Quality Standards

Chronic Obstructive Pulmonary Disease

Care in the Community for Adults

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Health Quality Ontario

Let's make our health system healthier

Ontario
Health Quality Ontario

Summary

This quality standard addresses care for people with chronic obstructive pulmonary disease (COPD), including the assessment of people who may have COPD. It provides guidance on the diagnosis, management, and treatment of COPD in community-based settings. The scope of this quality standard applies to primary care, specialist care, home care, and long-term care.

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About Quality Standards

Health Quality Ontario, in collaboration with clinical experts, patients, residents, and caregivers across the province, is developing quality standards for Ontario.

Quality standards are concise sets of statements that will:

- Help patients, residents, 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

The statements in this quality standard do not override the responsibility of health care professionals to make decisions with patients, after considering each patient's unique circumstances.

How to Use Quality Standards

Quality standards inform clinicians and organizations about what high-quality health care looks like for aspects of care that have been deemed a priority for quality improvement in the province. They are based on the best available evidence.

They also include indicators to help clinicians and organizations assess the quality of care they are delivering, and to identify gaps and areas for improvement. These indicators measure process, structure, and outcomes.

In addition, tools and resources to support clinicians and organizations in their quality improvement efforts accompany each quality standard.

For more information on how to use quality standards, contact: qualitystandards@hqontario.ca.

About This Quality Standard

Scope of This Quality Standard

This quality standard addresses care for people with chronic obstructive pulmonary disease (COPD), including the assessment of people who may have COPD. It provides guidance on the diagnosis, management, and treatment of COPD in community-based settings. The scope of this quality standard applies to primary care, specialist care, home care, and long-term care.

This quality standard does not address care provided in an emergency department or hospital inpatient setting for the management of acute exacerbations of COPD, nor does it address specific aspects of palliative care. Health Quality Ontario has developed a separate quality standard that addresses palliative care: *Palliative Care: Care for Adults with a Progressive, Life-Limiting Illness*.

Terminology Used in This Quality Standard

In this quality standard, "caregiver" refers to an unpaid person who provides care and support to a person with COPD. This may be a family member, friend, or anyone identified by the person with COPD.

In this quality standard, "primary care" refers to care provided by a family physician or nurse practitioner. In some cases, another health care professional who works closely with a primary care provider may be involved in a person's primary care, such as a registered nurse, respiratory therapist, occupational therapist, or pharmacist.

Why This Quality Standard Is Needed

Chronic obstructive pulmonary disease (COPD) is a progressive illness characterized by irreversible or partially reversible airflow obstruction in the lungs.[1,2] The main risk factor for COPD is current or past tobacco smoking.[1,2] The condition is characterized by progressive shortness of breath, often associated with cough or sputum production, resulting in a decrease in exercise tolerance, the ability to carry out activities of daily living, and quality of life.[1-3] As the disease progresses, people with COPD have more frequent and more severe acute exacerbations of COPD, also called flare-ups or lung attacks.[1,2]

Worldwide, COPD is a leading cause of morbidity and mortality. The disease results in a social and economic burden that is both substantial and increasing. Despite declining smoking rates in Ontario, COPD is one of the most common chronic conditions. The overall estimated prevalence of COPD was 11.8% of Ontarians in 2014/15.[4] In addition, more people are living with COPD in Ontario than in the past: The prevalence of COPD increased by 36.6% from 1996/97 to 2014/15.[4] However, it is also estimated that only 40% of people with COPD have received spirometry testing to confirm their diagnosis. In 2014/15, this varied between 31% in the North East local health integration network (LHIN) and 47% in the Toronto Central LHIN (Physician-Billed Services, Institute for Clinical Evaluative Sciences, 2014–15).

People with COPD also frequently require health care services.[4] COPD is the second-most common reason for hospitalization in Ontario, after childbirth (Hospital Morbidity Database and Ontario Mental Health Reporting System, Canadian Institute for Health Information, 2014–2016). However, there is also variation across LHINs in the rate of hospitalizations and emergency department visits attributable to COPD. In 2014/15, there was a 2.2-fold difference

between the highest rate of hospitalization (37.6 per 1,000 person-years in the North West LHIN) and the lowest rate (17.3 per 1,000 person-years in the Central LHIN). Also in 2014/15, the rate of emergency department visits was 5 times higher in the North East LHIN (52.5 per 1,000 person-years) than in the Mississauga Halton LHIN (12.7 per 1,000 person-years).[4] From 2008 to 2011, Ontarians with physician-diagnosed COPD accounted for 24% of hospitalizations, 24% of emergency department visits, 21% of ambulatory care visits, 30% of home care services, and 35% of long-term care residence places.[5] In 2011, the total economic burden comprising direct and indirect costs in Ontario was estimated to be $3.9 billion (direct health care costs alone were estimated to be $3.3 billion).[6]

Although COPD is a progressive illness, there are significant opportunities to improve the quality of life of people with the disease through the delivery of high-quality health care. As most people with COPD are not diagnosed until the disease is well advanced, earlier testing of symptomatic individuals at risk of developing COPD is an essential first step in managing this chronic condition.[7] The goals of COPD management include slowing the progression of airflow limitation; reducing the frequency and severity of and treating acute exacerbations; relieving symptoms such as breathlessness; and improving exercise tolerance, the ability to carry out activities of daily living, and overall health status.[1]

Principles Underpinning This Quality Standard

This quality standard is underpinned by the principles of respect and equity.

People with COPD should receive services that are respectful of their rights and dignity and that promote self-determination.

People with COPD should be provided services that are respectful of their gender, sexual orientation, socioeconomic status, housing, age, background (including self-identified cultural, linguistic, ethnic, and religious backgrounds), and disability. Equitable access to the health system also includes access to linguistically appropriate and culturally safe care.

A high-quality health system is one that provides appropriate access, experience, and outcomes for all Ontarians, no matter where they live, what they have, or who they are.

How Success Can Be Measured

The COPD Quality Standard Advisory Committee identified a small number of overarching goals for this quality standard. These have been mapped to indicators that may be used to assess quality of care provincially and locally.

How Success Can Be Measured Provincially

- Percentage of people with COPD whose diagnosis is confirmed by spirometry
- Percentage of people with COPD with one or more urgent acute-care visits for COPD in the last year:
    - Emergency department visits
    - Nonelective hospitalizations
- Percentage of people with COPD who smoke tobacco daily

How Success Can Be Measured Locally

You may want to assess the quality of care you provide to people with COPD. You may also want to monitor your own quality improvement efforts. It may be possible to do this using your own clinical records, or you might need to collect additional data. We recommend the following list of potential indicators, some of which cannot be measured provincially using currently available data sources:

- Percentage of people with COPD whose disease has a low or medium impact on their life (stratification: low, medium, high, and very high impact)
- Percentage of people with moderate to severe COPD who have access to a pulmonary rehabilitation program (stratification: community-based and inpatient rehabilitation)

In addition, each quality statement within the standard is accompanied by one or more indicators. These indicators are intended to guide the measurement of quality improvement efforts related to the implementation of the statement.

Quality Statements in Brief

QUALITY STATEMENT #1:
Diagnosis Confirmed With Spirometry
People clinically suspected of having COPD have spirometry testing to confirm diagnosis within 3 months of identification for testing.

QUALITY STATEMENT #2:
Comprehensive Assessment
People with COPD have a comprehensive assessment to determine the severity of airflow limitation, degree of disability, risk of acute exacerbation, and presence of comorbidities near the time of diagnosis and on an annual basis.

QUALITY STATEMENT #3:
Ongoing Multidisciplinary Care
People with COPD have timely access to ongoing multidisciplinary care based on their needs, including regular visits with their primary care provider.

QUALITY STATEMENT #4:
Education and Interventions to Support Self-Management
People with COPD and their caregivers receive verbal and written information about COPD and participate in interventions to support self-management, including the development of a written self-management plan, with their health care professional.

QUALITY STATEMENT #5:
Promoting Smoking Cessation
People with COPD are asked about their tobacco-smoking status at every opportunity. Those who continue to smoke are offered pharmacological and nonpharmacological smoking cessation interventions.

QUALITY STATEMENT #6:
Pharmacological Management of Stable COPD
People with a confirmed diagnosis of COPD are offered pharmacotherapy.

QUALITY STATEMENT #7:
Vaccinations
People with COPD are offered influenza and pneumococcal vaccinations.

QUALITY STATEMENT #8:
Specialized Respiratory Care
People with a confirmed diagnosis of COPD are referred to specialized respiratory care when clinically indicated, after receiving a comprehensive assessment and being offered treatment in primary care. Once the referral has been made, people with COPD have a specialized respiratory care consultation in accordance with the urgency of their health status.

QUALITY STATEMENT #9:
Pulmonary Rehabilitation
People with moderate to severe, stable COPD are referred to a pulmonary rehabilitation program if they have activity or exercise limitations and breathlessness despite appropriate pharmacological management.

QUALITY STATEMENT #10:
Long-Term Oxygen Therapy
People with stable COPD receive an assessment for and, if needed, treatment with long-term oxygen therapy.

