

**Quality
Standards**

Glaucoma

Care for Adults

**Health Quality
Ontario**

Let's make our health system healthier



Summary

This quality standard focuses on care for adults 18 years of age and older with primary open-angle glaucoma and those who are at risk for primary open-angle glaucoma. It focuses on the assessment, diagnosis, and management of this condition and it applies to all care settings. This quality standard does not address care for people with acute angle-closure glaucoma (a medical emergency that requires immediate treatment to prevent vision loss).

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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. Health Quality Ontario has worked in partnership with the Provincial Vision Task Force to develop this quality standard for glaucoma.

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.

Tools and resources to support clinicians and organizations in their quality improvement efforts accompany each quality standard. One of these resources is an inventory of indicator definitions to help clinicians and organizations assess the quality of care they are delivering, and to identify gaps in care and areas for improvement. These indicator definitions can be used to assess processes, structures, and outcomes. It is not mandatory to use or collect data when using a quality standard to improve care. The indicator definitions are provided to support quality improvement efforts; clinicians and organizations may choose indicators to measure based on local priorities and local data availability.

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 focuses on care for adults 18 years of age and older with glaucoma or who are at risk for glaucoma. It addresses primary open-angle glaucoma and focuses on the assessment, diagnosis, and management of this condition. It applies to all care settings.

This quality standard does not address care for people with acute angle-closure glaucoma (a medical emergency that requires immediate treatment to prevent vision loss).

While the quality standard addresses care for adults with or at risk for primary open-angle glaucoma, some guidance in this quality standard may be relevant and applicable to people younger than 18 years of age or who have other forms of glaucoma, such as chronic angle-closure glaucoma and secondary open-angle glaucoma. However, eye care providers should consider that specialized skills and expertise may be required when providing treatment in these populations. If treatment is beyond an eye care provider's scope or expertise, they should consult an eye care provider with the appropriate expertise.

Terminology Used in This Quality Standard

Glaucoma

In this quality standard, “glaucoma” refers to primary open-angle glaucoma, the most common form of glaucoma in North America.¹ Primary open-angle glaucoma involves damage to the optic nerve (optic neuropathy) characterized by its progressive degeneration, leading to visual impairment.² Glaucoma is classified as primary or secondary, depending on whether there is a known cause: primary glaucoma has no identifiable cause, whereas secondary glaucoma develops as a result of an identifiable cause, such as an injury or disease.¹

People at Risk for Glaucoma

In this quality standard, “people at risk for glaucoma” are those who possess risk factors or clinical findings that indicate an increased likelihood of developing glaucoma; examples of clinical findings are ocular hypertension or a suspicious appearance of the optic nerve.

Not all people who are at risk will develop glaucoma. Strong risk factors for developing glaucoma include¹⁻⁴:

- Elevated intraocular pressure (> 21 mm Hg in at least one eye)
- Increasing age (particularly people 50 years of age and older)
- Family history of glaucoma (in first-degree relatives)
- African or Hispanic ethnicity
- Thin central corneal thickness
- Enlargement or asymmetric cupping of the optic nerve head
- Myopia (near-sightedness; especially higher than –3.00 diopters, with increasing risk with each additional diopter)^{5,6}
- Ocular history (e.g., trauma or injury, prior ocular surgery, prolonged use of corticosteroids in any form or route, particularly topical drops)

People who are at high risk of developing glaucoma because they have several risk factors or clinical features are often referred to as “glaucoma suspects.”

Eye Care Provider

In this quality standard, “eye care provider” refers to optometrists and ophthalmologists (comprehensive or with subspecialty glaucoma training).

Primary Care Provider

In this quality standard, “primary care provider” refers to a family physician or nurse practitioner.

While much of the diagnosis, monitoring, and treatment of glaucoma is done by eye care providers, primary care providers play critical roles in the care and treatment process for people with glaucoma. For example:

- Primary care providers are often people’s first point of contact with the health system and are well situated to identify and refer people who are at risk for glaucoma to an eye care provider for evaluation (see Quality Statement 1)

Why This Quality Standard Is Needed

Glaucoma can result in gradual and permanent vision loss and ultimately blindness, if not diagnosed and treated.^{1,2} Globally, glaucoma is the leading cause of irreversible blindness.⁷ It is estimated to affect more than 400,000 Canadians, and the direct costs of vision loss from glaucoma in Canada are estimated at \$300 million annually.⁸⁻¹⁰

- Many primary care providers act as the main point of contact as patients move through the system, helping them navigate health care transitions and coordinate multiple appointments and treatments
- Good communication and collaboration between primary care providers and eye care providers can assist with early detection of glaucoma, managing the systemic effects of glaucoma medications, avoiding potential interactions with medications taken for other health conditions, and maintaining the continuity of visits to the eye care provider

Progression

In this quality standard, the term “progression” refers to new or worsening structural or functional changes associated with glaucoma.² The clinical significance of progression, and the clinical actions required, are influenced by the extent of damage prior to the change and the threat of visual impairment if further progression were to occur.²

Age is a strong risk factor for glaucoma; people over age 60 are six times more likely to develop glaucoma.¹¹ The burden of disease is growing as the Ontario population ages: between 2009/10 and 2015/16, the number of optometry and ophthalmology visits in Ontario for people with glaucoma increased by 34% and 67%, respectively (data source: IntelliHealth Ontario, Medical Services).

