

Equity-Focused
Interventions to
Increase Colorectal
Cancer Screening:

PROGRAM PACK



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Acknowledgements



This document describes participation rates in colorectal cancer screening among diverse population groups and provides guidance for evidence-based approaches that can eliminate barriers and increase equity in colorectal cancer screening participation.

Development of the Program Pack would not have been possible without the contribution and participation of members of the National Colorectal Cancer Screening Network (NCCSN) and Program Pack Advisory Team.

The Canadian Partnership Against Cancer (“the Partnership”) would like to acknowledge the following groups and individuals in the production of this document:

- The people from all provinces and territories who informed the refreshed Canadian Strategy for Cancer Control (the Strategy) and called upon the Partnership and the broader system to eliminate barriers to people getting the care they need and diagnose cancer faster, accurately and at an earlier stage;
- The NCCSN for identifying the need to better understand colorectal cancer screening inequities, as well as the need to enhance the cancer screening system’s capacity to eliminate disparities;
- The dedication and contributions of expert advisors, patient and family advisors, the Program Pack Advisory Team (Appendix A), and Project Teams at the Partnership (Appendix B) who informed this work.

Production of this report has been made possible through financial support from Health Canada. The views expressed herein do not necessarily represent the views of Health Canada.

Suggested Citation: Canadian Partnership Against Cancer. Equity-focused interventions to increase colorectal cancer screening: Program Pack. Toronto: Canadian Partnership Against Cancer; 2021. <https://www.partnershipagainstcancer.ca/topics/equity-colorectal-cancer-screening/>.

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What's inside the Program Pack?

This Program Pack draws on the best-available evidence to describe participation in screening for colorectal cancer by diverse population groups, barriers to and facilitators of colorectal cancer screening, and evidence-based interventions to increase equity in colorectal cancer screening participation.

The Program Pack aims to inform decision-making at the provincial/territorial government and cancer program level, to provide better services and care that is adapted to the specific needs of diverse populations.

There are sections on:

- Rates of screening among low-income groups, immigrants, people living in urban, rural and remote locations, and those with disabilities and/or chronic diseases;
- Barriers, facilitators and evidence-based approaches to increasing screening uptake among specific populations.

Quotes from patient interviews have been interwoven throughout the Program Pack to illustrate the experiences of some individuals. The views and opinions expressed may not represent all population groups or individuals.

Equity Considerations associated with the COVID-19 Pandemic

In the context of COVID-19, social determinants of health are expected to exacerbate existing inequities, and strategies that maintain and promote equitable access to screening, while respecting necessary public health measures, become even more important.¹ As the Chief Public Health Officer of Canada (CPHO) has identified, there is a risk of widening disparities due to COVID-19. To avoid exacerbating health disparities, and in fact capitalize on cancer screening service disruption from the pandemic to close gaps, **this document highlights the importance of embedding equity and provides evidence-based approaches that can strengthen colorectal cancer screening programs.**¹

Recognizing that the COVID-19 pandemic has meant that some populations, such as older adults, racialized populations, people living with disabilities and women, are at greater risk of experiencing poor health outcomes, efforts to support uptake of colorectal cancer screening should be centred on addressing inequities.¹ Travel restrictions that have been put into place in response to the COVID-19 pandemic should be considered when assessing the provision of screening services to people who reside in rural and remote areas. Furthermore, reduced interactions with the healthcare system, by way of some of the approaches outlined in the Program Pack, should be leveraged and opportunities to explore virtual care should also be considered in light of the pandemic.

The Partnership has developed a [guidance document](#) to aid decision makers with the management of cancer screening services during the pandemic and to support building resilient, safer and equitable screening services.

Key Messages

The **Canadian Strategy for Cancer Control (the Strategy)**^{2,3} calls for the health care system to do a better job of adapting services to the specific needs of people of all socio-economic and cultural backgrounds, all age groups and all identities. In addition, institutional racism and prejudice have an impact on care, and these effects must be addressed through system-level responses (e.g., cultural humility training, policies, etc.) along with changes achieved through broader societal efforts.

This Program Pack draws on the **best-available evidence** to describe disparities in screening for colorectal cancer, barriers to and facilitators of colorectal cancer screening, and evidence-based interventions to increase colorectal cancer screening participation among diverse populations.

Health inequities are culturally, socially, economically, and geographically created, and can be modified or eliminated through consistent, focused action to overcome barriers and reduce disparities. By changing the way screening services and health care systems are created, organized screening programs can reach out to and work collaboratively with specific population groups, to better understand their diverse needs and increase screening uptake.

Screening participation rates for colorectal cancer remain below the pan-Canadian target of 60% with no province or territory meeting the target. Competing health concerns such as those experienced during the COVID-19 pandemic can cause further declines in screening participation and exacerbate inequities.

Social determinants of health influence screening rates, with rates for lower income households below those of higher income groups. Determinants such as geography, immigration status and racism, may produce other disparities in screening, among other health inequities.

The strongest facilitators for uptake of screening are a health care provider's recommendation and improved health literacy, particularly for populations living with low income.

Multicomponent interventions that combine strategies were more effective at increasing colorectal cancer screening rates compared to single component interventions.

Participant education and navigation proved to be highly effective interventions among underscreened populations.

Highly effective interventions for low income and rural/remote populations included provider reminders, culturally appropriate small media, one-on-one education and in-clinic kit distribution.

Direct mail of colorectal cancer screening self-sampling kits resulted in higher rates of participation for low income, visible minority groups, and rural residents, compared to no intervention, no mailing, and opportunistic, clinic visit-based offers to complete colorectal cancer screening.

Local-level data and community engagement are important to determine which interventions are most effective with specific groups. More research is needed to understand the barriers, facilitators and optimal approaches to increasing screening uptake among population groups, including individuals with disabilities and chronic diseases, LGBTQ2S+, transient and houseless individuals.