QUALITY STATEMENT #11:
Management of Acute Exacerbations of COPD
People with COPD have access to primary care within 24 hours of the onset of an acute exacerbation.

QUALITY STATEMENT #12:
Follow-Up After Hospitalization for an Acute Exacerbation of COPD
People with COPD who have been hospitalized for an acute exacerbation have an in-person follow-up assessment after discharge with a health care professional with expertise in COPD.

QUALITY STATEMENT #13:
Pulmonary Rehabilitation After Hospitalization for an Acute Exacerbation of COPD
People who have been admitted to hospital for an acute exacerbation of COPD are referred to pulmonary rehabilitation at the time of discharge and start the program within 1 month of hospital discharge.

Quality Statement #1: Diagnosis Confirmed With Spirometry

People clinically suspected of having COPD have spirometry testing to confirm diagnosis within 3 months of identification for testing.

Background

It is estimated that of all people with COPD worldwide, between 60% and 80% have not been diagnosed.[8] Both over- and under-diagnosis are possible with this condition.[8,9] Overdiagnosis can happen when the diagnosis is based only on a person's medical history and physical examination and not verified by spirometry testing. In this situation, a person may not actually have COPD. Overdiagnosis may lead to the overuse of medications, and medication-related adverse effects without potential for benefit.[8-10] Under-diagnosis can occur when symptoms and risk factors are ignored or unrecognized by health care professionals and/or people with COPD, and when spirometry testing is not performed.[8-10] Spirometry is the only way to accurately measure the airflow obstruction of the lungs characteristic of COPD; therefore, it should be performed to confirm a diagnosis of COPD.[11] In Ontario, it is estimated that 40% of people with COPD have received spirometry testing to confirm their diagnosis of COPD (Physician-Billed Services, Institute for Clinical Evaluative Sciences, 2014–15).

Sources: Canadian Thoracic Society, 2007[1] | Department of Veterans Affairs and Department of Defense, 2014[12] | Global Initiative for Chronic Obstructive Lung Disease, 2017[2] | Health Quality Ontario, 2015[9] | National Institute for Health and Care Excellence, 2010[3]

Definitions Used Within This Quality Statement

Clinically suspected
People are clinically suspected of having COPD if they have at least one respiratory symptom and one risk factor for COPD as defined below.

Respiratory symptoms
Respiratory symptoms include the following:

- Persistent shortness of breath that worsens with activity and/or exercise
- Chronic cough
- Regular sputum production
- Recurrent respiratory infections
- Wheezing
- Chest tightness
- Activity and/or exercise limitation

Risk factors
Current or past tobacco smoking is the most common risk factor for COPD. Additional risk factors include the following:

- Exposure to second-hand smoke
- Exposure to occupational lung irritants, such as dust, vapours, fumes, gases, and other chemicals
- Childhood factors, such as low birthweight, recurrent respiratory infections, and other lung development issues
- Exposure to significant air pollution

- Family history of COPD
- Genetic predisposition (alpha-1 antitrypsin deficiency)
- Use of biomass fuels for indoor heating or cooking without proper ventilation

Spirometry
Spirometry is a lung function test that measures airflow, including forced vital capacity (FVC), which is the volume of air forcibly exhaled from the point of maximal inspiration, and forced expiratory volume in 1 second (FEV_1), which is the volume of air exhaled during the first second of the FVC measurement. Reference values to interpret the test are based on age, height, sex, and race. Spirometry results are presented as a percentage of the predicted value or as an absolute with upper and lower limits of normal. To diagnose COPD, testing should be administered and interpreted by trained health care professionals using spirometers that regularly undergo quality control and calibration. Spirometry should be performed before and after the administration of an inhaled bronchodilator.[13] A post-bronchodilator FEV_1/FVC ratio of less than 0.7 confirms a diagnosis of COPD.[2,9]

What This Quality Statement Means

For People With COPD
If your health care professional thinks you might have COPD, you should be given a breathing test called spirometry (also called a lung function test or a pulmonary function test). This test is done to confirm whether or not you have COPD.

For Clinicians
Administer or order spirometry testing for people with at least one respiratory symptom and one risk factor for COPD to definitively confirm a diagnosis of COPD. Testing should occur within 3 months of identifying people for testing.

For Health Services
Ensure that health care professionals in primary care and community-based settings have access to spirometers that regularly undergo quality control and calibration. Ensure that health care professionals are trained in administering and interpreting the results of spirometry testing.

Quality Indicators

Process Indicators

Percentage of people clinically suspected of having COPD who have undergone spirometry testing to confirm diagnosis within 3 months of identification for testing

- Denominator: total number of people clinically suspected of having COPD
- Numerator: number of people in the denominator who have undergone spirometry testing to confirm a diagnosis of COPD within 3 months of identification for testing
- Data sources: local data collection; Ontario Health Insurance Plan (OHIP) Claims Database

Structural Indicator

Local availability of spirometry testing

- Data source: local data collection

Quality Statement #2: Comprehensive Assessment

People with COPD have a comprehensive assessment to determine the severity of airflow limitation, degree of disability, risk of acute exacerbation, and presence of comorbidities near the time of diagnosis and on an annual basis.

Background

A comprehensive assessment can assist in ensuring accurate diagnosis, ruling out other causes of symptoms, and determining prognosis.[2] Despite being essential in confirming a diagnosis of COPD, the presence of airflow limitation confirmed by spirometry is insufficient on its own to provide an accurate assessment of a person's symptoms, their health-related quality of life, or their health care needs.[2] The essential components of a comprehensive assessment for a person with COPD help to determine the following[2]:

- The severity of airflow limitation
- The degree of disability based on the impact of COPD symptoms on the person's life
- The risk of future acute exacerbations of COPD
- Other health conditions the person may have

This information should be collected and documented as soon as possible following diagnosis and then on an annual basis. It is used to inform the health care a person needs.[3]

Sources: Canadian Thoracic Society, 2007[1] | Department of Veterans Affairs and Department of Defense, 2014[12] | Global Initiative for Chronic Obstructive Lung Disease, 2017[2] | Health Quality Ontario, 2015[9] | National Institute for Health and Care Excellence, 2010[3]

Definitions Used Within This Quality Statement

Comprehensive assessment
A comprehensive assessment includes a medical history, medication reconciliation, and the evaluation and documentation of the severity of airflow limitation, degree of disability, risk of acute exacerbation, and presence of comorbidities.

In some cases, such as when the severity of symptoms seems disproportionate to the severity of airflow limitation or when comorbidities are suspected, additional assessments and/or referral to specialized respiratory care (see Statement #8) should be considered.

Airflow limitation
The severity of airflow limitation is measured with spirometry. The percentage predicted FEV_1, relative to reference values based on age, height, sex, and race, is used to classify the severity of airflow limitation into one of the following categories:

- Mild: $FEV_1 \geq 80\%$
- Moderate: $50\% \leq FEV_1 < 80\%$
- Severe: $30\% \leq FEV_1 < 50\%$
- Very severe: $FEV_1 < 30\%$

Degree of disability
The degree of COPD-related disability depends on symptom severity and can be measured using a number of instruments, including, but not limited to, the following:

- Clinical Frailty Scale (CFS)

- COPD Assessment Test (CAT)
- COPD Control Questionnaire (CCQ)
- Medical Research Council (MRC) Dyspnea Scale
- Tests of exercise capacity (e.g., 6-minute walking test, shuttle walk test, gait speed)

Risk of acute exacerbation
The risk of acute exacerbation can be assessed by obtaining a history of past acute exacerbations of COPD, including their timing, frequency, and severity, and any associated hospitalizations. Severe and worsening airflow obstruction, based on spirometry results, is also associated with a higher risk of acute exacerbation of COPD.

Comorbidities
The following conditions are common in people with COPD and should be considered in assessment and care planning:

- Asthma
- Cardiovascular disease (e.g., arrhythmia, heart failure, hypertension, ischemic heart disease, peripheral vascular disease, stroke)
- Gastroesophageal reflux
- Lung cancer
- Metabolic disease (e.g., diabetes, metabolic syndrome, obesity)
- Mental illness (e.g., anxiety, depression)
- Musculoskeletal disorders (e.g., osteoarthritis)
- Osteoporosis
- Pulmonary embolism
- Sleep apnea
- Substance use disorders (e.g., tobacco)

What This Quality Statement Means

For People With COPD
If you have been diagnosed with COPD, your health care professional should thoroughly examine you. They should ask you about your physical health, your mental health, your medical history, what medications you're taking, how you spend your time, and how you're feeling. You may also need tests at a hospital, lab, or clinic, like blood tests or breathing tests.

Your health care professional wants to build a relationship of trust with you. The more they know about you and your goals, the better they can help create a care plan that meets your needs.

You should see your health care professional once or twice a year, or more often if your COPD symptoms are more severe. This lets your health care professional see how you are doing and make changes to your care if needed. These appointments also give you and your caregivers the chance to ask questions about COPD or the care you're getting.

For Clinicians
Perform a comprehensive assessment when people present with suspected or diagnosed COPD and at least once a year. Recently completed investigations should not be repeated unless clinically indicated. All results should be documented and used to inform care.

