Measuring the impact of the COVID-19 pandemic on organized cancer screening and diagnostic follow-up care in Ontario, Canada: a provincial, population-based study

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Background

• Disparities in screening and diagnostic care for immigrant, Indigenous, lower income, rural populations in Canada prior to the pandemic

• The same populations have been disproportionately impacted by the pandemic


Objectives

Conduct a provincial, population-based study in Ontario, Canada to:

1. Assess impact of pandemic on organized screening and diagnostic follow-up

2. Assess whether patterns of cancer screening use and diagnostic delay differed across population sub-groups:
   - Sex
   - Age
   - Income
   - Rurality
   - Rural and remote areas associated with First Nation communities
Setting

• Ontario is Canada’s most populous province: ~40% of the population

• Ontario has the largest Indigenous population in Canada:
  • 236,680 First Nations
  • 120,585 Métis
  • 3,860 Inuit
  • 7,540 other Indigenous peoples
Methods

• Absolute volume and percentage change differences between 2020 and 2019 monthly volumes calculated

• Participant characteristics compared Mar–Dec 2019 vs. Mar–Dec 2020

• Proportion of screening participants experiencing diagnostic delay calculated and associations between participant characteristics and diagnostic delay modeled using unadjusted logistic regression

• Residential postal codes used to identify those living in areas with ≥90% Indigenous people, covering only ~40% of Indigenous populations in Ontario
Results: Colorectal screening test volume

Fecal test volume (average risk)

Colonoscopy volume (increased risk)
Results: CRC screening participant characteristics
Results: Diagnostic delay

- Percentage of participants with FIT+ results who did not have colonoscopy ≤8 weeks was elevated in Feb–Apr 2020 (range = 47%–67%)

**Fig. 2.** Percentage of screening participants with an abnormal screening result who experienced diagnostic delay, according to the month of the abnormal screening test, January 1, 2019–June 30, 2020.
Results: Characteristics of CRC screening participants with diagnostic delay

- No significant differences by sex, age, most categories of rurality

<table>
<thead>
<tr>
<th>Participant characteristic</th>
<th>Odds ratio (95% CI)</th>
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<tbody>
<tr>
<td>Neighborhood income quintile</td>
<td></td>
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<tr>
<td>Q1 (lowest)</td>
<td>1.28 (1.20-1.36)</td>
</tr>
<tr>
<td>Q2</td>
<td>1.14 (1.07-1.21)</td>
</tr>
<tr>
<td>Q3</td>
<td>1.13 (1.06-1.20)</td>
</tr>
<tr>
<td>Q4</td>
<td>1.07 (1.01-1.14)</td>
</tr>
<tr>
<td>Q5 (highest)</td>
<td>1.00</td>
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<tr>
<td>Postal code overlap with First Nation reserve</td>
<td></td>
</tr>
<tr>
<td>≥90% overlap</td>
<td>1.77 (1.05-3.00)</td>
</tr>
<tr>
<td>&lt;90% overlap</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Discussion

• Profound impact on cancer screening that led to substantial backlogs

• To manage the colonoscopy backlog, Ontario recommended redirecting low-yield colonoscopy (e.g., average risk screening) to FIT
  
  • Estimated to shorten colonoscopy backlog recovery time by >1 year if ≥25% redirection rate achieved (Tinmouth et al., Gastroenterol 2021; 160(4):1400-1402.e1.)

• Disparities for lower income and Indigenous peoples are not new; recovery efforts must aim to achieve equitable access

• Monitoring of screening and downstream service and backlogs must continue
Future directions

• Further work to explore Indigenous-specific findings to inform mutual commitments to work with and for Indigenous partners to improve cancer care

• Evaluation to identify populations disproportionately impacted and impact of pandemic-related care deficits on morbidity, mortality, quality of life

• Examples from Ontario to address screening inequities within organized screening:
  • Pilot program providing tailored FIT kit distribution strategy to set of communities in Ontario with high proportion of First Nations individuals
  • Cervical screening correspondence design & testing: recruitment of key under-screened populations (i.e., Indigenous, lower education level) and different categories of age, immigrant status, gender identity and sexual orientation to reflect diverse lived experience
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