As a First Nations, Inuit and Métis cancer care priority identified in the Strategy, ways to design and deliver approaches suitable for **First Nations, Inuit and Métis** populations based on self-determined needs and preferences will also be addressed by the Partnership and provincial/territorial programs and services, separately from this Program Pack.

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Introduction



Disparities within and between population groups exist in all aspects of cancer control, from the prevalence of risk factors, to the use of cancer screening services, to diagnosis and treatment.



Social determinants of health, such as income, geography, immigration status, race and ethnicity, may influence screening uptake, and may intersect, resulting in disparities in screening, among other health inequities.²

Health inequities are socially created, and can be modified or eliminated through consistent, focused action to remove barriers and reduce disparities.

With respect to colorectal cancer screening, organized screening programs have an important role to play in reaching out to and working collaboratively with underscreened groups to increase screening uptake.

Despite the establishment of organized colorectal cancer screening programs in most of Canada, some programs do not successfully engage all populations and are not tailored to meet the needs of diverse populations, which consequently results in different screening rates across populations. Given that colorectal cancer incidence varies among population groups, approaches designed to increase screening need to be sensitive and responsive to population differences.

This Program Pack draws on the best-available evidence to describe the magnitude of inequities in colorectal cancer screening between the Canadian population as a whole, as compared with lower income households, those living with disabilities or chronic diseases, immigrants and visible minorities, and those living in rural and remote areas. In addition, the Program Pack presents research from Canada and international settings on known barriers and facilitators to colorectal cancer screening for specific populations, and highlights evidence-based interventions shown to increase participation in colorectal cancer screening among population groups.

First Nations, Inuit and Métis Self-Determined Action

First Nations, Inuit and Métis are culturally rich, strong, and resilient. Many First Nations, Inuit, and Métis experience inequities in accessing cancer screening services, and these gaps in access are widened in times of system and resource pressures, like COVID-19.

To understand inequities in colorectal cancer screening for First Nations, Inuit and Métis, more and better data will be needed to support the co-development and implementation of interventions with and for these diverse populations.

First Nations-, Inuit- and Métis-governed research and data systems will be needed in order to advance this work, which is a priority of the Canadian Strategy for Cancer Control (the Strategy).³ The Partnership and provincial/territorial programs and services are actively supporting First Nations, Inuit and Métis governance of the collection and use of data and research.

The Partnership collects information on national, provincial, and territorial colorectal cancer screening guidelines, strategies, and activities. To learn more about strategies that are being implemented across Canada to improve access and increase participation in colorectal cancer screening among First Nations, Inuit and Métis populations, download the [2019-2020 environmental scan](#).

The current Program Pack does not make recommendations specifically related to increasing colorectal cancer screening for First Nations, Inuit and Métis, recognizing that the available evidence based on the literature search criteria used is incomplete and requires further self-determined direction. All allies and institutions must respect First Nations, Inuit and Métis right of self-determination to govern and choose a culturally safe health care system that works to address the uniqueness of First Nations, Inuit and Métis communities.⁴

2019–2029 Canadian Strategy for Cancer Control (the Strategy)

To provide equitable cancer care, the Strategy³ calls for the health care system to do a better job of adapting services to the specific needs of people of all socio-economic, geographic, and cultural backgrounds, all age groups, and all identities. The Strategy also calls for more practical research to gain a deeper understanding of the barriers faced by specific groups. In addition, institutional racism and prejudice have an impact on care, and these must be eliminated through education and training of health care providers, along with broader systemic change to the health care system. To that end, the Strategy calls for all cancer care providers to receive comprehensive education and training to understand and provide culturally safe care that respects the values of their patients.

1.1 | Limitations

The following limitations should be considered when reviewing this report:

The data on inequities in colorectal cancer screening in this report are from the 2017 Canadian Community Health Survey (CCHS).

The 2017 CCHS does not include data from those living in the Territories, those living on First Nations reserves, transient and houseless populations and those without telephone access.

Estimates from CCHS referring to the national average or Canada rate exclude the Territories.

This is because the coverage of CCHS in 2017 does not represent the entire population of the Territories.

Only half of the communities in the Territories were visited in 2017, and the other half in 2018, so analyses based on the Territories were not available for the 2017 analyses reported in the Program Pack.

Large variability in CCHS estimates due to small sample sizes requires that data on immigrants, visible minorities and ethnic origins be interpreted with caution.

Most studies with a focus on immigrants, visible minorities and ethnic groups were conducted in the US and, where described, the visible minority groups addressed were primarily Hispanic or African American.

In a number of cases, specific minority groups were not identified, sometimes indicating only that the studies were conducted in ethnically diverse locations or among non-English-speaking participants.⁵

Many of the studies focused only on participants from a minority group, without comparing them to their majority counterparts, making it unclear whether the interventions would be effective in actually reducing a disparity in colorectal cancer screening between groups.⁵

Little research was found on interventions that improve uptake for people affected by mental health issues, transient and houseless populations, LGBTQ2S+ groups and individuals with chronic conditions.

Given this gap in knowledge, increased understanding of the barriers and needs of these population groups would be valuable for screening programs.

Developed during the summer of 2020, this report reflects the evolving nature of the science and our understanding of the COVID-19 pandemic.