For Health Services
Ensure systems, processes, and resources are in place in primary care and community-based settings for health care professionals to carry out comprehensive assessments of people suspected to have or diagnosed with COPD. This includes access to spirometry and standardized assessment tools.

Quality Indicators

Process Indicators

Percentage of people with COPD who have had a comprehensive assessment within the past year

- Denominator: total number of people with COPD
- Numerator: number of people in the denominator who have had a comprehensive assessment within the past year
- Data source: local data collection

Percentage of people with COPD who have undergone spirometry testing within the past year

- Denominator: total number of people with COPD
- Numerator: number of people in the denominator who have undergone spirometry testing in the past year
- Potential stratification: initial assessment or regular follow-up
- Data source: OHIP Claims Database

Percentage of people with COPD whose degree of disability has been evaluated within the past year

- Denominator: total number of people with COPD
- Numerator: number of people in the denominator whose degree of disability has been evaluated in the past year
- Potential stratification: initial assessment or regular follow-up
- Data source: local data collection

Percentage of people with COPD whose risk of acute exacerbation of COPD has been reviewed within the past year

- Denominator: total number of people with COPD
- Numerator: number of people in the denominator whose risk of acute exacerbation of COPD has been reviewed within the past year
- Potential stratification: initial assessment or regular follow-up
- Data source: local data collection

Percentage of people with COPD who have had an evaluation of comorbidities within the past year

- Denominator: total number of people with COPD
- Numerator: number of people in the denominator who have had an evaluation of comorbidities within the past year
- Potential stratification: initial assessment or regular follow-up
- Data source: local data collection

Quality Statement #3: Ongoing Multidisciplinary Care

People with COPD have timely access to ongoing multidisciplinary care based on their needs, including regular visits with their primary care provider.

Background

The purpose of ongoing multidisciplinary care and regular primary care visits for people with COPD is to ensure that appropriate assessments are completed (see Statement #2), to optimize disease management, and to discuss any changes in care that might be needed as a person's disease progresses.[3]

The health care needs of people with COPD change over time according to the progression and severity of their disease. As such, many different skills may be required to provide high-quality care for people with COPD.[9,14]

Depending on a person's needs and the stage of their disease, this care may be provided by a single health care professional with a variety of skills, such as a primary care provider (a family physician or nurse practitioner), or multiple health care professionals with different training and skills. People with COPD should be included in discussions about care goals and should actively participate in their care. Caregivers should also be involved in such discussions and care as appropriate.

Sources: Department of Veterans Affairs and Department of Defense, 2014[12] | Health Quality Ontario, 2015[9] | National Institute for Health and Care Excellence, 2010[3] | Ontario Health Technology Advisory Committee, 2012[14]

Definitions Used Within This Quality Statement

Multidisciplinary care
Multidisciplinary care refers to care provided by multiple health care professionals and other types of care providers with different training and skills. This care may be related to one or many health conditions. Communication among the team of health care professionals and care providers is essential, whether or not they are co-located or officially organized in an integrated way.

In addition to primary care, multidisciplinary care for people with COPD may include the following:

- Respiratory therapy and respiratory education
- Respirology or other specialist care
- Care coordination or case management
- Home care
- Kinesiology
- Nutrition support
- Occupational therapy
- Palliative care
- Pharmacy
- Physiotherapy
- Psychiatry, psychology, or other psychosocial support
- Spiritual or religious support

Regular visits
People with COPD should see their primary care provider at least 1 to 2 times per year, or more frequently if needed.

What This Quality Statement Means

For People With COPD
You are at the centre of your care team, and you should be involved in all decisions made about your care. If you want, your family members or other chosen caregivers can also be involved.

You might receive care for COPD from your family doctor or nurse practitioner only, or from a number of health care professionals and providers with different training and skills, like a respirologist (a physician who specializes in lung health), nurse, respiratory therapist, pharmacist, occupational therapist, physiotherapist, or social worker. Even if these health care professionals work in different places, they should work together to make sure you get the best care. Together, these health care professionals make up your care team.

You should see your health care professional once or twice a year, or more often if your COPD symptoms are more severe. This lets your health care professional see how you are doing and make changes to your care if needed. These appointments also give you and your caregivers the chance to ask questions about COPD or the care you're getting.

For Clinicians
Ensure that people with COPD receive multidisciplinary care from health care professionals and care providers who can meet their physical and mental health needs. Involve people with COPD in shared decision-making about their care. If caregivers are involved in the person's care, they should also be included in the shared decision-making process.

For Health Services
Ensure that systems, processes, and resources are in place for people with COPD to receive multidisciplinary care based on their needs.

Quality Indicators

Process Indicators

Percentage of people with COPD seen in primary care for COPD at least once in the past 12 months

- Denominator: total number of people with COPD
- Numerator: number of people in the denominator seen in primary care for COPD at least once in the past 12 months
- Potential stratification: symptom severity
- Data sources: local data collection (to identify denominator and for visits with health care professionals other than physicians); OHIP Claims Database (for physician visits)

Percentage of people with COPD who report that their primary care provider always or often involves them in decisions regarding their care

- Denominator: total number of people with COPD
- Numerator: number of people in the denominator who answer “always” or “often” to the following question: “When you see your primary care provider or someone else in their office, how often do they involve you as much as you want in decisions about your care and treatment?” (Response options: Always, Often, Sometimes, Rarely, Never, It depends on who I see and/or what I am there for, Not using or on any treatments/not applicable, Don’t know, Refused)
- Exclusions: Those who respond “It depends on who I see and/or what I am there for,” “Not using or on any treatments/not applicable,” “Don't know,” or “Refused”
- Data sources: local data collection (to identify denominator); Health Care Experience Survey (Ministry of Health and Long-Term Care)

Quality Statement #4: Education and Interventions to Support Self-Management

People with COPD and their caregivers receive verbal and written information about COPD and participate in interventions to support self-management, including the development of a written self-management plan, with their health care professional.

Background

Interventions to support self-management aim to inform, educate, and motivate people with COPD to help them adopt sustained behaviour change and confidently develop skills to better manage their symptoms.[15] As part of interventions to support self-management, health care professionals should provide people with COPD and their caregivers with verbal and written information about COPD and how to manage the condition. They should also work together with people with COPD and their caregivers to develop an individualized, written self-management plan or COPD action plan. The use of a written self-management plan on its own, without education and ongoing support provided by a trained health care professional, cannot be recommended at this time owing to inconsistency in the evidence for safety and effectiveness.[9]

A consensus definition of self-management intervention for COPD has been proposed; however, there is limited evidence regarding the information that should be provided or the timing and frequency of interventions.[15] The following topics are considered essential for discussions with people with COPD and their caregivers:

- Information about the nature of COPD and disease progression
- Exacerbation management using an individualized, written self-management plan that includes information regarding when to seek help from a health care professional, what medications to take, and how to cope effectively with setbacks and relapses (see Statement #11)
- The importance of smoking cessation and information regarding available smoking cessation interventions (see Statement #5)
- Medications used to manage COPD, inhaler device technique, and the importance of adhering to maintenance therapy (see Statement #6)
- The importance of avoiding of lung irritants, including second-hand smoke, air pollution, and chemicals
- Breathlessness symptom management, including breathing and chest clearance techniques
- Developing and maintaining healthy behaviours, such as physical activity and exercise, healthy eating, adequate sleep, vaccinations, and hand hygiene
- Available social and community supports, including formal support groups, and the importance of being socially connected
- Advance care planning, includes the capable person with COPD confirming a future substitute decision-maker who can communicate their wishes, values, and beliefs about future health care. The substitute decision-maker will make decisions when the person with COPD is not capable of giving or refusing consent (e.g., regarding intubation, ventilation, or cardiopulmonary resuscitation). The substitute decision-maker should be involved in ongoing discussions with the person about their goals of care, wishes, values, and beliefs so that the substitute decision-maker is empowered to participate in the consent process, if required (for more information on advance care planning, please

refer to Health Quality Ontario's quality standard on palliative care: *Palliative Care: Care for Adults with a Progressive, Life-Limiting Illness*.)
- Information about available palliative care support to improve quality of life

Sources: American College of Chest Physicians and Canadian Thoracic Society, 2015[16] | Canadian Thoracic Society, 2007[1] | Department of Veterans Affairs and Department of Defense, 2014[12] | Global Initiative for Chronic Obstructive Lung Disease, 2017[2] | Health Quality Ontario, 2015[9] | National Institute for Health and Care Excellence, 2010[3] | Ontario Health Technology Advisory Committee, 2012[14]

Definitions Used Within This Quality Statement

Interventions to support self-management
According to a consensus definition, a self-management intervention for COPD is a structured but individualized plan to motivate, engage, and support people with COPD to positively adapt their health behaviours and develop skills to better manage their disease.[15] The goals of self-management are to optimize physical health, reduce symptoms and functional impairments, increase quality of life, and establish effective relationships with health care professionals, family, friends, and community.

The process requires iterative interactions between people with COPD and health care professionals trained in behaviour change techniques and literacy-sensitive approaches to providing self-management interventions. The focus is on identifying needs and goals, formulating a plan to reach goals, and re-evaluating the plan as necessary.