Although there is no cure for glaucoma, its progression can be managed, and there are significant opportunities to improve the quality of life of people with glaucoma through the delivery of high-quality care. Glaucoma develops painlessly and gradually; symptoms are often not apparent until there is substantial irreversible damage to the optic nerve fibres.¹ As a result, glaucoma often goes undetected: it is estimated that up to 50% of people with glaucoma are not aware they have the disease.^{10,12,13} In a Canadian study, nearly half of people with newly diagnosed open-angle glaucoma had moderate or advanced disease at the time of diagnosis.^{14,15}

Early detection and treatment of glaucoma can often delay or prevent further vision loss.¹² The best way to detect glaucoma is through a routine eye examination by an eye care provider.^{16,17}

In Ontario, there are inequities in access to care for some populations that are at risk for glaucoma. Lower socioeconomic status and older age are associated with a greater severity of glaucoma at the time of initial diagnosis, potentially because of delayed access to care.¹³⁻¹⁵ People aged 20 to 64 years old with a specific medical condition affecting the eye (including glaucoma, diabetes mellitus, cataract, retinal disease, amblyopia, visual field defects, corneal disease, strabismus, recurrent uveitis, and optic pathway disease) are eligible to receive OHIP coverage for a routine eye examination once every 12 months and for any follow-up appointments related to the condition.¹⁸ However, other people in this age group—including those at risk for glaucoma—must either

pay out of pocket for the examination if performed by an optometrist or have their costs covered by private insurance (when available). The costs associated with routine eye examinations can be a barrier to access.

Administrative data reveal regional variations across Ontario in the use of glaucoma-related services; these may suggest inequities in access. In 2015/16, the rate of optometry visits for people with glaucoma ranged from 107 to 350 visits per 10,000 residents across Ontario's 14 regions (data source: IntelliHealth Ontario, Medical Services), while the rate of consultations to an ophthalmologist (requested by an optometrist or a physician) varied across the regions, from 39 to 106 consultations per 10,000 residents (data source: IntelliHealth Ontario, Medical Services). Data also suggest there are variations in the procedures provided to people with glaucoma across regions. For example, rates of laser trabeculoplasty per 100,000 residents in 2015/16 ranged from 5.0 to 98.9 across the regions (data source: IntelliHealth Ontario, Medical Services).

Because administrative data currently available in Ontario have significant limitations both for identifying people with glaucoma and for capturing the use of certain glaucoma-related services (such as optometrist consultations that are not publicly insured), it is not known whether these regional variations in use are related to regional differences in the underlying prevalence of glaucoma, differences in service patterns, or true inequities in access to care.

Principles Underpinning This Quality Standard

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

People with glaucoma or at risk for glaucoma should receive services that are respectful of their rights and dignity and that promote shared decision-making and self-management.

People with glaucoma or at risk for glaucoma 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 culturally safe care. Language, a basic tool for communication, is an essential part of safe

care and needs to be considered throughout a person's health care journey. For example, services should be actively offered in French and other languages.

Care providers should be aware of the historical context of the lives of Indigenous peoples throughout Canada and be sensitive to the impacts of intergenerational trauma and the physical, mental, emotional, and social harms experienced by Indigenous people, families, and communities.

A high-quality health system is one that provides good access, experience, and outcomes for everyone in Ontario, no matter where they live, what they have, or who they are.

How Success Can Be Measured

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

- Wait time between referral to specialist consultation for incisional glaucoma surgery
- Wait time between decision to treat and incisional glaucoma surgery

How Success Can Be Measured Provincially

In this section, we list indicators that can be used to monitor the overall success of the standard provincially, given currently available data. If additional data sources are developed, other indicators could be added.

- Percentage of people diagnosed with glaucoma who receive at least one comprehensive eye examination annually

How Success Can Be Measured Locally

Providers may want to monitor their own quality improvement efforts and assess the quality of care they provide to people with glaucoma. It may be possible to do this using their own clinical records, or they might need to collect additional data.

ABOUT THIS QUALITY STANDARD CONTINUED

In addition to the provincial measures of success, we recommend the following indicators to measure the quality of care patients are receiving; these indicators cannot be measured provincially using currently available data sources:

- Percentage of people treated for glaucoma who report high satisfaction with the eye care they receive
- Percentage of people with glaucoma who are legally blind due to visual field loss

In addition to the overall measures of success, each quality statement within the standard is accompanied by one or more indicators. These indicators are intended to guide local measurement of quality improvement efforts related to the implementation of the statement. To assess the equitable delivery of care, the statement-specific indicators and the overall indicators can be stratified by patient socioeconomic and demographic characteristics, such as income, education, language, age, sex, and gender.

Quality Statements in Brief

Quality Statement 1: Routine Eye Examination and Comprehensive Glaucoma Assessment

People at risk for glaucoma receive a routine eye examination. People suspected of having glaucoma, based on the routine eye examination, receive a comprehensive glaucoma assessment.

Quality Statement 2: Monitoring

People with glaucoma or at risk for glaucoma are monitored on an appropriate reassessment schedule, according to their current stage of disease and risk of progression to vision impairment.

