MEASURE IMPROVEMENT FOR THIS STATEMENT

- Percentage of adults with asthma who have ever received asthma self-management education from a trained health care professional
- Percentage of adults with asthma who have received a written personalized asthma action plan
- Percentage of adults with asthma who have a written personalized asthma action plan and who have had their asthma action plan reviewed in the previous 12 months

Measurement details for these indicators, as well as indicators to measure overarching goals for the entire quality standard, are presented in Appendix 1.

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Self-Management Education and Asthma Action Plan

For Clinicians

When prescribing medication, provide asthma self-management education to adults with asthma and their caregivers, and work with them to create a written personalized asthma action plan that considers literacy, usability, and language. Ensure they receive information about and referrals to local service providers who can help them learn how to avoid or reduce exposure to triggers and improve their ability to self-manage (e.g., referral to asthma education, team-based care, or social services).

When dispensing medication, ensure it aligns with the person's asthma action plan and review the plan with them.

For Health Services Planners

Ensure training, systems, processes, and resources are in place in primary care and community-based settings for health care professionals to provide and review asthma action plans and self-management education with adults with asthma and their caregivers. Ensure adults with asthma and their caregivers have access to health care professionals trained in providing asthma self-management education and asthma action plans, including, but not limited to, respiratory therapists and other health care professionals who are CREs or CAEs.

Referral to Specialized Asthma Care

Adults who meet criteria for severe asthma or have other appropriate indications are referred to specialized asthma care.

Sources: British Thoracic Society and Scottish Intercollegiate Guidelines Network, 2019¹⁸ | Canadian Thoracic Society, 2010,¹⁰ 2012,¹¹ 2017¹² | Global Initiative for Asthma, 2019¹ | National Institute for Health and Care Excellence, 2017²² | Registered Nurses' Association of Ontario, 2017³

Definitions

Severe asthma: "Asthma which requires treatment with high-dose inhaled corticosteroid [ICS; as outlined in the current Canadian Thoracic Society position statement¹²] and a second controller for the previous year, or systemic corticosteroids for 50% of the previous year to prevent it from becoming 'uncontrolled,' or which remains 'uncontrolled' despite this therapy."¹² Before categorizing a person's asthma as severe, health care professionals should assess asthma control using a structured assessment and thoroughly assess reasons for poor control (see quality statement 2). Further investigations and certain treatments for severe asthma may be better suited to care by asthma specialists.

Appropriate indications: Appropriate indications for referral to specialized asthma care include, but are not limited to, the following categories:

- The person's inability to complete lung function testing
- Diagnostic uncertainty (e.g., having obstructive spirometry but negative bronchodilator reversibility, symptoms suggestive of asthma but negative spirometry and negative peak flow variability)
- Uncontrolled asthma, including near-fatal exacerbations and uncontrolled asthma in pregnancy
- Severe asthma
- Confirmed or suspected work-related asthma (i.e., occupational or work-aggravated asthma)
- Suspected side effects of treatment (e.g., fungal or yeast infections, osteoporosis)

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Referral to Specialized Asthma Care

- Any asthma-related hospitalization
- Need for allergy testing to assess the possible role of environmental allergens

Specialized asthma care: Depending on the clinical indication, one or more of the following professionals may provide specialized asthma care:

- A respirologist
- An allergist
- A general internist with expertise in respiratory medicine
- A health care professional with expertise in asthma and/or working within a specialized asthma clinic, such as a family physician, a nurse practitioner, a nurse, a respiratory therapist, or another health care professional who is a certified respiratory educator (CRE) or certified asthma educator (CAE)

Rationale

Most adults with asthma can effectively manage their disease and symptoms with appropriate medication, self-management education, and support from primary care. However, some people continue to have uncontrolled asthma despite appropriate asthma medication (see quality statement 3) or require maximal doses of medication to achieve control, and they may have severe asthma.^{1,12} In such clinical situations, a referral to specialized asthma care may be needed for expert advice about diagnosis and/or management.^{1,12} To promote patient-centred care, the referral process should involve an integrated approach in which there is collaboration, communication, and shared decision-making among health care professionals and the person with asthma.