Written self-management plan
Also referred to as a COPD action plan, a written self-management plan is a written document developed together by people with COPD, their health care professionals, and their caregivers. It outlines a person's treatments and the strategies they should use daily and in the case of an acute exacerbation. It may include prescriptions or standing orders for medications. This plan should be used in conjunction with interventions to support self-management provided by a health care professional.

What This Quality Statement Means

For People With COPD
Your health care professional should explain COPD to you, including how the disease will progress, what treatment options are available to you, and what you can do to take care of yourself.

You, your caregivers, and your health care professional should work together to create a plan for you to stay as healthy as possible. This is called a written self-management plan or a COPD action plan. This plan describes your medications and how to take them, things you can do on a daily basis to stay healthy, and what to do if you experience a flare-up of your symptoms.

A big part of living well with COPD is taking care of yourself. Some things you can do are:
- Stop smoking: quitting smoking is the most important thing you can do to slow the progression of COPD
- Take your medications regularly
- Make sure you know how to use your inhaler and other medications properly

- Eat healthy foods
- Exercise safely: talk with your health care professional about what kinds of exercise would be good for you
- Get enough sleep
- Stay connected with family, friends, and your community

For Clinicians
Provide interventions to support self-management to people with COPD and their caregivers. Work with them to create a written self-management plan that is accompanied by education and support.

For Health Services
Ensure that people with COPD have access to health care professionals trained in providing interventions to support self-management for COPD, including but not limited to respiratory therapists and other health care professionals who are certified respiratory educators.

Quality Indicators

Process Indicators

Percentage of people with COPD who participate in interventions to support self-management with their health care professional

- Denominator: total number of people with COPD
- Numerator: number of people in the denominator who participate in interventions to support self-management with their health care professional
- Data source: local data collection
- Note: In some settings, it might be more appropriate to measure “offered” versus “received”

Percentage of people with COPD who have a written self-management plan

- Denominator: total number of people with COPD
- Numerator: number of people in the denominator who have a written self-management plan
- Data source: local data collection

Outcome Indicator

Percentage of people with COPD who report feeling confident in the self-management of their symptoms

- Denominator: total number of people with COPD
- Numerator: number of people in the denominator who respond “confident” or “very confident” to the following question: “How confident are you in your ability to manage your COPD symptoms?” (Response options: Very confident, Confident, Not confident, Not at all confident, Unsure)
- Potential stratification: those with or without a self-management plan
- Data source: local data collection

Quality Statement #5: Promoting Smoking Cessation

People with COPD are asked about their tobacco-smoking status at every opportunity. Those who continue to smoke are offered pharmacological and nonpharmacological smoking cessation interventions.

Background

Past or current tobacco smoking is the most common risk factor for developing COPD.[2] Estimates suggest that as many as 30% of people with COPD are current smokers.[17] Smoking cessation is likely one of the most effective ways to slow the progression of the disease, reduce symptom severity, and prevent acute exacerbations.[1,2,16] Every encounter with a health care professional presents an opportunity to discuss smoking status and cessation with people who have COPD.[3] Smoking cessation interventions offered to a person with COPD should be aligned with the person's readiness for change. For those who have stopped smoking, the discussion should focus on any additional interventions that may be needed to support them in maintaining smoking cessation.

Sources: American College of Chest Physicians and Canadian Thoracic Society, 2015[16] | Canadian Thoracic Society, 2007[1] | Department of Veterans Affairs and Department of Defense, 2014[12] | Global Initiative for Chronic Obstructive Lung Disease, 2017[2] | Health Quality Ontario, 2015[9] | National Institute for Health and Care Excellence, 2010[3] | Ontario Health Technology Advisory Committee, 2012[14]

Definitions Used Within This Quality Statement

Smoking cessation interventions
A range of pharmacological and nonpharmacological interventions are available to help people stop smoking tobacco. Options include, but are not limited to, the following:

- Behavioural support
- Intensive counselling (≥ 90 minutes per session)
- Motivational interviewing
- Nicotine replacement therapy products (e.g., gum, inhalation cartridges, spray, sublingual tablets, transdermal patches)
- Pharmacotherapy (e.g., bupropion, varenicline)

What This Quality Statement Means

For People With COPD
Quitting smoking is the most important thing you can do to slow the progression of COPD. If you smoke tobacco, your health care professional should talk with you about how to quit. There are different types of treatment that can help, like counselling, nicotine replacement therapy, and medications. You can work with your health care professional to find the best one for you.

For Clinicians
Ask people with COPD about their tobacco-smoking status each time you see them. If they have stopped smoking, ask if they need any additional supports. If they still smoke, use motivational interviewing techniques to encourage them to consider stopping. Offer appropriate smoking cessation interventions, including behavioural support, intensive counselling, medications, or referrals to other health care professionals and programs that offer these supports.

For Health Services
Ensure that pharmacological and nonpharmacological smoking cessation interventions are available in the community to help people with COPD stop smoking tobacco.

Quality Indicators

Process Indicators

Percentage of people with COPD who smoke tobacco and who have discussed making a plan to stop their tobacco use with a health care provider in the past year

- Denominator: total number of people with COPD who smoke tobacco
- Numerator: number of people in the denominator who have discussed making a plan to stop their tobacco use with a health care provider in the past year
- Data sources: local data collection; Canadian Community Health Survey (Statistics Canada)

Percentage of people with COPD who smoke tobacco and who receive counselling interventions to stop their tobacco use

- Denominator: total number of people with COPD who smoke tobacco
- Numerator: number of people in the denominator who receive counselling interventions to stop their tobacco use
- Potential stratification: daily or occasional smoking
- Data sources: local data collection (for counselling provided by health care professionals other than physicians); OHIP Claims Database (for counselling provided by physicians)

Percentage of people with COPD who smoke tobacco and who receive pharmacological interventions to stop their tobacco use

- Denominator: total number of people with COPD who smoke tobacco
- Numerator: number of people in the denominator who receive a pharmacological intervention to stop their tobacco use
- Data sources: local data collection (for the denominator, those under 65 years of age, and to measure the use of over-the-counter medications such as nicotine replacement therapies); Ontario Drug Benefit Program (for those 65 years of age and older)
- Note: In some settings, it might be more appropriate to measure “offered” versus “received”

Outcome Indicator

Percentage of people with COPD who smoke tobacco daily (lower is better)

- Denominator: total number of people with COPD
- Numerator: number of people in the denominator who report smoking tobacco on a daily basis
- Data sources: local data collection; Canadian Community Health Survey (Statistics Canada)

Structural Indicator

Local availability of smoking cessation interventions

- Data source: local data collection

Quality Statement #6: Pharmacological Management of Stable COPD

People with a confirmed diagnosis of COPD are offered pharmacotherapy.

Background

Pharmacological management of COPD requires that additional medications be added to a person's regimen in a stepwise way as symptoms progress.[16] Pharmacotherapy can help reduce day-to-day symptoms of stable COPD and prevent or reduce the severity of acute exacerbations of COPD. The medications offered should be selected based on a comprehensive assessment (see Statement #2), and issues related to medication adherence, the ability of the person to use a medication delivery system, and the ability of the person to pay should be considered. When offered pharmacotherapy, people with COPD should be taught when and how to properly use the medication and its delivery system, including inhaler technique if applicable.[3] If different or additional medications are prescribed during an acute exacerbation of COPD, medication reconciliation should be a priority during follow-up once the acute symptoms have subsided (see Statements #11 and #12).

Sources: American College of Chest Physicians and Canadian Thoracic Society, 2015[16] | Canadian Thoracic Society, 2007[1] | Department of Veterans Affairs and Department of Defense, 2014[12] | Health Quality Ontario, 2015[9] | Global Initiative for Chronic Obstructive Lung Disease, 2017[2] | National Institute for Health and Care Excellence, 2010[3]

Definitions Used Within This Quality Statement

Pharmacotherapy
When people are first diagnosed with COPD, they should be offered short-acting bronchodilator therapy as needed for immediate symptom relief. People with COPD requiring short-acting bronchodilator therapy more than twice daily should be offered long-acting bronchodilator maintenance therapy. If breathlessness persists or worsens, or if acute exacerbations of COPD occur frequently, additional inhaled pharmacologic treatment should be considered during stable periods to help prevent acute exacerbations, such as a combination of two or more long-acting bronchodilators or a combination of one long-acting bronchodilator and inhaled corticosteroids. In some cases, oral pharmacologic treatment may also be considered (e.g., ongoing oral corticosteroids, anxiolytics, macrolides, roflumilast, and theophylline).

What This Quality Statement Means

For People With COPD
Medications are an important part of managing COPD. They can help manage your day-to-day symptoms and also prevent and manage flare-ups. The first medication you should be offered is an inhaler called a short-acting bronchodilator. You take this to relieve symptoms right away.

Depending on your symptoms, your health care professional may offer you a second type of inhaler called a long-acting bronchodilator or a maintenance inhaler. You take this on a regular basis, even when your symptoms are under control. This type of inhaler can help prevent flare-ups.

Your health care professional should explain how and when to take your medications. They should also ask you to show them how you use your inhaler. Together, you can make sure you are confident using it.