Quality Statement 3: Information

Eye care providers speak with people with glaucoma or at risk for glaucoma about their diagnosis, prognosis, and management, and offer them relevant and accessible information about their condition at initial and subsequent visits.

Quality Statement 4: Referral and Timely Access to an Ophthalmologist

People with glaucoma are referred to and have timely access to an ophthalmologist for consultation, when clinically indicated.

Quality Statement 5: Medications and Laser Therapy

People with glaucoma or at risk for glaucoma are offered medications or laser therapy when clinically indicated.

Quality Statement 6: Incisional Surgery

People with glaucoma who are at risk of progressing to sight loss despite maximum tolerated medical therapy and laser therapy are offered incisional surgery.

Routine Eye Examination and Comprehensive Glaucoma Assessment

People at risk for glaucoma receive a routine eye examination. People suspected of having glaucoma, based on the routine eye examination, receive a comprehensive glaucoma assessment.

Background

Glaucoma is asymptomatic in its early stages, so it is often unnoticed by people until it is advanced and they have permanent vision loss. It is estimated that up to 50% of people with glaucoma are not aware they have the disease.^{10,12,13} Early detection and treatment of glaucoma can often delay or prevent further vision loss.¹² Primary care providers (a family physician or nurse practitioner) play a key role in identifying and referring people who are at risk for glaucoma (see the Definitions section) to an eye care provider for evaluation.^{4,19}

If the findings of a routine eye examination indicate the need for a comprehensive glaucoma assessment, elements of the comprehensive glaucoma assessment may occur during the same visit as the routine eye examination. The assessment findings should inform people's individualized treatment plans and the frequency of ongoing monitoring (see Quality Statement 2).

On many occasions, the information gathered during an initial comprehensive glaucoma assessment does not establish an unequivocal diagnosis: in these situations, ongoing assessments over time may reveal progressive changes that define glaucoma (see Quality Statement 2).

Sources: American Academy of Ophthalmology, 2015¹⁹ | Canadian Association of Optometrists, 2017¹ | Canadian Ophthalmological Society, 2009² | National Health and Medical Research Council, 2010⁴ | National Institute for Health and Care Excellence, 2017²⁰

What This Quality Statement Means

For People at Risk for Glaucoma or Suspected of Having Glaucoma

Usually, glaucoma has no symptoms in its early stages. The best way to know if you have glaucoma is to get a routine eye examination by an eye care provider. Your eye care provider should ask you about your vision and your health and check for signs of glaucoma. If your eye care provider thinks you might have glaucoma, they will recommend additional testing.

For Clinicians

Primary care providers: Identify and refer people who are at risk for glaucoma (see the Definitions section) to an eye care provider for evaluation.

Eye care providers: Perform a routine eye examination in people who exhibit signs of glaucoma or have risk factors for glaucoma; if necessary, perform a comprehensive glaucoma assessment too. Communicate the results of the examinations to the patient and their primary care provider.

For Health Services

Ensure there are systems, processes, and resources in place to allow (1) primary care providers to assess for glaucoma risk factors and refer patients to an eye care provider for evaluation, and (2) eye care providers to carry out investigations for people suspected to have glaucoma or at risk for glaucoma.

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

At risk

Strong risk factors for developing glaucoma include^{1-4,20}:

- Elevated intraocular pressure (> 21 mm Hg in at least one eye)
- Increasing age (particularly people 50 years of age and older)
- Family history of glaucoma (in first-degree relatives)
- African or Hispanic ethnicity
- Thin central corneal thickness
- Enlargement or asymmetric cupping of the optic nerve head
- Myopia (near-sightedness; especially higher than -3.00 diopters, with increasing risk with each additional diopter)^{5,6}
- Ocular history (e.g., trauma or injury, prior ocular surgery, prolonged use of corticosteroids in any form or route, particularly topical drops)

Routine eye examination

A routine eye examination evaluates a person's vision and eye health and can help detect eye diseases, such as glaucoma, cataracts, diabetic retinopathy, and macular degeneration. It is completed by an eye care provider and includes, at a minimum, the following components^{1,2}:

- History:
 - Medical history
 - Ocular history
 - Current medications and allergies
 - Family history (medical and ocular)
 - Assessment of risk factors
- Clinical examination:
 - Refraction and best corrected visual acuity
 - Pupillary function (including pupil size and reactivity)
 - Ocular motility
 - Slit-lamp examination of the anterior segment
 - Ophthalmoscopy
 - Determination of the intraocular pressure

Quality Indicators

Process Indicators

Percentage of people at risk of developing glaucoma who have received a routine eye examination within the past 24 months

- Denominator: number of people at risk of developing glaucoma
- Numerator: number of people in the denominator who have received a routine eye examination within the past 24 months
- Data source: local data collection

Percentage of people suspected of having glaucoma who receive a comprehensive glaucoma assessment

- Denominator: number of people suspected of having glaucoma (based on findings from a routine eye examination)
- Numerator: number of people in the denominator who receive a comprehensive glaucoma assessment
- Data source: local data collection
- Potential stratification: age category

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Comprehensive assessment

If glaucoma is suspected (based on risk factors or clinical findings during a routine eye examination), a comprehensive glaucoma assessment should be initiated to^{1,19}:

- Investigate the presence of the disease
- Establish the classification and subtype of glaucoma
- Gather baseline information
- Establish disease severity

The comprehensive glaucoma assessment is performed by an eye care provider to investigate the presence of disease and develop a baseline to assess progression. The assessment of structural damage and functional loss allows for the staging of disease severity; this staging informs decision-making for treatment and follow-up.