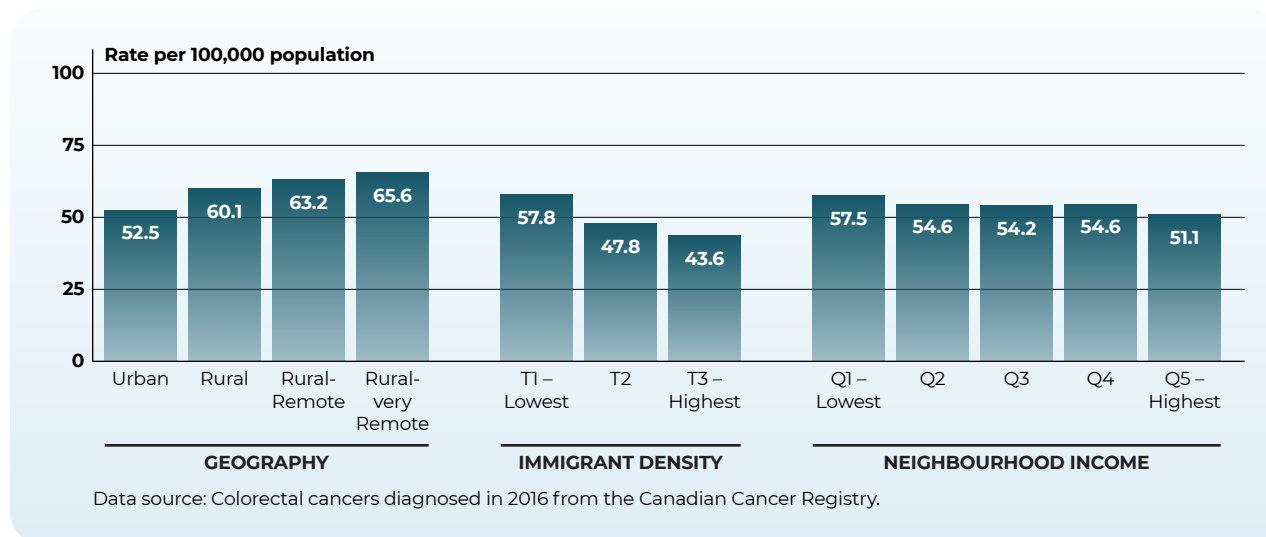
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Rates of Colorectal Cancer by Population Groups



Colorectal cancer is the third most diagnosed cancer and the second leading cause of cancer death in Canada.⁶ Rates of colorectal cancer vary based on factors such as geography, neighbourhood income, and immigrant density (see Figure 1). Although incidence of colorectal cancer is influenced by multiple factors, screening remains an important aspect of cancer control.

Figure 1. Age-standardized incidence rate for colorectal cancer, by geography, income and immigrant density – Canada, diagnosis year 2016



People living in rural-remote and rural-very remote areas have a higher incidence rate for colorectal cancer than those living in urban areas. Those living in neighbourhoods with low immigrant density have a higher incidence of colorectal cancer than those living in neighbourhoods with the highest immigrant density. The differences associated with neighbourhood income quintile are not significant (Figure 1).

2.1 | Screening across Canadian jurisdictions

Efficient, population-based screening programs with high uptake rates can effectively reduce mortality from cancer.

For example, organized screening programs have contributed to reduced mortality from breast and cervical cancer, as they allow for earlier disease detection and more timely delivery of effective therapies.^{7,8} Organized programs for colorectal cancer screening have been implemented more recently, but existing evidence shows that these programs are also contributing to reduced mortality.⁹ In the Canadian context, there is evidence that screening programs have led to a shift toward earlier diagnosis.^{10,11}

Organized programs:

- have processes in place to minimize the risk of over-testing
- have diagnostic pathways in place to follow-up on abnormal screening results
- monitor their performance to ensure their effectiveness and safety

Screening uptake can be considered in terms of participation rate and up-to-dateness. From a health system resources perspective, participation rate is of interest because this measure specifically reflects uptake of the fecal test, which is the general population recommendation in cancer screening guidelines.¹²

Up-to-dateness is also of interest from the overall standpoint of reducing the burden of disease, with various approaches to screening included in being up to date: the guideline-recommended fecal test as well as colonoscopy / sigmoidoscopy, which can be used for screening but has risks that are not present for fecal tests.

This Program Pack includes both indicators, with uptake of fecal tests (the participation indicator) as the best indicator of uptake of organized screening program offerings.

As illustrated in Figure 2, uptake for both participation in fecal testing and up-to-dateness in colorectal cancer screening varies significantly across Canada.

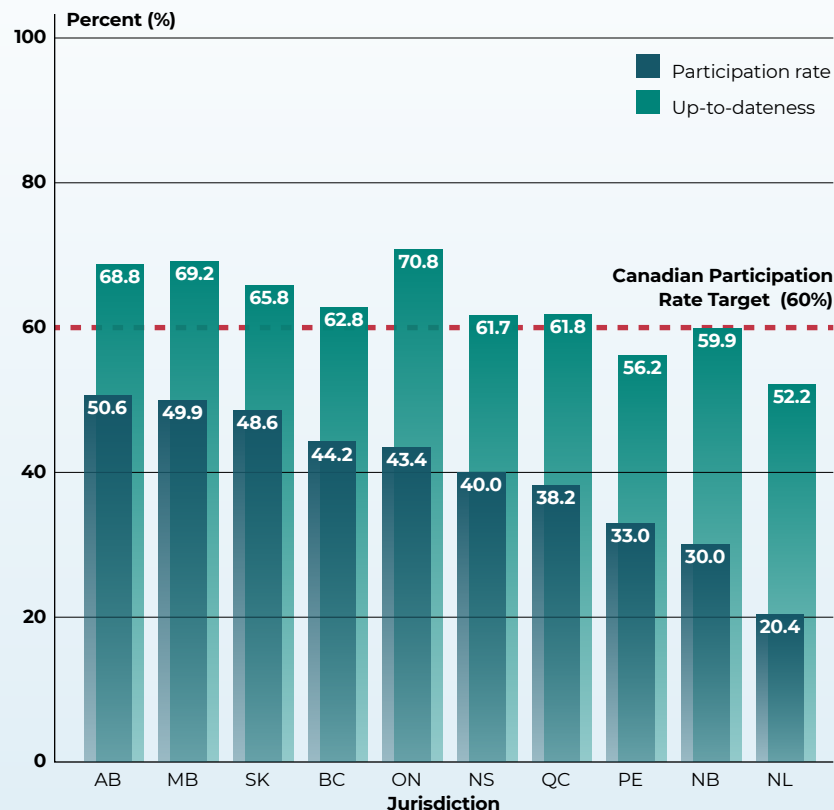
All jurisdictions in Canada currently have organized colorectal cancer screening programs, except for the Northwest Territories, Nunavut and Québec, where programs are being planned or initiated.