There are many different medications and inhalers that can help manage the symptoms of COPD and prevent and manage flare-ups. If you are not feeling well on your current medications or inhaler, talk with your health care professional to see if there's another type of medication or inhaler you can try.

For Clinicians
Prescribe medications to manage symptoms of stable COPD and prevent acute exacerbations in a stepwise fashion based on a comprehensive assessment. Provide people with COPD clear instructions about when and how to properly use the medication and its delivery system. Provide instructions on proper inhaler technique, and ask people to demonstrate how they use their inhaler to ensure proper technique, as applicable.

For Health Services
Ensure that systems, processes, education, and resources are in place and that education is provided for health care professionals to appropriately offer and prescribe medications to manage stable COPD.

Quality Indicators

Process Indicators

Percentage of people with COPD who receive short-acting bronchodilator therapy

- Denominator: total number of people with COPD
- Numerator: number of people in the denominator who receive short-acting bronchodilator therapy
- Potential stratification: disease severity
- Data sources: local data collection (to identify people with COPD and for those under 65 years of age); Ontario Drug Benefit Program (for those 65 years of age and older)

Percentage of people with COPD who receive long-acting bronchodilator therapy

- Denominator: total number of people with COPD
- Numerator: number of people in the denominator who receive long-acting bronchodilator therapy
- Potential stratification: disease severity
- Data sources: local data collection (to identify people with COPD and for those under 65 years of age); Ontario Drug Benefit Program (for those 65 years of age and older)

Percentage of people with COPD who receive inhaled corticosteroid therapy who do not receive long-acting bronchodilator therapy (lower is better)

- Denominator: total number of people with COPD who receive inhaled corticosteroid therapy
- Numerator: number of people in the denominator who do not receive long-acting bronchodilator therapy
- Data sources: local data collection (to identify people with COPD and for those under 65 years of age); Ontario Drug Benefit Program (for those 65 years of age and older)

Percentage of people with COPD using their inhaled medication delivery system properly

- Denominator: total number of people with COPD who have been prescribed an inhaler
- Numerator: number of people in the denominator using their inhaled medication delivery system properly
- Data source: local data collection

Quality Statement #7: Vaccinations

People with COPD are offered influenza and pneumococcal vaccinations.

Background

Influenza infection and pneumococcal disease, along with complications such as pneumonia, can worsen day-to-day symptoms for people with COPD and lead to acute exacerbations, hospitalization, and even death.[2] Annual influenza vaccination has been found to reduce the number of respiratory infections and the number of acute exacerbations for people with COPD.[16] Annual influenza vaccination has also been found to reduce the number of hospitalizations due to influenza and pneumonia and to reduce mortality rates among people with COPD.[2,3] Although there is less certainty in the evidence regarding pneumococcal vaccinations reducing the number of hospitalizations or the mortality rate among people with COPD, potential benefits include the prevention of community-acquired pneumonia and invasive pneumococcal disease.[2]

Sources: American College of Chest Physicians and Canadian Thoracic Society, 2015[16] | Canadian Thoracic Society, 2007[1] | Department of Veterans Affairs and Department of Defense, 2014[12] | Global Initiative for Chronic Obstructive Lung Disease, 2017[2] | Health Quality Ontario, 2015[9] | National Institute for Health and Care Excellence, 2010[3] | Ontario Health Technology Advisory Committee, 2012[14]

Definitions Used Within This Quality Statement

Influenza vaccination[18,19]
Influenza vaccination should be offered annually to all people with COPD unless contraindications are present. People with immunosuppression (e.g., those receiving immunocompromising therapy such as long-term corticosteroids) and those who are 65 years of age or older should be offered a high-dose influenza vaccine.

Pneumococcal vaccinations[20-22]
Pneumococcal vaccinations should be offered to all people with COPD, unless contraindications are present, according to their age and the presence of factors contributing to an increased risk of developing invasive pneumococcal disease (e.g., the use of immunocompromising therapy such as long-term corticosteroids).

What This Quality Statement Means

For People With COPD
The flu and some infections, like pneumonia (a lung infection) and meningitis (an infection of the brain and spine), can make COPD symptoms worse. You should be offered a flu shot every year. You should also be offered pneumococcal vaccinations, which can prevent infections like pneumonia and meningitis.

For Clinicians
Ensure people with COPD are offered influenza vaccination annually and pneumococcal vaccinations based on their age and individual risk factors.

For Health Services
Ensure the availability of influenza and pneumococcal vaccines in sufficient quantity in primary care and community-based settings. Ensure education is available to health care professionals regarding how these vaccines should be administered, when, and to whom.

Quality Indicators

Process Indicators

Percentage of people with COPD who have received an influenza vaccination in the past year

- Denominator: total number of people with COPD
- Numerator: number of people in the denominator who have received an influenza vaccination in the past year
- Data sources: local data collection (for administration by health care professionals other than physicians); OHIP Claims Database (for administration by physicians); Resident Assessment Instrument–Home Care (RAI-HC; for home care); Resident Assessment Instrument–Minimum Data Set (RAI-MDS; for long-term care)
- Note: In some settings, it might be more appropriate to measure “offered” versus “received”

Percentage of people with COPD who have received a pneumococcal vaccination

- Denominator: total number of people with COPD
- Numerator: number of people in the denominator who have received a pneumococcal vaccination
- Data sources: local data collection (for administration by health care professionals other than physicians); OHIP Claims Database (for administration by physicians)
- Note: In some settings, it might be more appropriate to measure “offered” versus “received”

Quality Statement #8: Specialized Respiratory Care

People with a confirmed diagnosis of COPD are referred to specialized respiratory care when clinically indicated, after receiving a comprehensive assessment and being offered treatment in primary care. Once the referral has been made, people with COPD have a specialized respiratory care consultation in accordance with the urgency of their health status.

Background

Before being referred to a respiratory specialist, people suspected of having COPD should typically undergo spirometry testing to confirm their diagnosis (see Statement #1) and receive a comprehensive assessment (see Statement #2). They should also be offered pharmacotherapy (see Statement #6) and other relevant secondary prevention measures (see Statements #4, #5, #7, and #9).

The referral should include the spirometry results, results from the comprehensive assessment, information about the person's care plan, including a copy of their written self-management plan, and the clinical indication for referral. This information will help the respiratory specialist to ensure people with COPD are seen according to the urgency of their health status and undergo only those investigations that have not already been completed.

In some cases, a phone or email consultation between a person's primary care provider and a respiratory specialist may be sufficient. Ongoing communication among the person with COPD, their primary care provider, and their respiratory specialist may help reassure the person with COPD, ensure referrals have been completed appropriately by the primary care provider, and confirm that referrals have been received and prioritized by the specialist.

Sources: Canadian Thoracic Society, 2007[1] | Department of Veterans Affairs and Department of Defense, 2014[12] | Health Quality Ontario, 2015[9] | National Institute for Health and Care Excellence, 2010[3] | Ontario Health Technology Advisory Committee, 2012[14]

Definitions Used Within This Quality Statement

Specialized respiratory care
Depending on the clinical indication, specialized respiratory care may be provided by a respirologist, a general internist with expertise in respiratory medicine, or another type of physician or nurse practitioner with expertise in respiratory medicine working within a specialized respiratory health clinic.

Clinically indicated
Clinical indications for referral to specialized respiratory care include, but are not limited to, the following:

- Accelerated decline in lung function
- Assessment required for any of the following:
    - Long-term nebulizer therapy
    - Ongoing oral corticosteroid therapy or other oral therapy (e.g., anxiolytic, roflumilast, macrolide, theophylline)
    - Oxygen therapy
    - Pulmonary rehabilitation
    - Suitability for air travel in a person with hypoxemia
    - Surgery

- Complex comorbidities (see Statement #2)
- Frequent infections
- Hemoptysis
- Hypercapnia
- Onset of pulmonary hypertension
- Onset of symptoms at a young age or a family history of alpha-1 antitrypsin deficiency
- Patient request for second opinion
- Severe or recurrent acute exacerbations
- Severe symptoms disproportionate to airflow limitation
- Uncertain diagnosis

What This Quality Statement Means

For People With COPD
At some point, your health care professional may determine that you need to see a physician who specializes in lung health, called a respirologist, or another type of health care professional with training in lung health, like a respiratory therapist or a respiratory educator.

Before you are referred to a lung specialist, your health care professional should thoroughly assess you and give you medication to help control your symptoms.

If you are referred to a lung specialist, your health care professional should let you know when your appointment with the specialist is. They should also let you know what they hear back from the specialist after your visit.

For Clinicians
Primary care: Confirm a person's diagnosis of COPD with spirometry and perform a comprehensive assessment before considering referral to specialized respiratory care. Provide a detailed referral, including spirometry results, comprehensive assessment results, the person's individualized care plan, a copy of the person's self-management plan, and the clinical indication for referral.

Specialized respiratory care: Communicate with the person's primary care provider to inform them of the timing of the referral response.

In certain circumstances, it may be appropriate or preferable for the consultation between primary care and specialized respiratory care to be held via phone or email.

For Health Services
Ensure systems, processes, and resources are in place so that all people with COPD have timely access to specialized respiratory care when needed upon referral from their primary care provider.

