



Teleophthalmology

Telemedicine-enabled retinal screening

The challenge

Serious complications of chronic diseases affect the lives of hundreds of thousands of Ontarians. They tend to have high needs for health services and to be amongst those with the highest healthcare costs. Evidence-informed care can prevent many complications, but not all those who could benefit receive these services.

This is the case for diabetic retinopathy, the leading cause of blindness among working age adults. Results from England and Wales after they introduced a proactive, structured screening program that includes multi-faceted interventions such as telehealth and structured recall of patients show that it does not have to be.

In Ontario, ICES reports that **about 400,000 people with diabetes have not had an eye exam** in the last two years, even though guidelines recommend screening for retinopathy every 1-2 years. Younger adults with type 1 diabetes, Indigenous peoples, recent immigrants, and residents of inner cities and remote areas have lower screening rates. Almost all people with Type 1 diabetes and more than 60% of those with Type 2 diabetes develop some form of retinopathy in the first 2 decades after a diabetes diagnosis.

Population-based, evidence-informed strategies can lead to improved diabetes care

Telehealth can be part of the solution, particularly for underserved populations. The Ontario Telemedicine Network (OTN) in collaboration with the Diabetes Action Canada (DAC) SPOR network, LHINs, and local partners piloted its use for diabetic retinopathy screening in inner city Toronto and Manitoulin Island. **In South Riverdale, 25% of patients screened had diabetic retinopathy, 5% had sight-threatening disease, and 35% had other pathology such as cataracts, glaucoma, or AMD.** A recent THETA economic analysis found that telehealth for retinal screening in this context is cost effective relative to usual care.

To test new approaches to preventing diabetic retinopathy as a model for broader chronic disease management, we propose a systematic and replicable screening program that:

- Leverages population-based data to identify local areas within LHINs with higher rates of the most vulnerable and under-screened diabetes complications;
- Proactively reaches out to those who have not been screened;
- Facilitates access to screening via community services and/or expanded telehealth;
- Ensures timely screening results across the province, facilitates appropriate specialist and follow-up care, and links with the patient's broader circle of care including primary care.

LHINs, in collaboration with partners such as primary care leads and diabetes education programs, would work with OTN and DAC to customize screening programs that fit their unique capacities and circumstances.





Teleophthalmology

Telemedicine-enabled retinal screening

Alignment with LHIN priorities/indicators

This province-wide initiative will enable LHINs to address gaps in performance relative to the **Ontario's Diabetes Strategy's aims of ensuring that 80% of adult Ontarians with diabetes have all three key diabetes tests (an HbA1C blood sugar test, an LDL-C cholesterol test and a retinal eye exam) within recommended timeframes.** Health Quality Ontario tracks screening rates in its annual *Measuring Up* report. In collaboration with ICES, it also shares local results via Primary Care Practice Reports. Quality-based procedures for prevention and treatment of diabetic retinopathy are also being explored.

About 150,000 additional people would need to be screened over a two-year period to achieve an 80% screening rate. This proposal builds on initiatives already underway in several LHINs to prevent diabetes complications, including retinopathy. Telehealth is being used in urban and rural pockets to expand access to high quality retinal screening for vulnerable and underserved groups, but its use must be scaled up. The OTN-DAC collaboration brings expertise in scaling up transformative diabetes care interventions.

Teleophthalmology is ready for implementation

A cross-LHIN approach that balances the advantages of collective effort towards a shared province-wide goal and responsiveness to the unique circumstances of each LHIN. OTN-DAC will work with each LHIN to develop a tailored and feasible plan and budget that leverages existing investments in CHCs, FHTs, diabetes education programs, and other services including:

- **Launch/expand telehealth retinal screening to reach vulnerable/underserved groups** in each LHIN. 2-4 nodes (some with mobile cameras) per LHIN required, at a cost of up to \$635,000 per node over 3 years to screen 4000 patients. This translates to about \$159 per person screened or \$265 per person with diabetic retinopathy or other pathology identified. The number of nodes needed in each LHIN depends on geography, community screening capacity, and existing telehealth services.
- **Reduce barriers to screening and follow-up**, e.g. by adding retinal screening to diabetes education program referral forms and by implementing/advocating for new referral paths for people with diabetes who have not been screened (currently GP/NP referral required).
- **Proactively reach out to those who need screening** and refer them to community-based and/or telehealth screening. OHIP data can identify who has diabetes but has not had an eye exam in the past two years. While Ontario does not currently use the results to refer patients to screening, the English experience shows the power of doing so. Building on a previous pilot with a FHT, the intent would be to arrange for lists of patients who have not been screened to be available to their circle of care, including services directly provided by the LHINs (e.g. home care), services funded by LHINs, and other care providers (e.g. for patients rostered with primary care providers). Longer-term, the intention would be to enable direct outreach on a population basis, as is done by Cancer Care Ontario for services such as pap smears and mammography.
- **Shared cross-LHIN services to optimize economies of scale**, e.g. data/analytics to identify local areas with large screening gaps, trend monitoring and evaluation, shared/pooled image reading centre, and direct outreach to those not screened. Cost to each LHIN dependent on # participating LHINs and scale of shared services.





Teleophthalmology

Telemedicine-enabled retinal screening

Support provided by OTN

- Diabetes Action Canada (DAC)/ICES to identify geographic areas within LHINs with screening gaps, track screening trends, and offer other evaluation support
- OTN to offer telehealth infrastructure for retinal screening
- MOHTLC via OHIP to pay professional fees for most screening and follow-up
- DAC to coordinate shared/pooled image reading centre (if desired)
- OTN/DAC to provide template for and collaboration in development of regional plan consistent with desired participation tier and local needs/capacity
- MOHLTC to be asked to provide data to enable direct outreach to persons who have not been screened via circle of care or population-based program
- DAC to serve as partner in trialing and evaluating new technologies and models of care

Anticipated LHIN support for Tele-ophthalmology

- Commit to shared target of reducing the number of Ontarians with diabetes who have not received recommended retinal screening, thereby reducing the risk of vision loss
- Confirm desired level of participation and collaboration on regional plan consistent with this decision and local capacity/programs
- Funding for program support, e.g. telehealth screening nodes and shared services
- Identification of retinal specialist (ophthalmologist) as champion
- Partner in addressing policy/regulatory barriers to screening, such as direct outreach to individuals who have not been screened