Opportunistic screening is available in those jurisdictions through health care providers, but opportunistic screening does not have the same capacity as exists within organized programs to reach underscreened populations, and as a result may contribute to disparities in screening.

Screening participation rates for colorectal cancer in Canada remain below the national target¹³ of 60%, with no province or territory meeting the target.

Participation rates for colorectal cancer screening in Alberta (50.6%), Manitoba (49.9%) and Saskatchewan (48.6%) come closest to the target, while far lower uptake is seen in the Atlantic provinces of Newfoundland and Labrador (20.4%), New Brunswick (30%) and Prince Edward Island (33%) (see Figure 2). With respect to up-to-dateness, Eastern Canadians are least likely to be up to date with colorectal cancer screening and residents of Ontario are most likely to be up to date.

Figure 2. Percentage of the population aged 50 to 74 that self-reported having had a fecal test with the last two years and that is up to date with colorectal cancer screening (fecal test last two years, sigmoidoscopy/colonoscopy last ten years), by jurisdiction



Data source: Statistics Canada, Canadian Community Health Survey, 2017

3

Colorectal Cancer Screening and Equity



Strategies to eliminate barriers and provide care adapted to the specific needs of underserved groups are priorities for the Partnership and cancer control partners, including organized screening programs.³



Screening rates for lower income households, including both participation and up-to-dateness, are below the rest of the population.

Recent immigrants and those living in rural or remote locations have been shown in the past to have lower rates of screening uptake,¹⁴ although the more recent data presented in this report show that these disparities may have been reduced. (It should be noted that limitations of CCHS data may lead to disparities not being detected or being underestimated – see Limitations section).

Although less is known about screening participation rates among people living with disabilities, chronic diseases, mental health conditions and among houseless, transient and LGBTQ2S+ individuals, these groups are known to experience health inequities and may be among the underscreened population.

To improve equity, interventions must specifically address barriers and inequities in access to screening. Otherwise, those most able to take advantage of screening will do so, while groups with more individual and system level barriers to participation will have lower rates of screening, resulting in the unintended consequence of increasing disparities.¹⁵

There is a need for robust reporting on intervention methods, to allow effective selection, adaptation and implementation of interventions that work best in specific settings, populations and communities.¹⁶ Local-level data collection and community engagement are also important to determine which interventions are most effective at increasing participation rates.

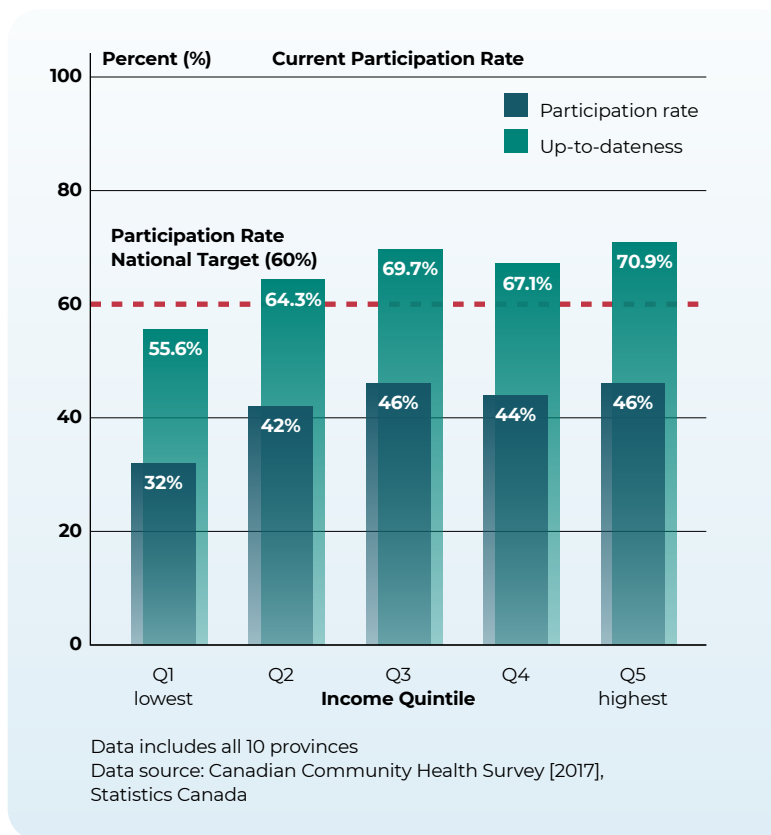
3.1 | Low income

More than 3.4 million people in Canada (9.5%) lived with low incomes in 2017, although the number of individuals living below the low-income threshold has fallen over the past decade.¹⁷ The extensive slowdown in the Canadian economy as a result of public health emergency measures set in place to tackle COVID-19, including the closure of non-essential services, schools and daycare centres, impacted and continues to impact many Canadians through employment and/or income loss, both of which are key social determinants of health.¹ In turn, this can have long-term economic impacts, beyond the COVID-19 pandemic. The negative association between socio-economic disadvantage and health outcomes, including life expectancy, disability and hospitalization, and mortality, has been widely demonstrated.¹⁸

Screening participation in Canada is under the target of 60% for all income quintiles, with disparities evident for the lowest income quintile compared to others (see Figure 3).