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Referral to Specialized Asthma Care

A recent chart audit of a convenience sample of primary care clinics in Ontario highlighted that wait times (the duration between a patient's referral and their specialist visit) vary across clinical specialties (median of 79 days for nonurgent referrals and 49 days for urgent referrals).³⁹ Electronic tools for specialist consultation such as eConsult or virtual visits can be used to improve wait times for specialized asthma care.

What This Quality Statement Means

For Adults With Asthma

If you take your medication and avoid triggers as much as possible but continue to have asthma symptoms, or if your family doctor or nurse practitioner has other concerns, they should consult with or refer you to specialized asthma care.

For Clinicians

Ensure adults with severe asthma or other appropriate indications (see definitions in this statement) are referred to specialized asthma care. After seeing the patient, the specialized asthma care provider should communicate the recommended plan for treatment and follow-up (if needed) to the primary care provider. In some cases, a consultation between the primary care provider and specialized asthma care provider may be required or sufficient; that is, the patient may not need to visit the specialized provider.

All clinicians involved should ensure the entire referral process involves collaboration, communication, and shared decision-making among health care professionals, the person with asthma, and their caregivers.

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Referral to Specialized Asthma Care

For Health Services Planners

Ensure systems, processes, and resources are in place so all adults with asthma have timely access to specialized asthma care when needed upon referral from their primary care provider, including the use of eReferral, eConsult, and virtual visits. Ensure health care professionals in primary care and community-based care are aware of the asthma services and referral processes in their communities.³

QUALITY INDICATORS: HOW TO MEASURE IMPROVEMENT FOR THIS STATEMENT

- Percentage of adults with severe asthma or one or more appropriate indications who are referred to specialized asthma care
- Percentage of adults with asthma who have two or more asthma-specific emergency department visits or one or more hospitalizations and who then have a consultation with a relevant specialist physician within 3 months of the index event

Measurement details for these indicators, as well as indicators to measure overarching goals for the entire quality standard, are presented in Appendix 1.

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Follow-Up After Discharge

Adults who have had an emergency department visit or been hospitalized for an asthma exacerbation have a follow-up assessment within 2 to 7 days after discharge.

Sources: British Thoracic Society and Scottish Intercollegiate Guidelines Network, 2019¹⁸ | Global Initiative for Asthma, 2019¹

Definitions

Asthma exacerbation: This can occur in people with a pre-existing diagnosis of asthma (even when mild or well controlled) or, occasionally, as the first presentation of asthma. It is an episode characterized by a progressive worsening in symptoms of shortness of breath, cough, wheezing, or chest tightness, and a progressive decrease in lung function. Asthma exacerbations represent a big enough change from the person's usual status to require a change in treatment (e.g., the use of oral corticosteroids), an emergency department visit, or hospitalization. Exacerbations often occur in response to irritant or allergic trigger exposures (e.g., viral, bacterial, or fungal infection in the upper or lower respiratory tract, air pollution, smoke, pollen) and/or inadequate controller medication adherence. However, a subset of people present with exacerbations without trigger exposures.

Follow-up assessment: Adults should be assessed in primary care or an asthma clinic within 2 to 7 days of an emergency department visit or hospital discharge and reassessed regularly over subsequent weeks until they achieve asthma control and reach or surpass their personal best lung function (see quality statement 2). The initial follow-up may be completed by primary care providers, such as family doctors or nurse practitioners, or by respirologists, allergists, and other physicians or other members of the care team, such as nurses, respiratory therapists, and pharmacists who are certified respiratory educators (CREs) or certified asthma educators (CAEs). In some cases, a phone or virtual follow-up may be sufficient.¹

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Follow-Up After Discharge

The follow-up assessment should be individualized and related to the details of the emergency department visit or hospitalization. Components of the follow-up assessment include, but are not limited to, a review of the following:

- The person's or their caregivers' understanding of the cause of the asthma exacerbation
- Asthma control and reasons for poor control (see quality statement 2)
- Changes in medication as needed by prescribing physicians or nurse practitioners, including discontinuation of oral corticosteroids (see quality statement 3)
- Asthma action plan (see quality statement 4)
- Self-management education, including medication adherence, inhaler technique, and avoidance or reduction of trigger exposures (see quality statement 4)