In addition to components of the routine eye examination, the comprehensive glaucoma assessment should include^{1,2,4,12,19,20}:

- Gonioscopy (evaluates the appearance of the area where fluid drains from the eye)
- Measurement of the central corneal thickness
- Applanation tonometry (measures intraocular pressure; include time of measurement)
- Stereoscopic evaluation of the optic nerve head
- Standard automated perimetry (visual field testing)
- Imaging of the optic nerve head and retinal nerve fiber layer

Monitoring

People with glaucoma or at risk for glaucoma are monitored on an appropriate reassessment schedule, according to their current stage of disease and risk of progression to vision impairment.

Background

For people with glaucoma or at risk for glaucoma, ongoing assessment by an eye care provider is important to detect the progression of structural damage (i.e., to the optic nerve and retinal nerve fibre layer) and functional (visual field) loss and to assess the effectiveness and side effects of treatment.^{1,20} Early identification of progression allows for timelier therapeutic intervention. Although some degree of progression may be unavoidable, the goals of the eye care provider are to measure and minimize the progression, while optimizing health-related quality of life, with an appropriate and individualized treatment plan that is acceptable to the patient.¹⁹

Based on the assessment results, the eye care provider evaluates the risk of conversion to glaucoma (in people at risk) and the risk of progressive structural damage or functional loss (in people with glaucoma). They use this evaluation to decide whether treatment or a change in treatment is indicated and to establish an appropriate monitoring schedule.

Sources: American Academy of Ophthalmology, 2015¹⁹ | Canadian Association of Optometrists, 2017¹ | Canadian Ophthalmological Society, 2009² | National Health and Medical Research Council, 2010⁴ | National Institute for Health and Care Excellence, 2017²⁰ | Scottish Intercollegiate Guidelines Network, 2015³

What This Quality Statement Means

For People With Glaucoma or at Risk for Glaucoma

Your eye care provider should check your eyes regularly to see if your eye condition is getting worse. If so, it should be treated promptly to try to slow down or prevent further vision loss.

For Clinicians

Reassess people at risk for glaucoma or diagnosed with glaucoma on a regular basis, according to their disease severity and stability and risk of progressive loss of vision.

For Health Services

Ensure there are systems, processes, and resources for eye care providers to carry out timely, ongoing eye assessments for people at risk for glaucoma or diagnosed with glaucoma.

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Monitored

At a minimum, each assessment should include the following:

- Questions about changes to the person's general health and medications, visual changes, and, if applicable, glaucoma medication adherence and side effects^{1,2,4,19,20}
- Structural and functional tests, including^{1,2,4,19,20}:
 - Measurement of intraocular pressure
 - Evaluation of the optic nerve head (e.g., using a stereo fundus lens and objective imaging)
 - Visual field testing
 - Gonioscopy when clinically indicated (e.g., a previous examination was inconclusive, there is an unexplained rise in intraocular pressure, anterior chamber angle abnormalities are present, or angle narrowing is suspected)

Appropriate reassessment schedule

While the frequency of monitoring has not been assessed in high-quality studies, current glaucoma clinical practice guidelines have provided consensus-based recommendations for follow-up intervals and testing frequencies for stable glaucoma (see below).² When deciding on appropriate follow-up intervals, clinical judgment is paramount. It may be reasonable to adjust the follow-up intervals suggested below according to individual factors, such as risk of conversion to glaucoma, control of intraocular pressure, severity and stability of the glaucoma, risk of progression to visual impairment during the patient's lifetime, treatment nonadherence, and health-related quality of life.^{2,20}

For example, people warrant more frequent monitoring if they have rapid disease progression (or an elevated risk of rapid progression, such as in people with very high intraocular pressure). Although rapid progression is often defined as a rate of change of -1.5 to -2 dB mean deviations per year, a patient's current glaucoma severity should be used to modify the threshold.²¹⁻²³ Further, in people with advanced glaucomatous optic neuropathy (or non-glaucomatous ocular disease) with very poor vision or blindness, it may be reasonable to monitor at different intervals than those below.

Here is a summary of consensus-based published guidance for follow-up intervals and testing frequencies for stable glaucoma, by stage of glaucoma.