Evidence from Canada and from other countries confirms that screening participation rates are lower among persons with lower income and lower education.² Although less is known about screening participation among people living with unstable housing, a study in New York City shelters found that people with unstable housing had approximately half the rate of colorectal cancer screening (20%) of those who were housed.¹⁹

Figure 3. Percentage of the population aged 50 to 74 that self-reported having had a fecal test with the last two years and that is up-to-date with colorectal cancer screening (fecal test last two years, sigmoidoscopy/colonoscopy last ten years), by income quintile



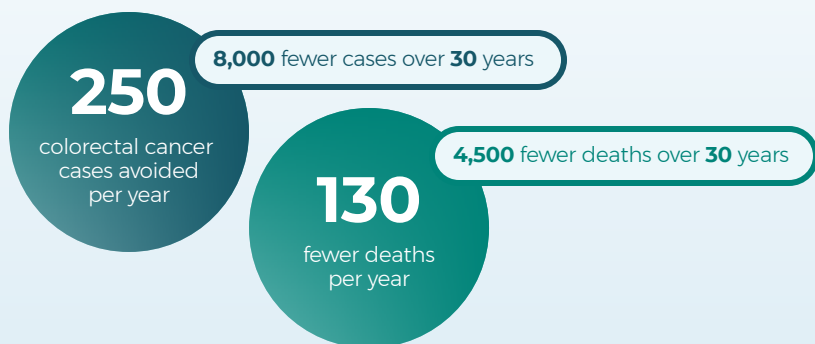
Fewer people in the lowest income quintile reported having had a fecal test in the previous two years (32.2%) compared to the other quintiles, with the largest difference when compared to the highest income quintile (46.3%), a difference of 14 percentage points (see Figure 3).

Fewer people in the lowest household income quintile were up to date with colorectal cancer screening than in all other quintiles (see Figure 3).

Screening reduces the number of cases and deaths over many years into the future.

Screening for colorectal cancer is projected to reduce the number of people who will be diagnosed with and die from cancer, through finding and removing pre-cancerous polyps over many years into the future.

Increasing the colorectal cancer screening participation rate to the target of **60% across all quintiles by 2029** would result in:

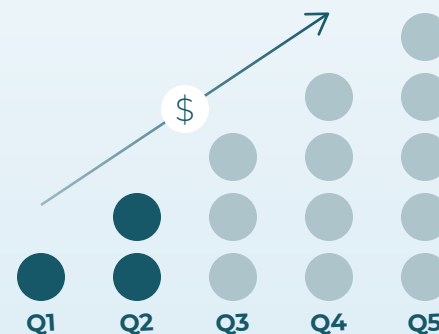


Using modelling data for long-term projections,ⁱ increasing the colorectal cancer screening participation rate to the target of 60% across all quintiles by 2029 would result in avoiding 250 colorectal cancer cases per year (or cumulatively 8,000 fewer colorectal cancer cases over 30 years). With respect to colorectal cancer deaths, increasing the colorectal cancer screening participation rate to the target of 60% across all quintiles would result in over 130 fewer colorectal cancer deaths per year (or cumulatively 4,500 fewer colorectal cancer deaths over 30 years).

by 2050



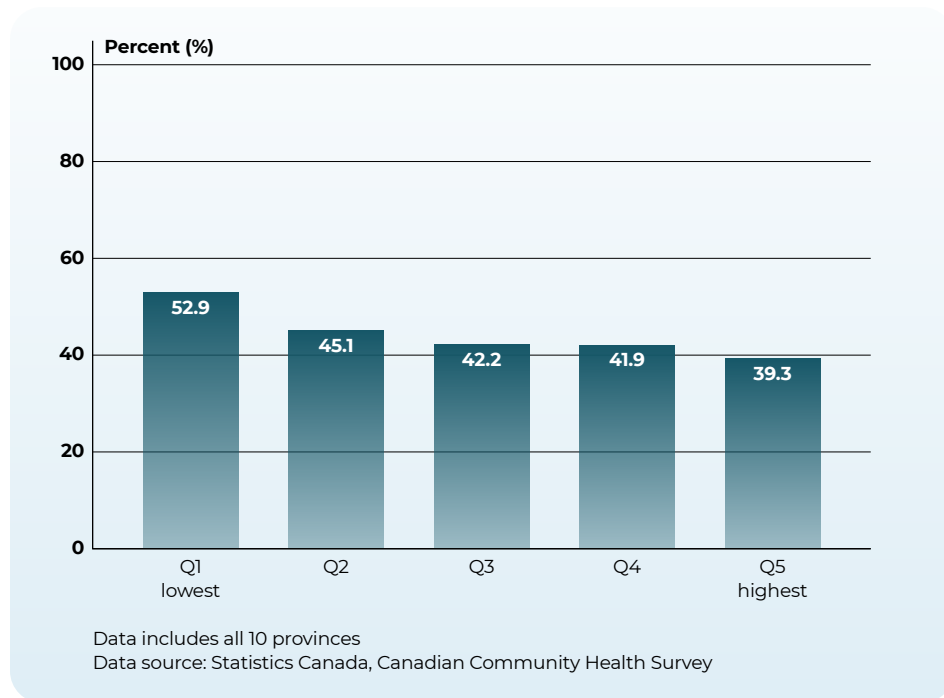
would be among those in the lowest two household income quintiles



From a health equity perspective, population groups with currently lower participation rates have more to gain by increasing screening participation up to target levels: approximately 44% of avoided cases by 2050 would be among those in the lowest two household income quintiles. With respect to deaths from colorectal cancer, approximately 50% of avoided deaths by 2050 would be among those in the lowest two household income quintiles.

ⁱ The projections were estimated using OncoSim. OncoSim is led and supported by the Canadian Partnership Against Cancer, with model development by Statistics Canada, and is made possible through funding from Health Canada.

Figure 4. Proportion of individuals aged 50–74 years who have never had a fecal test, by household income quintile



Disparity by income quintile for up-to-date screening lessens with age. Among those below 65 years of age, people in the highest income quintile are overrepresented among all those tested, and people in the lowest quintile are underrepresented. The disparity lessens with age, such that people at lower income quintiles are screened at approximately equal rates to those in higher income quintiles after 65.

More people in the lowest household income quintile have never had a fecal test than in the other quintiles, with a difference of 13 percentage points between lowest (52.9%) and highest quintile (39.3%) (see Figure 4).

3.2 | Time since immigration, country of origin and language spoken at home

Fecal test screening among immigrant populations appears to have increased considerably in a decade.