Rationale

Asthma exacerbations can be life-threatening emergencies and may require care in an emergency department or a hospitalization.¹ The subsequent transition from hospital to home can complicate a person's care, as transitions are vulnerable points in the provision of health care.⁴⁰ Transitions pose a risk of information being lost or miscommunicated between health care settings, which can increase the person's vulnerability to adverse events.⁴¹

The need for acute care in adults with asthma should be considered a failure of asthma management, and their transition back to primary care should provide an opportunity to address gaps in care and/or self-management.¹⁰ Gaps in the quality of hospital-based care may also increase vulnerability to adverse events. For example, the Ontario Asthma Regional Variation Study documented important care gaps in Ontario emergency departments, including underutilization of systemic steroids on discharge (in about 33% of adult patients) and failure to refer patients to specialized asthma care (about 2.7%).⁴²

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Follow-Up After Discharge

Prompt follow-up in primary care or referral to an asthma clinic can mitigate these risks. In some patients with respiratory or chronic illnesses other than asthma, early follow-up has been linked to improved patient outcomes and reduced rates of readmission, emergency department use, and death.⁴¹

For more information on discharge planning and follow-up in primary care after discharge, please see the quality standard [Transitions Between Hospital and Home](#).

What This Quality Statement Means

For Adults With Asthma

If you went to the emergency department or were hospitalized because of an asthma flare-up, your family doctor or nurse practitioner should follow up with you within 2 to 7 days to see how you are doing and make any needed changes to your medications or your asthma action plan. In some cases, the initial follow-up may be done by a respirologist, allergist, or another physician, or by other members of the care team such as nurses, respiratory therapists, and pharmacists who are certified respiratory educators (CREs) or certified asthma educators (CAEs). At this visit, you can also ask questions to make sure you understand:

- What caused the flare-up
- What care you received
- What you can do to prevent asthma flare-ups

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Follow-Up After Discharge

For Clinicians

Before an adult who has had an asthma exacerbation is discharged from an emergency department, the care team should tell the person with asthma to arrange a follow-up primary care appointment. If the person was hospitalized, the hospital care team should arrange for a follow-up assessment in primary care. In either setting, the care team should send the person's discharge information directly to their primary care provider. Primary care follow-up is important to ensure the person's treatment continues, their asthma symptoms are well controlled, and their lung function reaches their known personal best.

Following discharge, consider referral to an asthma education program or specialized asthma care.¹

For Health Services Planners

Ensure systems, processes, and resources are in place so all adults have timely access to follow-up in primary care after an asthma-specific emergency department visit or hospitalization. This includes ensuring all adults with asthma have a primary care provider, arrangements for a follow-up assessment in primary care are made, and seamless communication is possible between hospital and primary care settings.

QUALITY INDICATOR: HOW TO MEASURE IMPROVEMENT FOR THIS STATEMENT

- Percentage of adults 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

Measurement details for this indicator, as well as indicators to measure overarching goals for the entire quality standard, are presented in Appendix 1.

Appendices

Appendix 1. Measurement to Support Improvement

The Asthma Quality Standards Advisory Committee identified some overarching goals for this quality standard. These goals were mapped to indicators that can be used to monitor the progress being made to improve care for adults with asthma in Ontario. Some indicators are provincially measurable, while some can be measured using only locally sourced data.

Collecting and using data associated with this quality standard is optional. However, data will help you assess the quality of care you are delivering and the effectiveness of your quality improvement efforts.

We realize this standard includes a lengthy list of indicators. We've given you this list so you don't have to create your own quality improvement indicators. We recommend you identify areas to focus on in the quality standard and then use one or more of the associated indicators to guide and evaluate your quality improvement efforts.

To assess equitable delivery of care, you can stratify locally measured indicators by patient socioeconomic and demographic characteristics, such as age, education, gender, income, language, and sex.

Our [measurement guide](#) for asthma provides more information and concrete steps on how to incorporate measurement into your planning and quality improvement work.