Quality Indicators

Process Indicator

Percentage of people at risk of developing glaucoma who have been clinically assessed at the appropriate frequency for their risk of progression to vision impairment

- Denominator: number of people at risk for or suspected of developing glaucoma
- Numerator: number of people in the denominator who have been clinically assessed at the appropriate frequency for their risk of progression to vision impairment
- Data source: local data collection
- Potential stratification: stage of disease (glaucoma suspected—within 2 years; early or mild glaucoma—within 1 year; moderate glaucoma—within 6 months; advanced glaucoma—within 4 months)

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Appropriate reassessment schedule (continued)

Glaucoma suspect

- Glaucoma suspects are people who have several glaucoma risk factors or clinical features that suggest they are likely to develop glaucoma.
- *Assessment interval:* every 1 to 2 years²
- *Clinical features:* one or more of the following^{1,2}:
 - Suspicious 24-2 (or similar) visual field defect
 - Intraocular pressure greater than 21 mm Hg
 - Suspicious structure, disc, or cup-to-disc asymmetry of greater than 0.2 in optic nerve heads of equal size

Early or mild-stage glaucoma

- *Assessment interval:* at least every 12 months²
- *Clinical features:* early glaucomatous disc features (vertical cup-to-disc ratio < 0.65) and/or mild visual field defect not within 10° of fixation (e.g., mean deviation better than -6 dB on Humphrey Visual Field Analyzer 24-2)^{1,2}

Moderate-stage glaucoma

- *Assessment interval:* at least every 6 months^{1,2}
- *Clinical features:* moderate glaucomatous disc features (vertical cup-to-disc ratio 0.7–0.85) and/or moderate visual field defect not within 10° of fixation (e.g., mean deviation from -6 to -12 dB on Humphrey Visual Field Analyzer 24-2)^{1,2}

Advanced-stage glaucoma

- *Assessment interval:* at least every 4 months^{1,2}
- *Clinical features:* advanced glaucomatous disc features (vertical cup-to-disc ratio > 0.9) and/or advanced visual field defect within 10° of fixation (e.g., mean deviation worse than -12 dB on Humphrey Visual Field Analyzer 24-2)^{1,2}

Vision impairment

This is a severe reduction in visual acuity or visual field that cannot be corrected with prescription glasses or contact lenses.²⁰ Vision impairment can limit a person's ability to perform activities such as reading, writing, walking, and driving and can negatively impact their quality of life.

Information

Eye care providers speak with people with glaucoma or at risk for glaucoma about their diagnosis, prognosis, and management, and offer them relevant and accessible information about their condition at initial and subsequent visits.

Background

Providing people with evidence-based information about glaucoma and engaging them in discussions can help them to make informed decisions about their care. These discussions should focus on their condition, its current status and risk of progression, treatment options (including potential benefits and harms), and the importance of ongoing monitoring.^{4,19,20}

Information should be provided on an ongoing basis and should align with the person's stage of glaucoma and current needs. People should have opportunities to discuss questions and concerns with their eye care provider.

Sources: American Academy of Ophthalmology, 2015¹⁹ | Canadian Ophthalmological Society, 2009² | National Health and Medical Research Council, 2010⁴ | National Institute for Health and Care Excellence, 2017²⁰ | Scottish Intercollegiate Guidelines Network, 2015³

What This Quality Statement Means

For People With Glaucoma or at Risk for Glaucoma

Your eye care provider should give you information about glaucoma. They should tell you about how the disease is likely to progress, what you can do to help manage it, how often to get your eyes tested, and your treatment options. This information should be available for you in a variety of ways, including verbal, written, or electronic (such as websites). If you give permission, your family should also be given this information.

You should be involved in all decisions made about your care and have the opportunity to discuss your condition and treatment with your eye care provider. The [glaucoma patient guide](#) can help you have conversations with your eye care provider. Inside you will find questions you may want to ask as you work together to make a plan for your care.

For Clinicians

Discuss with the person their diagnosis and their condition's prognosis and management. Provide evidence-based information about glaucoma that is tailored to meet their learning needs in a format and at times that are most appropriate for them. If the person consents, include family as much as possible in the discussions and decision-making. Share the [glaucoma patient guide](#) to help your patients have conversations with you about their care.

For Health Services

Ensure that appropriate educational resources about glaucoma are available for eye care providers to provide to their patients. These resources should be available in written or electronic formats and translated when necessary.

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Information

Information about glaucoma should be provided throughout the care continuum and offered in verbal, written, or electronic (e.g., website) formats. Not every topic noted here needs to be provided to people at every visit; rather, information should be individualized and align with the person's stage of glaucoma and current needs. It may include the following:

- Risk factors for glaucoma
- The fact that glaucoma can run in families, so family members may wish to be tested for the condition
- Signs and symptoms of glaucoma
- Methods of investigation during assessment and ongoing monitoring
- The need for regular monitoring and follow-up with an eye care provider
- The person's specific condition or type of glaucoma, its life-long implications, and the prognosis for sight retention
- Their individualized treatment plan, including aspects of care such as target intraocular pressure, reassessment intervals, and treatments, based on the person's age and stage of glaucoma
- The importance of taking glaucoma medications as directed by the eye care provider
- How to effectively apply eye drops and how to store them
- Treatment options (medications, laser therapy, and incisional surgery), including mode of action, frequency, side effects, potential benefits and harms, and any financial costs to the person (see Quality Statements 5 and 6)
- The importance of the person's role in their own treatment
- Available social and community supports (e.g., formal support groups), both locally and online
- Visual aids and other adaptive technologies (e.g., magnifying lenses, talking clocks, large-print books, or labels)

Quality Indicators

Process Indicator

Percentage of people with glaucoma or at risk for glaucoma who discussed their diagnosis and their condition's prognosis and management with their eye care provider at their last visit

- Denominator: number of people with glaucoma or at risk for glaucoma
- Numerator: number of people in the denominator who discussed their diagnosis and their condition's prognosis and management with their eye care provider at their last visit
- Data source: local data collection

Outcome Indicator

Percentage of people with glaucoma or at risk for glaucoma who report feeling confident they can apply their prescribed eye drops effectively

- Denominator: number of people with glaucoma or at risk for glaucoma who are prescribed eye drops
- Numerator: number of people in the denominator who report feeling confident they can apply their eye drops effectively
- Data source: local data collection

4

Referral and Timely Access to an Ophthalmologist

People with glaucoma are referred to and have timely access to an ophthalmologist for consultation, when clinically indicated.