Data from 2008 showed that only 19.2% of recent immigrants reported being up to date in screening, compared to 35.0% of immigrants who have been in Canada for more than 10 years and 31.7% of the Canadian-born population.¹⁴

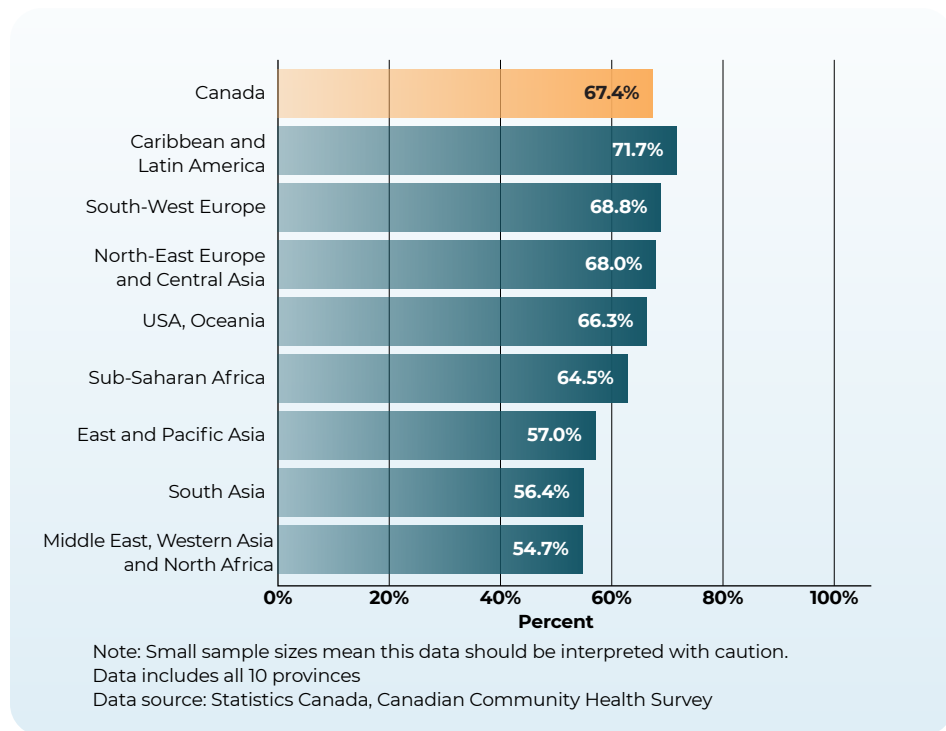
By 2017, all groups had increased their screening, and the same pattern of approximately 10% difference between new immigrants and Canadian-born individuals is evident, although not significantly different in the 2017 CCHS data (estimates of 58.8% among recent immigrants and 64.5% among immigrants in Canada for more than 10 years, versus 67.4% for Canadian-born individuals).

Similar patterns exist in participation rates in colorectal cancer screening by fecal test for immigrants and Canadian-born individuals.²⁰

Organized screening programs were instituted in most jurisdictions between 2008 and 2017, which may explain part of the increase in screening for all populations and for recent immigrants.²¹

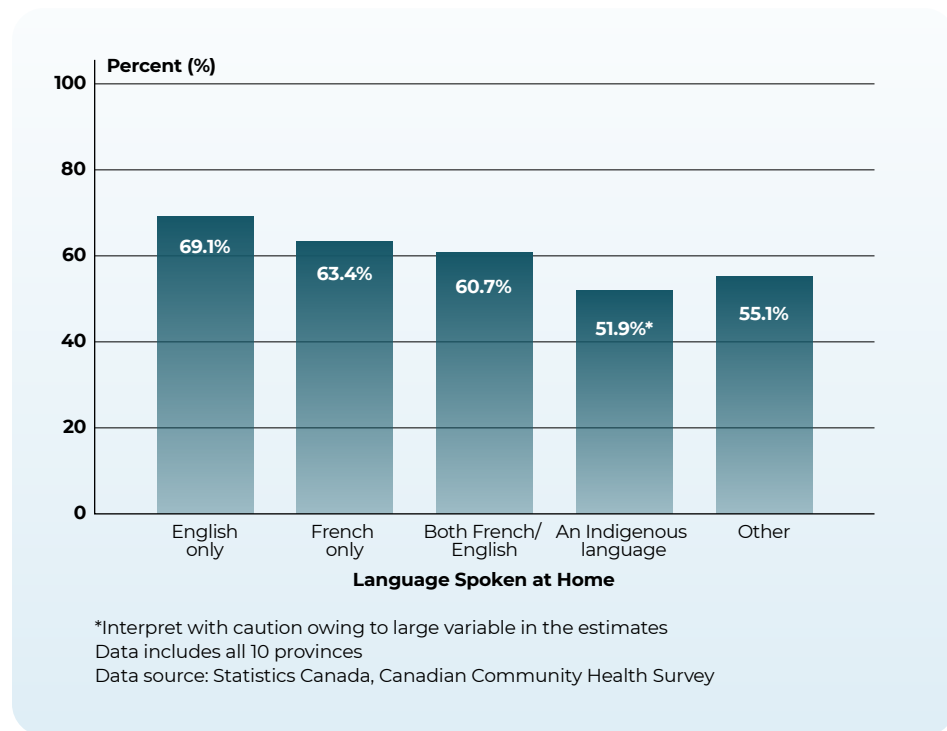
Although rates of participation in fecal testing and up-to-dateness do not differ significantly by immigrant group, reasons for not being screened show some differences. The main reason recent (<10 years) immigrants cited for not getting tested is that they did not think colorectal cancer testing was needed or even know it existed (60.5%), whereas those with longer time since immigration (38.2%) and Canadian-born individuals (40.8%) were less likely to give this as a reason.²⁰

Figure 5. Percentage of the population aged 50 to 74 that is up to date with colorectal cancer screening (fecal test, sigmoidoscopy, colonoscopy), by country of origin.