How to Measure Overall Success

Indicators That Can Be Measured Using Provincial Data

Percentage of adults with incident asthma whose diagnosis is confirmed with lung function testing

- Denominator: total number of adults with asthma
- Numerator: number of people in the denominator whose diagnosis is confirmed with lung function testing
- Data sources: Discharge Abstract Database, National Ambulatory Care Reporting System, OHIP Claims Database

Percentage of adults with asthma who visited the emergency department for an asthma-specific reason in the previous 12 months

- Denominator: total number of adults with asthma
- Numerator: number of people in the denominator who visited the emergency department for an asthma-specific reason in the previous 12 months
- Data sources: Discharge Abstract Database, National Ambulatory Care Reporting System, OHIP Claims Database

Indicators That Can Be Measured Using Only Local Data

Percentage of adults with asthma who had a structured assessment in the previous 6 months

- Denominator: total number of adults 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 adults with asthma with one or more appropriate indications who are prescribed inhaled anti-inflammatory therapy

- Denominator: total number of adults with asthma with one or more appropriate indications
- Numerator: number of people in the denominator who are prescribed inhaled anti-inflammatory therapy
- Data source: local data collection

Average number of asthma symptom-free days in the previous 4 weeks among adults with asthma

- Population: total number of adults with asthma
- Calculation: mean number of symptom-free days in the previous 4 weeks
- Data source: local data collection

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

- Population: total number of adults with asthma
- Calculation: mean number of days missed from school or work due to asthma in the previous 4 weeks
- Data source: local data collection

How to Measure Improvement for Specific Statements

Quality Statement 1: Diagnosis

Percentage of adults clinically suspected of having asthma who complete lung function testing within 3 months of seeking care for their respiratory symptoms

- Denominator: total number of adults 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

Local availability of lung function testing

- Data source: local data collection

Quality Statement 2: Asthma Control

Percentage of adults with asthma who had a structured assessment in the previous 6 months

- Denominator: total number of adults 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 adults with asthma who completed a lung function test in the previous 12 months

- Denominator: total number of adults 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, Discharge Abstract Database, National Ambulatory Care Reporting System, OHIP Claims Database

Quality Statement 3: Asthma Medication

Percentage of adults with asthma with one or more appropriate indications who are prescribed inhaled anti-inflammatory therapy

- Denominator: total number of adults with asthma with one or more appropriate indications
- Numerator: number of people in the denominator who are prescribed inhaled anti-inflammatory therapy
- Data sources: local data collection, Discharge Abstract Database, National Ambulatory Care Reporting System, Ontario Drug Benefit Database (65+ population), OHIP Claims Database

Percentage of adults with uncontrolled asthma who have had all their reasons for poor control addressed

- Denominator: total number of adults 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 adults with uncontrolled asthma who have their medication escalated after other reasons for poor control have been addressed

- Denominator: total number of adults 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 adults with asthma who have ever received asthma self-management education from a trained health care professional

- Denominator: total number of adults with asthma
- Numerator: number of people in the denominator who have received asthma self-management education from a trained health care professional at least once
- Data source: local data collection

Percentage of adults with asthma who have received a written personalized asthma action plan

- Denominator: total number of adults 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 adults 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 adults 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 Asthma Care

Percentage of adults with severe asthma or one or more appropriate indications who are referred to specialized asthma care

- Denominator: total number of adults with severe asthma or one or more appropriate indications
- Numerator: number of people in the denominator who are referred to specialized asthma care
- Data source: local data collection

Percentage of adults with asthma who have two or more asthma-specific emergency department visits or one or more hospitalizations and who then have a consultation with a relevant specialist physician within 3 months of the index event

- Denominator: total number of adults with asthma who have two or more asthma-specific emergency department visits or one or more hospitalizations
- Numerator: number of people in the denominator who have a consultation with a relevant specialist physician within 3 months of the index event
- Data sources: Discharge Abstract Database, National Ambulatory Care Reporting System, OHIP Claims Database

Quality Statement 6: Follow-Up After Discharge

Percentage of adults 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 adults 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, Discharge Abstract Database, National Ambulatory Care Reporting System, OHIP Claims Database

Appendix 2. Glossary

Adult: People aged 16 years and older.