Quality Indicators

Process Indicators

Percentage of people with COPD who are referred to specialized respiratory care when clinically indicated

- Denominator: total number of people with COPD with a clinically indicated reason for referral to specialized respiratory care
- Numerator: number of people in the denominator who are referred to specialized respiratory care
- Data sources: local data collection; referral may be measured using the OHIP Claims Database

Wait time between respirology care referral and first respirology consultation

- Definition: total number of days between referral for respirology care and first respirology consultation
- Potential stratification: referral provider type
- Data source: OHIP Claims Database

Percentage of people with COPD seen by a respirologist

- Denominator: total number of people with COPD
- Numerator: number of people in the denominator seen by a respirologist
- Potential stratification: symptom severity
- Data sources: OHIP Claims Database

Quality Statement #9: Pulmonary Rehabilitation

People with moderate to severe, stable COPD are referred to a pulmonary rehabilitation program if they have activity or exercise limitations and breathlessness despite appropriate pharmacological management.

Background

Pulmonary rehabilitation is an interdisciplinary intervention designed and individually tailored to optimize the physical and psychological condition of people with chronic respiratory conditions such as COPD.[23] Pulmonary rehabilitation should be offered to people with COPD who remain symptomatic despite appropriate pharmacological management (see Statement #6).[1-3,12] Despite this, in Ontario, pulmonary rehabilitation programs currently have capacity to serve less than 2% of people with COPD who could benefit from such a program.[24] From 2010 to 2015, between 500 and 600 people with COPD used inpatient rehabilitation services per year; however, data are not available on the use of hospital-based outpatient or community-based pulmonary rehabilitation programs (National Rehabilitation Reporting System, IntelliHealth, 2016). People who complete a pulmonary rehabilitation program benefit from participation in exercise programs to maintain function.[9]

Sources: Canadian Thoracic Society, 2007[1] | Department of Veterans Affairs and Department of Defense, 2014[12] | Global Initiative for Chronic Obstructive Lung Disease, 2017[2] | Health Quality Ontario, 2015[9] | National Institute for Health and Care Excellence, 2010[3] | Ontario Health Technology Advisory Committee, 2012[14] | Ontario Health Technology Advisory Committee, 2015[25]

Definitions Used Within This Quality Statement

Moderate to severe, stable COPD
The classification of the severity of stable COPD can be based on severity of airflow limitation and degree of disability[1]:

- Severity of airflow limitation
  - Mild: $FEV_1 \geq 80\%$
  - Moderate: $50\% \leq FEV_1 < 80\%$
  - Severe: $30\% \leq FEV_1 < 50\%$
  - Very severe: $FEV_1 < 30\%$

- Degree of disability (e.g., based on MRC Dyspnea Scale rating)
  - Mild: Breathlessness from COPD when walking at a quick pace on level ground or walking up a slight hill (MRC grade 2)
  - Moderate: Shortness of breath from COPD causing the person to stop after walking about 100 metres (or after a few minutes) on level ground (MRC grades 3–4)
  - Severe: Shortness of breath from COPD resulting in the person being too breathless to leave the house or breathless when dressing or undressing (MRC grade 5), or the presence of chronic respiratory failure or clinical signs of right heart failure

Pulmonary rehabilitation
Pulmonary rehabilitation consists of supervised aerobic (endurance) and resistance (strength) training to increase exercise capacity and functional status. Other components include education and self-management, including behavioural interventions, and nutrition and psychological support. Programs are multicomponent, interdisciplinary, and individualized, and run for at least 6 to 8 weeks.[9,23]

A person's eligibility for enrolment includes clinically stable, symptomatic COPD with increased breathlessness and reduced activity levels despite appropriate pharmacological treatment; no evidence of poorly controlled cardiovascular, neurological, or musculoskeletal conditions that might limit participation; ability to understand instructions; and a willingness to participate.

What This Quality Statement Means

For People With COPD
If you are taking your medication as directed but still have trouble being active and often feel breathless, your health care professional may suggest that you try a pulmonary rehabilitation program.

Pulmonary rehabilitation programs are designed for people with COPD. They are offered in a hospital or clinic. These programs involve education about COPD to help you understand and manage your symptoms. They also include a personalized, supported exercise program to increase your fitness, and they provide emotional and peer support.

For Clinicians
Discuss the option of pulmonary rehabilitation and refer people with COPD to pulmonary rehabilitation programs as appropriate.

For Health Services
Ensure the availability of pulmonary rehabilitation programs for people with moderate to severe, stable COPD who experience activity or exercise limitations and breathlessness despite appropriate pharmacological management.

Quality Indicators

Process Indicators

Percentage of people with moderate to severe COPD who experience activity or exercise limitations and breathlessness despite appropriate pharmacological management and who are referred to a pulmonary rehabilitation program

- Denominator: total number of people with moderate to severe COPD who experience activity or exercise limitations and breathlessness despite appropriate pharmacological management
- Numerator: number of people in the denominator who are referred to a pulmonary rehabilitation program
- Exclusions: those ineligible to participate in a pulmonary rehabilitation program; those who refuse to participate
- Data source: local data collection

Percentage of people with COPD who are deemed eligible for enrolment in a pulmonary rehabilitation program who begin the program

- Denominator: total number of people with COPD who are deemed eligible for a pulmonary rehabilitation program
- Numerator: number of people in the denominator who begin a pulmonary rehabilitation program
- Data sources: local data collection (for community-based rehabilitation); National Rehabilitation Reporting System (NRS; for inpatient rehabilitation)

Percentage of people with COPD who begin a pulmonary rehabilitation program and complete the program

- Denominator: total number of people with COPD who begin a pulmonary rehabilitation program
- Numerator: number of people in the denominator who completed a pulmonary rehabilitation program (attended ≥ 70% of sessions)
- Data sources: local data collection (for outpatient hospital-based or community-based rehabilitation); NRS (for inpatient rehabilitation; local data collection also required to determine reasons for not completing the program)

Structural Indicator

Local availability of pulmonary rehabilitation programs

- Data source: local data collection

Outcome Indicator

Percentage of people with COPD who reported that their disease had a reduced impact on their life 3 months following completion of a pulmonary rehabilitation program

- Denominator: total number of people with COPD who completed a pulmonary rehabilitation program (attended ≥ 70% of sessions)
- Numerator: number of people in the denominator who reported that their disease had a reduced impact on their life 3 months following completion of the pulmonary rehabilitation program
- Data source: local data collection (measured via the COPD Assessment Tool [CAT] or other validated tool)

Quality Statement #10: Long-Term Oxygen Therapy

People with stable COPD receive an assessment for and, if needed, treatment with long-term oxygen therapy.

Background

Long-term oxygen therapy increases survival in people with COPD with severe chronic resting hypoxemia; however, there is limited evidence of benefit for people who have moderate resting or exercise-induced hypoxemia.[2,12] In addition, it has been found that "inappropriate oxygen therapy in people with COPD may cause respiratory depression."[3] Therefore, an assessment of the need for long-term oxygen therapy is essential before initiating this therapy in people with stable COPD. When initiating oxygen therapy, health care professionals should provide people with COPD with education on the proper and safe use of oxygen.

Sources: Canadian Thoracic Society, 2007[1] | Department of Veterans Affairs and Department of Defense, 2014[12] | Global Initiative for Chronic Obstructive Lung Disease, 2017[2] | Health Quality Ontario, 2015[9] | National Institute for Health and Care Excellence, 2010[3] | Ontario Health Technology Advisory Committee, 2012[14]

Definitions Used Within This Quality Statement

Assessment for long-term oxygen therapy[3]
Arterial blood gases should be used to assess the need for long-term oxygen therapy in people with stable COPD who have one or more of the following:

- Very severe airflow obstruction (FEV_1 < 30%)
- Bluish discolouration of skin or mucus membranes (cyanosis)
- Hematocrit > 55% (polycythemia or erythrocytosis)
- Oxygen saturation ≤ 92% (screened with oximetry)
- Peripheral edema suggesting heart failure (cor pulmonale)
- Raised jugular venous pressure

People with severe airflow obstruction (FEV_1 30–50%) may also be considered for assessment.

Treatment with long-term oxygen therapy
Long-term oxygen therapy should be offered to people with stable COPD who have severe resting hypoxemia (arterial partial pressure of oxygen [PaO_2] ≤ 55 mmHg and/or arterial oxygen saturation [SaO_2] ≤ 88%).

People with moderate resting hypoxemia (PaO_2 56–60 mmHg and/or SaO_2 89–90%) may also benefit from long-term oxygen therapy, especially if they have one of the following:

- Pulmonary hypertension
- Hematocrit > 55% (polycythemia or erythrocytosis)
- Peripheral edema suggesting heart failure (cor pulmonale)
- Other signs of tissue hypoxia
- Exercise limited by hypoxemia (SaO_2 ≤ 88%) that improves with supplemental oxygen[26]
- Nocturnal hypoxemia (SaO_2 ≤ 88%)[26]

People with exertional hypoxemia (hypoxemia during exercise, SaO_2 ≤ 88%) may be eligible for long-term oxygen therapy if their exercise tolerance is restricted owing to severe breathlessness

(≥ MRC grade 4) and improves with supplemental oxygen, and if they are motivated to use oxygen therapy to increase their activity level.[26]

Once long-term therapy has been initiated, oxygen should be used at least 15 to 20 hours a day. The continued need for long-term oxygen therapy should be assessed after 60 to 90 days and then at least once a year.