Significantly fewer immigrants from East and Pacific Asia and from the Middle East, Western Asia and North Africa are up to date with colorectal cancer screening than Canadian-born individuals (see Figure 5).

Figure 6. Percentage of the population aged 50 to 74 that is up to date with colorectal cancer screening (fecal test, sigmoidoscopy, colonoscopy), by language spoken at home



People who speak only English or only French at home are more likely to be up to date with screening than those whose home language is an Indigenous language or another language (see Figure 6).

3.3 | Geography

The Strategy³ has a priority to eliminate barriers to people getting the care they need, with specific reference to ensuring that rural and remote communities have the resources required to better serve their people.

CCHS data from 2017 do not show significant differences in fecal test participation or up-to-dateness across geographies (urban, rural, remote).²⁰ However, there are limitations in the data source, and data from the Territories, First Nations reserves, houseless and transient populations are lacking, which limits the ability to identify geographical disparities through these statistics.

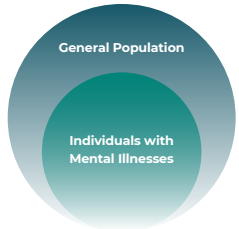


Despite no apparent differences in screening rates, incidence rates of colorectal cancer climb from urban to rural-very remote areas, with a gap of 13.1% between urban and rural/very remote geographies (Figure 1), suggesting that ongoing attention to screening continues to be important for rural and remote locations.

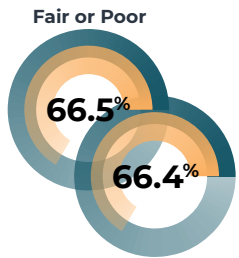
Income and geography are correlated, in that rural and remote populations generally have lower incomes than urban populations, so an intersection of income and other factors may be relevant to understanding colorectal cancer rates among rural and remote populations.¹⁴



3.4 | Mental health status and illnesses



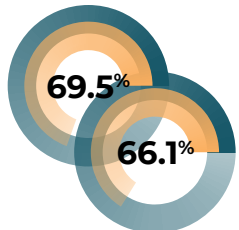
Individuals with mental illnesses generally have screening rates 20–30% lower than the general population for breast, cervical and colorectal cancer screening.²²



However, results for Canadian populations show that people who rate their mental health as fair or poor have screening rates similar to those who self-rate as good/very good/excellent (66.5% versus 66.4%).²⁰

Good / Very Good / Excellent

With Mood Disorder



People with a mood disorder have similar rates of up-to-dateness (69.5%) compared to people without a mood disorder (66.1%).²⁰

Without Mood Disorder

In Canada, those with an anxiety disorder were somewhat more likely (70.6%) to be up to date in colorectal cancer screening than those without (66.1%), a difference of 4.5 percentage points.²⁰ By contrast, a UK study reported no differences in fecal test participation for participants with self-reported anxiety or participants with depression, compared to those with no disorder.²³

The distress associated with the pandemic can increase the risk of poor mental health and other medical concerns.¹ People living with pre-existing mental illness may be more vulnerable during COVID-19 as isolation can cause the return or increase of symptoms, as well as disruptions in therapeutic care.¹ Issues with access to care may increase, resulting in additional barriers to getting screened.¹

3.5 | Disabilities

Research is limited on the role of disability in colorectal cancer screening participation for people with physical, learning, visual or hearing disabilities or impairments. Research from the US and UK showed:

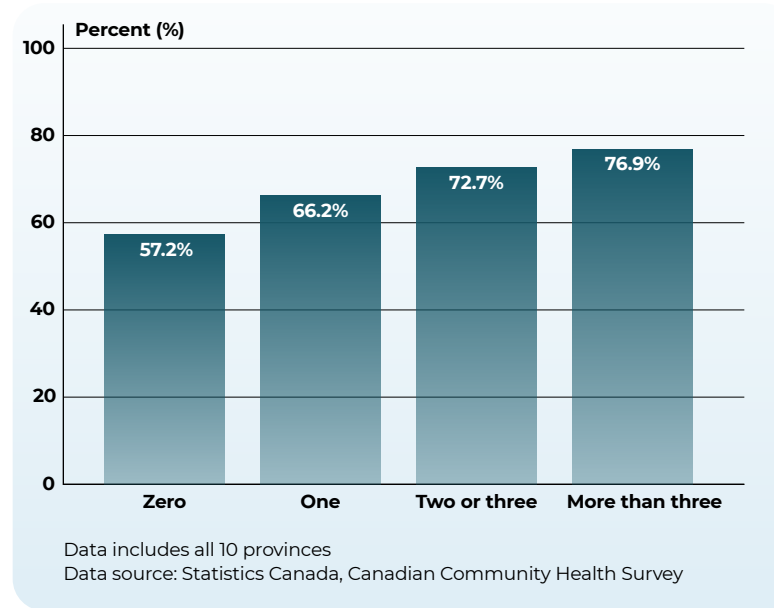
- Those who had the highest physical capacity were more likely to be up to date in screening (52%) than those with the lowest physical capacity (42%) (US).²⁴
- Women with disabilities were 25% less likely to complete a colorectal cancer screening test than women with no disabilities, even after adjusting for socio-demographic and lifestyle factors. Women with a greater number of disabilities were even less likely to participate in screening (UK).^{25,26}

In Canada, rates of up-to-dateness are significantly different for those with limited hearing (70.8%) and those without hearing loss (65.6%), and for those with memory loss (69.5%) versus no memory loss (65.8%), with slightly higher rates for people with these conditions, suggesting that these disabilities do not present significant barriers for colorectal cancer screening.²⁰

3.6 | Chronic disease

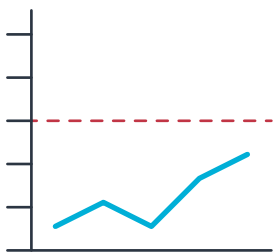
Colorectal cancer screening varies among people with one or more chronic diseases, and may vary with the type of disease. In the UK, diabetes and stroke were associated with lower uptake of screening, while osteoarthritis, rheumatoid arthritis and other conditions were associated with higher uptake.²³

