Why does Ontario need to be prepared for a future of genomic medicine?

Improved care – including better health outcomes, reducing harm from therapy, and improving survival and quality of life.

Better patient and care provider experiences – reducing the need for referrals and other diagnostic tests, and improving time to diagnosis.

Better science and economic growth – aiding scientific discovery and clinical trial enrollment, creating commercial and investment opportunities as well as future-proofing Canada's healthcare workforce.

Healthcare efficiency – genomic medicine creates opportunities to reduce healthcare costs while creating the necessary infrastructure for delivering 21st century care.

In 2021, Ontario made the establishment of many of the necessary conditions (1) to deliver genome-based testing a health system priority. Recent reforms, including, a more centralized health system, have created opportunities for improved coordination.

However, Ontario still lags behind other provinces in terms of readiness for genome-based testing.
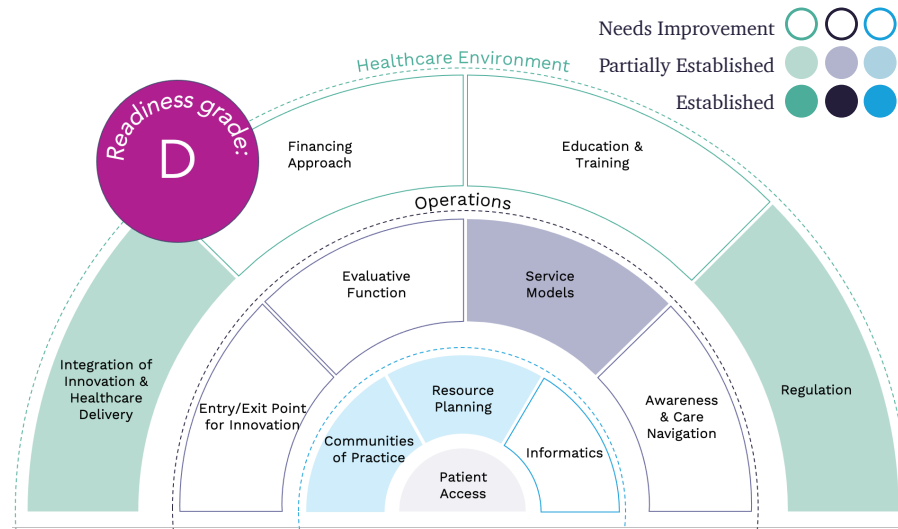
Its current state of readiness has earned **Ontario a grade of D**

Takeaway:
Ontario has lagged behind and has only recently taken necessary steps to reform its approach to genome-based testing. It currently lacks many of the necessary conditions to be prepared.

Strengths:
- Recently created single service organization (PGP) intended to coordinate services and provide oversight and resource planning.
- Clear standards for accreditation and proficiency

Weaknesses:
- Funding not timely or transparent; no funding for test development or human resources
- No across-province integration of laboratory information
- Multiple evaluative frameworks- some not fit- for purpose.
- Limited engagement and involvement of broader stakeholder community.

Evidence-based best practices	Action
High functioning health systems must act as stewards, rather than decision-makers for individual purchasing.(2)	Ontario must shift away from the Ministry acting as a decision-maker for the funding of individual tests, and toward a system of Ministry as a steward. This will ensure expenditure, and care quality are driven by needs of the clinical community and avoid unnecessary patient delay.
Evaluation and adoption of testing must be responsive to innovation, transparent (3), timely and well connected to current investments in translational and discovery research as well as a community of care.(4)	Ontario has numerous, loosely connected systems of evaluation of testing. It must consolidate evaluation processes and adopt a single-entry approach, supported by horizon scanning.
Informatics is essential for test development, interpretation, and clinical decision support (5,6). Ensuring adequate integration of test results into electronic health records will also provide a key resource for real-world monitoring, disease management, quality assessment and assurance, and financing (7).	Ontario must create an integrated laboratory information system integrated with clinical health records to provide genetic testing that will most benefit patients and care providers while reducing unnecessary expenditure.

Background

Ontario is the largest of Canada's 13 provinces and territories by population (approx. 14.8 million[1], with the vast majority of the province's inhabitants located in its southernmost regions) and third-largest by size. Provincial genetic testing is carried out in a decentralized fashion, across Ontario hospitals, including the Children's Hospital of Eastern Ontario for newborn screening. Some testing is commissioned to out-of-province providers as well. Somatic testing is conducted across 12 centres of varying sizes [Hamilton Health Sciences/ St. Joseph's Healthcare Hamilton; Health Sciences North; Kingston Health Sciences Centre; London Health Sciences Centre; Markham Stouffville Hospital; Mount Sinai Hospital; Sunnybrook Health Sciences Centre; The Ottawa Hospital; Trillium Health Partners; Unity Health – St. Michael's Hospital; University Health Network; William Osler Health System].

	Topic	Established	Partially Established	Need for Improvement
Infrastructure	Creating communities of practice and healthcare system networks		• Laboratories work independently coordination through PGP/PLMP • Networks being developed through PLMP and PGP-led clinical leadership forum	• Processes for engagement with commercial innovators lacking
	Personnel, equipment, and resource planning		• Working group report published in 2018 • New PGP area of focus --completed for cancer genetics	
	Informatics		• Some integration of EHR with laboratory information • New provincial program area of focus	• No across-province integration of laboratory information
Operations	Entry/exit point for innovation		• Open proposal process newborn and prenatal testing; OGAC reviews	• No single point of entry • No explicit timelines • No reassessment process
	Evaluative Function		• Some evaluation transparent (e.g., OGAC) with some stakeholder engagement • Ongoing evaluation through PGP-led expert and advisory groups	• No consistent evaluative framework • Multiple evaluation frameworks with some not timely
	Service Models		• Partially established through PGP	
	Awareness and care navigation		• Test navigation re-source in development • Test lists available	
Environment	Integration of innovation and healthcare delivery		• Some testing regimes combine established and investigational testing • Some large-scale implementation projects with industry partners	
	Financing approach			• Funds available on annual budget cycles or sometimes not available at time of adoption • Funding formula not clear • No funding for test development, additional human resource costs
	Education and Training			• No province-wide standards for education and training in development
	Regulation	• Accreditation and proficiency are based on the ISO15189		• No province-wide analytic validation standards

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