Background

Primary, secondary, and tertiary eye care are most effectively delivered when referrals are directed to the eye care provider best suited to provide the needed care. Optometrists, comprehensive ophthalmologists, and ophthalmologists with subspecialty training all provide glaucoma care, and the appropriate provider depends on a patient's stage of disease, the rate of progression, and the treatment required.

People with glaucoma may require care from different eye care providers at various points in their care journey. A person with glaucoma should be referred to another eye care provider whenever their condition or care needs exceed their current provider's scope of practice or expertise. Appropriate referrals are critical in enabling timely access for patients who require secondary and tertiary services.

There will be situations where the interests of the person with glaucoma are best served by a collaborative (shared-care) relationship among eye care providers. The Eye Health Council of Ontario provides guidance on interprofessional collaboration for the care of people with glaucoma in [Guidelines for the Care of Patients with Glaucoma](#).²⁰

In Ontario, the finite number of ophthalmologists and the even smaller number of ophthalmologists with subspecialty training in glaucoma have created challenges with meeting the need for care, resulting in lengthy wait times, particularly for people with nonurgent referrals. Establishing processes to triage incoming referrals can help ensure patients are seen in a timely manner, according to need.

4

Referral and Timely Access to an Ophthalmologist

BACKGROUND CONTINUED

Referral letters provide consulting providers with valuable information needed to triage patients according to clinical urgency. Referrals should include all relevant clinical information, including³:

- Baseline appearance and current appearance of the optic nerve
- Target, current, and maximum intraocular pressures
- Records of serial visual field assessments indicating rates of progression
- Information about the person's individualized treatment plan
- The clinical indication for the referral

Sources: Advisory committee consensus

What This Quality Statement Means

For People With Glaucoma

Your eye care provider may refer you to an ophthalmologist for testing and/or treatment. If you are referred to the ophthalmologist, you should see them within 6 months. You may see the ophthalmologist once or on an ongoing basis.

For Clinicians

Referring providers: Provide a detailed referral, including the clinical indication for referral, history, intraocular pressure, optic nerve appearance, visual fields, imaging (if possible), and details of current and previous glaucoma medications and interventions (laser and surgery). Continue to monitor (see Quality Statement 2) and treat patients while they wait to be seen by the consulting ophthalmologist.

Consulting ophthalmologist: Triage and see people with glaucoma in a timely manner, according to clinical urgency. Communicate with the referring provider to inform them of the timing of the referral response. After the appointment, inform them of any findings, complications, treatment changes, and next steps.

For Health Services

Ensure systems, processes, and resources are in place so that people with glaucoma who require a consultation with an ophthalmologist can be appropriately triaged and have timely access.

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Ophthalmologist

Ophthalmologists can provide diagnostic tests, medical management, laser therapy, and incisional surgery. Ophthalmologists with subspecialty training in glaucoma are available to manage particularly severe or rapidly progressing cases of glaucoma.

Clinically indicated

Clinical indications for referral to an ophthalmologist include, but are not limited to, these situations:

- There is uncertainty regarding the diagnosis¹⁹
- There is uncertainty regarding management (e.g., target pressures)
- The person has rapidly progressing glaucoma
- The person has an intraocular pressure that cannot be reduced sufficiently to prevent the risk of progressive vision loss²⁰
- The person requires advanced medical management
- The person may be a candidate for laser therapy (see Quality Statement 5) or incisional surgery (see Quality Statement 6)

Quality Indicators

Process Indicator

Percentage of people with glaucoma who wait less than 6 months between the referral and the consultation with an ophthalmologist

- Denominator: number of people with glaucoma who are referred to an ophthalmologist
- Numerator: number of people in the denominator who wait less than 6 months between the referral and the consultation
- Data source: local data collection

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Timely access

When there is a clinical indication for referral to an ophthalmologist, the person with glaucoma should be seen within a timeframe based on clinical need and risk of vision loss, as delays could result in permanent vision loss. In alignment with Ontario's reported wait time targets for patients' first specialist appointment following referral,²⁴ the Glaucoma Quality Standard Advisory Committee agreed that wait times should not exceed 6 months.

Wait times should be shorter for patients who are at risk of rapid vision loss, such as those with documented rapid progression or very high intraocular pressure. In some cases (e.g., advanced glaucoma with very high intraocular pressure), the need for consultation is an emergency and urgent referral for immediate care should be arranged.

Medications and Laser Therapy

People with glaucoma or at risk for glaucoma are offered medications or laser therapy when clinically indicated.