What This Quality Statement Means

For People With COPD
If your body is not getting enough oxygen when you breathe, you may need to start using oxygen at home. This is called oxygen therapy. Oxygen can be supplied in different ways, like in a canister or a machine. Your health care professional will help you decide which option is best for you. Oxygen is usually administered by a small tube with prongs that is placed under your nose. To make sure oxygen therapy is right for you, your health care professional will have you take some tests to measure the level of oxygen in your blood. Some people with COPD take oxygen therapy for a short period of time while they recover from a flare-up, whereas other people with COPD take oxygen therapy on a long-term basis.

For Clinicians
Screen people with COPD using oximetry to determine if arterial blood gases should be measured to assess the need for long-term oxygen therapy. When initiating oxygen therapy, provide people with COPD with information regarding the proper and safe use of oxygen. Reassess the need for continued oxygen therapy 60 to 90 days following initiation and then at least once a year.

For Health Services
Ensure the availability of pulse oximeters and arterial blood gas testing to determine the need for long-term oxygen therapy. Ensure access to long-term oxygen therapy for people with COPD who need it.

Quality Indicators

Process Indicators

Percentage of people with COPD whose oxygen saturation was measured with oximetry in the past year

- Denominator: total number of people with COPD
- Numerator: number of people in the denominator whose oxygen saturation was measured with oximetry in the past year
- Data source: local data collection

Percentage of people with COPD receiving long-term oxygen therapy whose arterial blood gases were measured in the past year

- Denominator: total number of people with COPD receiving long-term oxygen therapy
- Numerator: number of people in the denominator whose arterial blood gases were measured in the past year
- Data source: local data collection

Percentage of people with stable COPD and an indication for long-term oxygen therapy who receive long-term oxygen therapy

- Denominator: total number of people with stable COPD and at least one indication for long-term oxygen therapy
- Numerator: number of people in the denominator who receive long-term oxygen therapy
- Potential stratification: disease severity
- Data sources: local data collection (denominator); Assistive Devices Program (numerator)

Structural Indicator

Local availability of long-term oxygen therapy assessments (pulse oximeters and arterial blood gas testing)

- Data source: local data collection

Quality Statement #11: Management of Acute Exacerbations of COPD

People with COPD have access to primary care within 24 hours of the onset of an acute exacerbation.

Background

For people with COPD, an acute exacerbation of COPD is the primary reason for medical visits, hospitalization, and, when severe, death.[1] Even after people with COPD are stabilized, these episodic symptom flare-ups impact health status, including a decrease in lung function and a reduction in health-related quality of life.[1] Typically, exacerbations occur when people with COPD have respiratory infections. Sometimes, the cause of an exacerbation is exposure to triggers in the environment such as air pollution or temperature changes. Other times, the cause of an exacerbation is unknown.[16]

Some people will receive their initial diagnosis of COPD during or following an acute exacerbation. All people with COPD should be made aware of the early signs and symptoms of an acute exacerbation so that they can take steps to prevent it from getting worse should they experience one (see Statement #4). Caregivers should also be aware of these signs and symptoms, and the signs and symptoms should be noted in the person's self-management plan.

Regardless of the plan they have established with their health care professionals, all people with COPD should be able to contact a member of their care team within 24 hours of the onset of an acute exacerbation. During an acute exacerbation or a suspected exacerbation, a health care professional should obtain a complete history and perform a physical examination to help determine the cause of the worsening symptoms.[1] In some cases, timely access to primary care may prevent the need for an emergency department visit or hospital admission. However, more severe exacerbations of COPD will require acute care.

Source: Advisory committee consensus

Definitions Used Within This Quality Statement

Acute exacerbation of COPD[1,16]
An acute exacerbation of COPD is characterized by worsening respiratory symptoms, such as breathlessness, cough, and sputum production (purulent or nonpurulent), that lasts at least 48 hours. The severity of an acute exacerbation is categorized according to the treatment required:

- Mild: requires treatment with inhaled bronchodilators only, outside the hospital
- Moderate: requires treatment with inhaled bronchodilators, antibiotics, and/or corticosteroids, usually outside the hospital
- Severe: may be associated with acute respiratory failure; requires treatment in hospital (emergency department visit with possible admission to hospital)

What This Quality Statement Means

For People With COPD
It is important to recognize when you experience a flare-up of your symptoms so you can prevent it from getting worse. These include:

- Breathlessness that is worse than usual
- More coughing than usual
- Producing more sputum (coughed-up mucus) than usual
- A change in the colour or thickness of sputum

If you experience a flare-up of your symptoms, follow your written self-management plan or COPD action plan. If your flare-up lasts 48 hours or your symptoms get worse, contact your health care professional right away.

For Clinicians
Explain to people with COPD the signs and symptoms of an acute exacerbation so they know what steps to take should they experience one. Ensure people with COPD know who on their care team to contact in the event of an acute exacerbation and that they have the appropriate contact information. Ensure that people with COPD are able to contact a member of their care team within 24 hours of the onset of an acute exacerbation.

For Health Services
Ensure resources and processes are in place so that people with COPD have access to primary care within 24 hours of the onset of an acute exacerbation.

Quality Indicators

Process Indicators

Percentage of people with COPD who had access to primary care within 24 hours of the onset of an acute exacerbation

- Denominator: total number of people with COPD who experienced an acute exacerbation
- Numerator: number of people in the denominator who had access to primary care within 24 hours of the onset of the acute exacerbation
- Data source: local data collection

Percentage of people with COPD who experienced an acute exacerbation who were satisfied with the wait time to see their primary care provider during the exacerbation

- Denominator: total number of people with COPD who experienced an acute exacerbation
- Numerator: number of people in the denominator who answered “very good” or “excellent” to the following question: “How would you rate the length of time between making your appointment and the visit you just had?” (Response options: Poor, Fair, Good, Very good, Excellent)
- Data source: local data collection

Quality Statement #12: Follow-Up After Hospitalization for an Acute Exacerbation of COPD

People with COPD who have been hospitalized for an acute exacerbation have an in-person follow-up assessment after discharge with a health care professional with expertise in COPD.

Background

Transitions from hospital are important events that can introduce the risks of breakdown in a person's care and of crucial information being lost or miscommunicated. It is important for people with COPD who are leaving hospital to have a care plan in place that is shared with all of their care providers, including those in hospital and those in the community.[9] Many people with undiagnosed COPD receive treatment for the first time during an acute episode rather than for the early symptoms of the disease,[27] and some receive their initial diagnosis during or following hospitalization for an acute exacerbation of COPD. Therefore, an in-person follow-up after hospitalization for an acute exacerbation presents an important opportunity to ensure people with COPD receive the care they need to manage their disease as effectively as possible.

In-person follow-up with primary care should occur within 7 days of discharge, and, if needed, follow-up with specialist care should occur within 30 days of discharge.[2,9] People with complex health needs may also benefit from earlier (e.g., within 48 hours) and more frequent (e.g., every few weeks) follow-up with primary care.[2,9]

Source: Advisory committee consensus

Definitions Used Within This Quality Statement

Follow-up assessment[2,9,12]
A follow-up assessment after hospitalization for an acute exacerbation of COPD should be individualized and related to the details of the hospitalization. Components of the follow-up assessment include but are not limited to the following:

- Reviewing relevant comorbidities identified during the hospitalization
- Updating and reconciling medications, including dose, frequency, and technique (see Statement #6)
- Assessing barriers to coping at home or in long-term care, and assessing the need for or access to home and community care (see Statement #3)
- Ensuring spirometry testing has been done to confirm diagnosis and determine airflow limitation (see Statements #1 and #2)
- Offering self-management interventions (see Statement #4)
- Promoting smoking cessation (see Statement #5)
- Reviewing the need for vaccinations (see Statement #7)
- Ensuring referral to pulmonary rehabilitation has been done (see Statement #13)
- Discussing advance care planning as appropriate (see Statement #4)
- Assessing the need for referral to palliative care as appropriate
- If discharged with oxygen, assessing need for long-term oxygen therapy 30 to 90 days after discharge (see Statement #10)

After discharge[2,9]
An in-person follow-up assessment should occur as soon as possible:

- In primary care: within 7 days of discharge
- In specialist care: within 30 days of discharge, if needed

People with complex health needs may also benefit from earlier (e.g., within 48 hours) and more frequent (e.g., every few weeks) follow-up.

Health care professional with expertise in COPD
Health care professionals with expertise in COPD may include the following:

- *Primary care:* family physicians, nurse practitioners, respiratory therapists, or other health care professionals such as occupational therapists, physiotherapists, pharmacists, or nurses who are certified respiratory educators, have respiratory health expertise, or have the role of care coordinator or case manager for people with COPD
- *Specialist care:* respirologists, general internists with expertise in respiratory medicine, or other types of physicians or nurse practitioners with expertise in respiratory medicine working within a specialized respiratory health clinic

What This Quality Statement Means

For People With COPD
If you have been hospitalized for a flare-up, you should see your health care professional within 7 days of leaving the hospital. This lets your health care professional check how you're doing and make any changes to your care plan, including your medications. At this visit, you can also ask questions to make sure you understand what has happened to you and what you need to do to take care of yourself. If you need to see a lung specialist, you should see this specialist within 30 days of leaving the hospital.

