COVID and Cancer Global Modeling Consortium: Projections of the long-term impact of disruptions to colorectal cancer (CRC) screening programs

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A joint venture between The University of Sydney and Cancer Council NSW
COVID response to CRC screening

- COVID-19 pandemic has put pressure on existing health infrastructure
- Cancer screening activities were impacted in many countries – formal pauses, reallocation of health services, patient hesitancy, etc
- Restarting cancer screening requires setting specific adaptations

COVID and Cancer Global Modeling Consortium

- CCGMC is one of the three streams of work being conducted under the auspices of the COVID-19 and Cancer Taskforce, which has been established by cancer leaders in many countries.

- The CCGMC aim is to help to configure modelling platforms and teams that can provide more informed advice to our governments specific to cancer as they address the overwhelming health systems challenge.
CCGMC Working Groups

WG 1
Direct impact of infection on cancer outcomes & treatment services

WG 2
Impact on cancer screening & recovery strategies

WG 3
Impact on cancer risk & recovery prevention strategies

Shared learnings and cross-collaborations
Colorectal Cancer Screening

Canada
OncoSim
Biennial FIT test
50-74
COVID-19: program pause

The Netherlands
ASCCA & Miscan-Colon
Biennial FIT test
55-75
COVID-19: program pause

Australia
Policy1-Bowel
Biennial FIT test (2-samples)
50-74
COVID-19: lower participation
Impact of the COVID-19 pandemic on faecal immunochemical test-based colorectal cancer screening programmes in Australia, Canada, and the Netherlands: a comparative modelling study

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Published: February 03, 2021 • DOI: https://doi.org/10.1016/S2468-1253(21)00003-0
(Hypothetical) Screening disruptions due to COVID-19

Our approach was to model hypothetical disruptions to screening, and alternative management and behavioural change after a disruption:

• 3, 6, 9 or 12 month pauses to all iFOBT screening;
• Possibility of catch-up screening for those who missed a screening round
• Possibility of decreased participation for 12 months following the disruption, due to behavioural and/or health system changes.
Project 1: selected results

Drop in CRC diagnoses in 2020

Additional CRC incidence, 2020-2050

Additional CRC Deaths, 2020-2050
Project 1 key messages

- CRC screening should be continued if safe
- Where disruptions are unavoidable, catch-up screening can mitigate (though not entirely remove) the risk of increased long-term CRC incidence
CCGMC CRC Screening: Project 2

Aim: to evaluate strategies that clear the CRC screening backlog due to the COVID-19 pandemic using limited colonoscopy resources, including:

1. Performing catch-up screening in 6, 12 & 24 months (regular FIT threshold)
2. Performing catch-up screening at increased FIT threshold in 6, 12 & 24 months
   - Netherlands: 47, 50, 55, 60, 70, 80 µg HB/g faeces
   - Canada & Australia: 20, 25, 30, 40, 50, 60 µg HB/g faeces

Using 4 microsimulation models (ASCCA, MISCAN-Colon, OncoSim, Policy1-Bowel) to evaluate the programs in the Netherlands, Canada and Australia.

Source: van Wifferen et al 2021 Publication under review
Project 2 – *Policy1-Bowel* results

C. Policy1-Bowel - Australia

Monthly change in colonoscopy demand during the recovery period compared to usual demand (%)

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Excess CRC-related deaths in 2020-2050 prevented by performing catch-up (%)

6 months recovery

12 months recovery

24 months recovery

Source: van Wifferen et al 2021
Publication under review
Optimal strategies are setting-specific, however:

- Catch-up of screening for people who were affected by a 3-month disruption over a 24-month period could avert most excess CRC-related deaths
- This would require a small increase in diagnostic colonoscopy demand after a positive FIT.
- Increasing the FIT threshold slightly over a long recovery period could ease the pressure on colonoscopy resources.
Australia

- Policy interest in understanding the impact of a possible disruption on priority population groups.
- There has been no official pause but concerns remain around the access, availability and willingness to undertake colonoscopies during the pandemic.
Priority group analyses

- Additional analysis by priority population groups, as determined by the Department of Health’s targeted groups for CRC screening. These included:
  - people who receive their first screening invitation in 2020,
  - people by socioeconomic area,
  - people by remoteness area,
  - people with severe or profound activity limitation (disability),
  - people whose main language spoken at home is a language other than English, and
  - Aboriginal and Torres Strait Islanders.
12 month disruption for people eligible for screening for the first time in 2020

Source: CCNSW report, unpublished
Change in colonoscopy compliance rate*

* proxy for access, availability and willingness to undertake colonoscopies

Key messages for Australia

- Disruptions by priority population groups depend on both participation levels and CRC incidence and survival
- Even if there is no disruption, changes to colonoscopy follow-up rates would have a significant impact on outcomes
Acknowledgements

Presenting on behalf of the Colorectal Cancer Screening Working Group 2 of the COVID and Cancer Global Modelling Consortium.

Thank you to all members, especially the co-chairs Dr. I. Lansdorp-Vogelaar and Professor Karen Canfell and the technical modelling teams.

COVID and Cancer Global Modelling Consortium Secretariat

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