Background

There is no cure for glaucoma, but it is treatable. The goals of glaucoma treatment are to preserve visual function by slowing or stopping structural damage and functional loss by lowering intraocular pressure (the only known modifiable risk factor), while optimizing health-related quality of life.^{2,9} Eye care providers should set a target intraocular pressure range that is expected to prevent further damage to the optic nerve.¹⁹ This target range is a dynamic concept, and it should be individualized and continually re-evaluated, taking into consideration the person's stage of disease, pre-treatment intraocular pressure, risk factors, needs and preferences, social circumstances, and life expectancy.⁹ A combination of glaucoma medications, laser therapy, and/or incisional surgery (see Quality Statement 6) may be needed to achieve this target range.

The use of glaucoma medications or laser therapy should be discussed with the patient, including risks and benefits, side effects, and out-of-pocket costs (if any). Whenever possible, family members should be included in these discussions. A person's medications and dosage should be reviewed regularly, as well as their response, observed benefits, side effects, and adherence to treatment. People with glaucoma, especially older adults, who are taking both glaucoma and systemic medications need to be monitored closely for side effects and potential drug interactions.

Sources: American Academy of Ophthalmology, 2015¹⁹ | Canadian Association of Optometrists, 2017¹ | Canadian Ophthalmological Society, 2009² | National Health and Medical Research Council, 2010⁴ | National Institute for Health and Care Excellence, 2017²⁰ | Scottish Intercollegiate Guidelines Network, 2015³

What This Quality Statement Means

For People With Glaucoma or at Risk for Glaucoma

There is no cure for glaucoma, but there are treatments that aim to preserve your eyesight. Three common options to treat glaucoma by lowering eye pressure are medications (prescription eye drops), laser therapy, and surgery (see Quality Statement 6). Your eye care provider should discuss with you the potential benefits and harms, side effects, and out-of-pocket costs (if any) of the available treatment options so that you can make informed decisions about your care together. If you want to, include family members in these discussions.

Medications are an important part of managing glaucoma. It is important to use your prescription eye drops correctly. Your eye care provider should explain how and when to take your medications and should ask you to show them how you administer your eye drops. This way, you can both be sure you can administer the drops correctly.

Your eye care provider may recommend laser therapy to help open your eye's natural drainage system; this reduces the pressure in your eye. Laser therapy may be used as an initial treatment or in addition to prescription eye drops.

For Clinicians

People with glaucoma or at high risk for glaucoma are usually prescribed glaucoma medication as initial treatment. Regularly monitor and document people's response, side effects, and disease progression. Provide clear instructions about when and how to use the medication. Ask people to demonstrate how they administer their eye drops to ensure proper technique. Offer people laser therapy if they are likely to benefit from it, either as an initial treatment or an adjunct to glaucoma medications.

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Medications

Medication remains the most common initial treatment for lowering intraocular pressure and usually involves topical agents delivered as eye drops.⁹ People with glaucoma or at risk for glaucoma who are at risk for visual impairment within their lifetime should be offered prostaglandin analogue eye drops,²⁰ considered first-line treatments because of their favourable efficacy and safety profiles.^{4,19,20}

If progression is suspected, intraocular pressure targets are not achieved, or adverse effects are encountered, people should be switched to another drug in the prostaglandin analogue class. If treatment is still unsuccessful, people should be offered a drug from a different therapeutic class (a beta-blocker, carbonic anhydrase inhibitor, or sympathomimetic).^{19,20} Topical drugs from more than one therapeutic class may be needed at the same time.²⁰

To maximize people's health-related quality of life and adherence to the treatment regimen, the eye care provider should prescribe the minimum number of medications with the lowest dosing frequency to achieve the target intraocular pressure range.²

For Health Services

Ensure that systems, processes, education, and resources are in place for eye care providers to appropriately prescribe glaucoma medications and monitor people's response to treatment, and to perform or refer people for laser therapy.

Quality Indicators

Process Indicators

Percentage of people with glaucoma or at risk for glaucoma who receive medication or laser therapy

- Denominator: number of people with glaucoma or at risk for glaucoma
- Numerator: number of people in the denominator who receive:
 - Medication
 - Laser therapy
 - Both
- Data source: local data collection

Percentage of people with glaucoma or at risk for glaucoma who are receiving or considering medication or laser therapy who state they have been involved in discussions about the benefits, risks, and side effects of these treatments

- Denominator: number of people with glaucoma or at risk for glaucoma who are receiving or considering medication or laser therapy
- Numerator: number of people in the denominator who state they have been involved in discussions about the benefits, risks, and side effects of these treatments
- Stratify by:
 - People with glaucoma
 - People at risk for glaucoma for whom treatment is clinically indicated
- Data source: local data collection

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Laser therapy

Laser trabeculoplasty should be considered either as an adjunct to topical medications or as an initial treatment before medication in select populations with glaucoma, such as those at high risk for nonadherence to medication or those who cannot tolerate medication.^{1,19}

Options are laser trabeculoplasty^{1,2,4,19,20} and, less commonly, cyclodiode laser treatment.²⁰

Clinically indicated

Treatment for glaucoma is indicated¹:

- When there is structural damage to the optic nerve or functional loss of the visual field
- When people at risk for glaucoma are likely to experience progressive glaucoma-induced vision loss without treatment

Incisional Surgery

People with glaucoma who are at risk of progressing to sight loss despite maximum tolerated medical therapy and laser therapy are offered incisional surgery.