Caregiver: An unpaid person who provides care and support to an adult with asthma. This may be a spouse, family member, parent, legal guardian, or anyone identified by the person with asthma.

Controller medication: An inhaler or puffer that prevents asthma symptoms by bringing down the swelling in the airways in the lungs.

Health care professionals: Regulated professionals, such as nurses, nurse practitioners, occupational therapists, pharmacists, physicians, physiotherapists, psychologists, respiratory therapists, and social workers.

Health care providers: Health care professionals and also people in unregulated professions, such as administrative staff, behavioural support workers, personal support workers, recreational staff, and spiritual care staff.

Rescue or reliever medication: An inhaler or puffer that relieves asthma symptoms quickly by opening the airways.

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Advisory Committee

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Samir Gupta (co-chair)

Adult Respiriologist, St. Michael's Hospital;
Assistant Professor, University of Toronto;
Adjunct Scientist, Keenan Research Centre,
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St. Michael's Hospital

Dhenuka Radhakrishnan (co-chair)

Pediatric Respiriologist and Clinical
Investigator, Children's Hospital of Eastern
Ontario; Assistant Professor, Department of
Pediatrics, University of Ottawa;
Adjunct Scientist, ICES

Janice Belanger

Certified Respiratory Educator,
Group Health Centre

Madonna Ferrone

Coordinator, Project Manager, Certified
Respiratory Educator, Asthma Research
Group Inc. and Hôtel Dieu Grace Hospital

Andrea S. Gershon

Senior Scientist, Sunnybrook Research
Institute and ICES; Associate Professor,
University of Toronto; Respiriologist,
Sunnybrook Health Sciences Centre

Carmela Graziani

Lived Experience Advisor

Samim Hasham

Clinical Pharmacist; Consultant, Canadian
Mental Health Association Peel, Rapid
Access Addiction Clinics; Faculty, Adler
College Toronto

Julie Hunter

Nurse Practitioner, Lady Dunn Health Centre

Alan Kaplan

Family Physician; Chair, Family Physician
Airways Group of Canada; Clinical Lecturer,
University of Toronto

Diane Lougheed

Professor of Medicine, Public Health
Sciences, and Biomedical and Molecular
Sciences, Chair of Division of Respiriology,
Queen's University; Senior Adjunct
Scientist, ICES

Kate Mulligan

Lived Experience Advisor; Director, Policy
and Communications, Alliance for Healthier
Communities

Zoe Nugent

Staff Physician/Pediatric Respiriologist,
Peterborough Regional Health Centre,
The Peterborough Clinic

Delanya Podgers

Nurse Practitioner–Asthma and COPD,
Kingston Health Sciences Centre

Jessica Schooley

Primary Care Asthma Program Site
Coordinator and Certified Respiratory
Educator, Pediatric Asthma Clinic,
Kingston Health Sciences Centre

Ryan Smith

Staff Paediatrician, Medical Director,
Paediatric Asthma Clinic, Orillia Soldiers'
Memorial Hospital

Christina Sperling

Director, Respiratory Health Program,
The Lung Health Foundation

Itamar Tamari

Family Physician, Stonegate Community
Health Centre; Medical Director, Primary
Care Asthma Program

Teresa To

Professor, Dalla Lana School of Public
Health, University of Toronto; Senior
Scientist, The Hospital for Sick Children;
Director, Ontario Asthma Surveillance
Information System

Christine Truong

Clinical Pharmacist; Certified Respiratory
Educator, North York Family Health Team

Angelina Wiwczor

Nurse Practitioner, Certified Asthma
Educator, Health Sciences North–NEO Kids,
Kids Care Centre

Calvin Young

Lived Experience Advisor

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Ontario Health (Quality)

130 Bloor Street West, 10th Floor
Toronto, Ontario
M5S 1N5

Tel: 416-323-6868

Toll Free: 1-866-623-6868

Fax: 416-323-9261

Email: qualitystandards@hqontario.ca

Website: hqontario.ca