For Clinicians
See people with COPD who have been hospitalized for an acute exacerbation as soon as possible after discharge to complete a follow-up assessment. For primary care, follow-up should occur within 7 days of discharge. For specialist care, if needed, follow-up should occur within 30 days of discharge. For people with complex needs, consider earlier (e.g., within 48 hours) and more frequent (e.g., every few weeks) follow-up.

For Health Services
Ensure systems, processes, and resources are in place in primary care and outpatient specialist clinics to carry out follow-up assessments of people with COPD who were recently hospitalized for an acute exacerbation.

Quality Indicators

Process Indicators

Percentage of people hospitalized for COPD who had an in-person follow-up assessment in primary care within 7 days of discharge

- Denominator: total number of people discharged from hospital after an admission for COPD (main or contributing diagnosis)
- Numerator: number of people in the denominator who have an in-person follow-up assessment in primary care within 7 days of discharge
- Data sources: Discharge Abstract Database (DAD; to identify denominator); OHIP Claims Database (to identify follow-up with a physician)

Percentage of people hospitalized for COPD who had an in-person follow-up assessment in specialist care within 30 days of discharge

- Denominator: total number of people discharged from hospital after an admission for COPD (main or contributing diagnosis)
- Numerator: number of people in the denominator who have an in-person follow-up assessment in specialist care within 30 days of discharge
- Data sources: DAD (to identify denominator); OHIP Claims Database (to identify follow-up with a physician)

Outcome Indicators

Percentage of people with COPD who visited an emergency department for COPD within 30 days of discharge for a previous hospitalization for COPD (lower is better)

- Denominator: total number of people discharged from hospital after an admission for COPD (main or contributing diagnosis)
- Numerator: number of people in the denominator who visit an emergency department for COPD (main or contributing problem) within 30 days of discharge from their index hospitalization
- Data sources: DAD; National Ambulatory Care Reporting System

Percentage of people readmitted to hospital for COPD within 3 months of discharge (lower is better)

- Denominator: total number of people discharged from hospital after an admission for COPD (main or contributing diagnosis)
- Numerator: number of people in the denominator readmitted to hospital for COPD (most responsible or contributing diagnosis) within 3 months of discharge from their index hospitalization
- Data source: DAD

Quality Statement #13: Pulmonary Rehabilitation After Hospitalization for an Acute Exacerbation of COPD

People who have been admitted to hospital for an acute exacerbation of COPD are referred to pulmonary rehabilitation at the time of discharge and start the program within 1 month of hospital discharge.

Background

Following hospitalization for an acute exacerbation, people with COPD are likely to have worse lung function, symptoms, and quality of life than before; they are also at increased risk of having another acute exacerbation of COPD and of dying.[23] Activity and/or exercise limitations can last for weeks and months following discharge from hospital, and this physical inactivity increases the risks of negative health outcomes for people with COPD.[23]

When initiated early after discharge from hospital, pulmonary rehabilitation helps increase exercise tolerance, reduce symptoms, and improve the quality of life of people with COPD.[23,25] It also decreases hospital readmissions.[27]

Pulmonary rehabilitation is an interdisciplinary intervention designed and individually tailored to optimize the physical and psychological condition of people with chronic respiratory conditions such as COPD.[23] Pulmonary rehabilitation is recommended as the standard of care for people following hospitalization for an acute exacerbation of COPD (within 1 month of discharge from hospital). Despite this, in Ontario, pulmonary rehabilitation programs currently do not have enough capacity to serve all people with COPD who want to participate, and wait lists can be long.[24] From 2010 to 2015, between 500 and 600 people with COPD used inpatient rehabilitation services per year; however, data are not available on the use of hospital-based outpatient or community-based pulmonary rehabilitation programs (National Rehabilitation Reporting System, IntelliHealth 2016). People who complete a pulmonary rehabilitation program benefit from participation in exercise programs to maintain function.[9]

Sources: American College of Chest Physicians and Canadian Thoracic Society, 2015[16] | Department of Veterans Affairs and Department of Defense, 2014[12] | Global Initiative for Chronic Obstructive Lung Disease, 2017[2] | National Institute for Health and Care Excellence, 2010[3] | Ontario Health Technology Advisory Committee, 2012[14] | Ontario Health Technology Advisory Committee, 2015[25]

Definitions Used Within This Quality Statement

Pulmonary rehabilitation
Pulmonary rehabilitation consists of supervised aerobic (endurance) and resistance (strength) training to increase exercise capacity and functional status. Other components include education and self-management, including behavioural interventions, and nutrition and psychological support. Programs are multicomponent, interdisciplinary, and individualized, and run for at least 6 to 8 weeks.[9,23]

A person's eligibility for enrolment includes clinically stable, symptomatic COPD with increased breathlessness and reduced activity levels despite appropriate pharmacological treatment; no evidence of poorly controlled cardiovascular, neurological, or musculoskeletal conditions that might limit participation; ability to understand instructions; and a willingness to participate.

What This Quality Statement Means

For People With COPD
If you have been discharged from the hospital after a flare-up, your health care professional should talk with you about trying a pulmonary rehabilitation program to help improve your symptoms and regain your strength so that you can get back to the activities you enjoy.

Pulmonary rehabilitation programs are designed for people with COPD. They are offered in a hospital or clinic. These programs involve education about COPD to help you understand and manage your symptoms. They also include a personalized, supported exercise program to increase your fitness, and they provide emotional and peer support.

For Clinicians
For people with COPD being discharged from hospital for an acute exacerbation, discuss the option of pulmonary rehabilitation and refer people with COPD to pulmonary rehabilitation programs as appropriate.

For Health Services
Ensure the availability of pulmonary rehabilitation programs for people with COPD who have recently been hospitalized for an acute exacerbation. Programs should have the capacity required to ensure that people with COPD who have recently been hospitalized for an acute exacerbation are able to begin a program within 1 month of discharge from hospital.

Quality Indicators

Process Indicators

Percentage of people discharged from hospital after an admission for COPD who are referred to a pulmonary rehabilitation program

- Denominator: total number of people discharged from hospital after an admission for COPD (main or contributing diagnosis)
- Numerator: number of people in the denominator who are referred to a pulmonary rehabilitation program
- Data sources: local data collection; DAD; OHIP Claims Database

Proportion of people discharged from hospital after an admission for COPD who started a pulmonary rehabilitation program within 1 month of discharge

- Denominator: total number of people discharged from hospital after an admission for COPD (main or contributing diagnosis)
- Numerator: number of people in the denominator who start a pulmonary rehabilitation program within 1 month of discharge
- Data sources: local data collection (for community-based rehabilitation); DAD; NRS (for inpatient rehabilitation)

Structural Indicator

Local availability of pulmonary rehabilitation programs

- Data source: local data collection

Outcome Indicator

Percentage of people with COPD who reported that their disease had a reduced impact on their life 3 months following completion of a pulmonary rehabilitation program

- Denominator: total number of people with COPD who completed a pulmonary rehabilitation program (attended ≥ 70% of sessions)
- Numerator: number of people in the denominator who reported that their disease had a reduced impact on their life 3 months following completion of the pulmonary rehabilitation program
- Data sources: local data collection; measured with the COPD Assessment Test (CAT) or other validated tool

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About Health Quality Ontario

Health Quality Ontario is the provincial advisor on the quality of health care. We are motivated by a single-minded purpose: **Better health for all Ontarians.**

Who We Are

We are a scientifically rigorous group with diverse areas of expertise. We strive for complete objectivity, and look at things from a vantage point that allows us to see the forest and the trees. We work in partnership with health care providers and organizations across the system, and engage with patients themselves, to help initiate substantial and sustainable change to the province's complex health system.

What We Do

We define the meaning of quality as it pertains to health care, and provide strategic advice so all the parts of the system can improve. We also analyze virtually all aspects of Ontario's health care. This includes looking at the overall health of Ontarians, how well different areas of the system are working together, and most importantly, patient experience. We then produce comprehensive, objective reports based on data, facts and the voices of patients, caregivers and those who work each day in the health system. As well, we make recommendations on how to improve care using the best evidence. Finally, we support large-scale quality improvements—by working with our partners to facilitate ways for health care providers to learn from each other and share innovative approaches.

Why It Matters

We recognize that, as a system there is much to be proud of, but also that it often falls short of being the best it can be. Plus, certain vulnerable segments of the population are not receiving acceptable levels of attention. Our intent at Health Quality Ontario is to continuously improve the quality of health care in this province regardless of who you are or where you live. We are driven by the desire to make the system better, and by the inarguable fact that better has no limit.

Looking for more information?

Visit our website at **hqontario.ca** and contact us at **qualitystandards@hqontario.ca** if you have any questions or feedback about this guide.

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