Background

Eye care providers should offer or refer people for incisional surgery when glaucoma medications and laser therapy (see Quality Statement 5) do not sufficiently lower a person's intraocular pressure and the person is at risk of losing visual function.

The eye care provider should discuss surgical options with the person, including an explanation of the procedure, side effects, potential risks and benefits, and recovery time. Whenever possible, family members should be included in these discussions. Any treatment decisions should be made in collaboration with the person and be based on their individual needs and preferences. The person should be informed that surgery aims to lower the intraocular pressure, and this may preserve visual function; however, surgery will not cure the disease or restore vision already lost.² People with glaucoma for whom surgery is clinically indicated but who prefer not to have surgery should be offered medication or laser therapy (see Quality Statement 5).²⁰ A person's decision not to have surgery should be revisited with them on an ongoing basis.

Sources: American Academy of Ophthalmology, 2015¹⁹ | Canadian Association of Optometrists, 2017¹ | Canadian Ophthalmological Society, 2009² | National Health and Medical Research Council, 2010⁴ | National Institute for Health and Care Excellence, 2017²⁰

What This Quality Statement Means

For People With Glaucoma

If medications and laser therapy do not lower your eye pressure enough, or if you cannot tolerate the side effects of the medication, your eye care provider may recommend surgery. Surgery is done to try to preserve your vision; it doesn't cure glaucoma, and you won't regain the vision you have already lost.

Your eye surgeon should discuss surgery options with you, including potential risks and benefits, side effects, and recovery time, so that you can make informed decisions about your care together. If you have family or others involved in your care, they should also receive this information.

For Clinicians

Offer or refer people for incisional surgery if they are at risk of progressing to vision loss despite medical and/or laser therapy.

For Health Services

Ensure that systems, processes, education, and resources are in place for eye care providers to appropriately perform glaucoma surgery or to refer people with glaucoma for surgical consultation.

DEFINITIONS USED WITHIN THIS QUALITY STATEMENT

Maximum tolerated medical therapy

Maximum tolerated medical therapy refers to the largest number of medications the person with glaucoma can tolerate and consistently administer to attain the greatest possible reduction in intraocular pressure.^{1,9}

Incisional surgeries

These surgeries include:

- Trabeculectomy and other bleb-forming procedures^{2,4,19,20}
- Insertion of glaucoma drainage devices (tube shunts)^{2,4,19}
- Minimally invasive glaucoma surgical procedures¹⁹

Quality Indicators

Process Indicators

Percentage of people with glaucoma who are at risk of progressing to sight loss despite receiving maximum tolerated medical therapy and laser therapy who undergo incisional surgery

- Denominator: number of people with glaucoma who are at risk of progressing to sight loss despite receiving maximum tolerated medical therapy and laser therapy
- Numerator: number of people in the denominator who undergo incisional surgery
- Data sources: local data collection, OHIP Claims Database

Wait time between referral and first surgeon visit for people with glaucoma who undergo incisional surgery

- Description: average number of days between referral and date of first surgeon visit for those who undergo incisional surgery
- Data source: Wait Time Information System

Wait time between decision to treat and incisional surgery for people with glaucoma who are at risk of progressing to sight loss despite receiving maximum tolerated medical therapy and laser therapy

- Description: average number of days between decision to treat and date of incisional surgery
- Data source: Wait Time Information System

Acknowledgements

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Health Quality Ontario and the Provincial Vision Task Force thank the following individuals for their generous, voluntary contributions of time and expertise to help create this quality standard:

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About Health Quality Ontario

Health Quality Ontario is the provincial leader on the quality of health care. We help nurses, doctors and others working hard on the frontlines be more effective in what they do—by providing objective advice and by supporting them and government in improving health care for the people of Ontario.

Our focus is making health care more effective, efficient and affordable which we do through a legislative mandate of:

- Reporting to the public, organizations and health care providers on how the health system is performing,
- Finding the best evidence of what works, and
- Translating this evidence into concrete standards, recommendations and tools that health care providers can easily put into practice to make improvements.

For more information about Health Quality Ontario, visit hqontario.ca.

About the Provincial Vision Task Force

The Provincial Vision Task Force was established by the Ministry of Health and Long-Term Care in 2012. The purpose of the Task Force is to develop and implement a Provincial Vision Strategy to improve quality, access, and system integration of vision care services for Ontarians. The Provincial Vision Task Force work reflects a patient-centered focus to create a system of ophthalmology and optometry services to support the delivery of the highest possible quality and value to children and adults needing vision care and those at risk of vision loss. The Provincial Vision Task Force is composed of community and academic ophthalmologists and optometrists, family physicians, LHINs, hospitals, and independent health facilities from across Ontario, working with Ministry colleagues. Our work includes the development and implementation of Quality Based Procedures, Clinical Handbooks, guidelines, and processes that can be implemented locally and provincially to reduce wait times, increase accessibility, and improve the quality of care. Most recently we have focused on improving access to people with or at risk for glaucoma through the development of this Quality Standard for Glaucoma.

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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