Figure 7. Percentage of the population aged 50 to 74 that is up to date with colorectal cancer screening (fecal test, sigmoidoscopy, colonoscopy), by number of chronic conditions



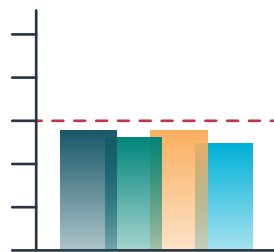
In Canada, those with three or more chronic conditions were more likely to be up to date for screening (76.9%) than those with one (66.2%) or no chronic conditions (57.2%), the latter showing a difference of 19.7 percentage points (see Figure 7). This finding may be a result of greater interaction with the health system among those with multiple chronic illnesses.²⁷

3.7 Summary of Key Population Group Findings



Screening participation by fecal test is under the target of 60% for all income quintiles, with a disparity evident for the lowest income quintile compared to others.

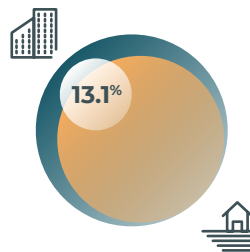
Fewer people in the lowest income quintile were up to date with colorectal cancer screening than in the highest quintile.



Rates of participation in fecal testing or in up-to-dateness do not differ by immigrant status.

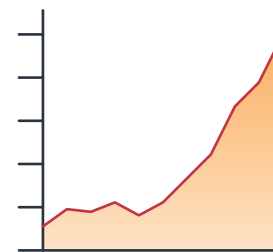
Recent immigrants have been shown in the past to have lower rates of screening uptake, although the more recent data presented in this report show that these disparities may have been reduced.

Detailed data, including data from the Territories, First Nations reserves, houseless and transient populations, are lacking.



There are no significant differences in fecal test participation or up-to-dateness across geographies (urban, rural, remote).

Despite no apparent differences in screening rates, incidence rates of colorectal cancer climb from urban to rural-very remote areas, with a gap of 13.1% between urban and rural / very remote geographies, suggesting that ongoing attention to screening continues to be important for rural and remote locations.



Organized screening programs were instituted in most jurisdictions between 2008 and 2017, which may explain part of the increase in screening for all populations and for recent immigrants and rural/remote residents.



Although less is known about screening participation rates among people with disabilities, chronic diseases, mental health issues and among houseless, transient and LGBTQ2S+ individuals, these groups may experience barriers to screening that can be addressed through tailored approaches.

4

Barriers and Effective Interventions



Strategies to reduce or eliminate barriers, and to implement interventions to increase screening uptake among underscreened populations, are important to understand as a way of moving to action.

Research exploring barriers, facilitators, and effective interventions to support eligible individuals to participate in colorectal cancer screening has been compiled by the Partnership and is presented below, with implications for screening programs.

4.1 | Reasons for not being screened

PATIENT COMMENTS

It seems yucky or uncomfortable or embarrassing maybe.

Among Canadians across jurisdictions who have not had a fecal test in the previous two years, the most common reasons were that their doctor felt it was not necessary, they felt it was not necessary, or they already had screening by colonoscopy or sigmoidoscopy.



Other less common reasons were lack of time, not having a doctor, not knowing the test existed, or feelings of fear or discomfort.²⁷



Individuals in British Columbia and Québec were more likely than other jurisdictions to say that their doctor felt the test was not necessary or did not bring it up.²⁰



Residents in Newfoundland and Labrador and Prince Edward Island were more likely than other jurisdictions to feel the test was not necessary or not to know the colorectal cancer screening test existed.²⁰

4.2 | Barriers among specific populations

PATIENT COMMENTS

There was no push or motivation to go home and [use the screening kit]. I just left it on the table and was going to talk to my kids about it and almost like a joke.

A literature review commissioned by the Partnership on barriers to and facilitators of colorectal cancer screening participation and up-to-dateness among specific populations found evidence of commonly reported barriers.²

The specific barriers most often cited by low-income populations, visible minority groups, and rural/remote residents are summarized in Table 1. Although rural and remote residents and immigrants have seen their levels of participation and up-to-dateness increase

over time, perhaps due in part to the successes of organized screening programs, continuing to attend to the needs and specific contexts of immigrant or visible minority communities and people living outside urban areas is necessary.

The barriers experienced by underscreened populations can be grouped as relating to:



Health care provider barriers






Health system barriers



Support and education barriers

Table 1. Barriers to colorectal cancer screening among specific population groups²

 <p>LOW INCOME</p>	 <p>VISIBLE MINORITY GROUPS</p>	 <p>RURAL/ REMOTE</p>
<p>Health Care Provider Barriers</p> <ul style="list-style-type: none"> - Lack of health care provider recommendation <p>Support and Education Barriers</p> <ul style="list-style-type: none"> - Fear of cancer / misconceptions - Negative attitude towards testing - Scheduling conflict / lack of time - Low health literacy 	<p>Health System Barriers</p> <ul style="list-style-type: none"> - Difficulty navigating the health system - Language barriers <p>Support and Education Barriers</p> <ul style="list-style-type: none"> - Lack of culturally appropriate health promotion material - Low health literacy - Fear of cancer / misconceptions - Embarrassment /discomfort handling fecal samples - Work/family responsibilities - Dependency on family members 	<p>Health Care Provider Barriers</p> <ul style="list-style-type: none"> - Lack of regular health care provider <p>Health System Barriers</p> <ul style="list-style-type: none"> - Difficulty accessing the health system - Non-receipt of test kit by mail (very remote areas)

4.3 Evidence-based approaches to improve colorectal cancer screening

4.3.1. Approaches for the general population

Over the past decade, the Community Preventive Services Task Force (CPSTF), supported by the US Centers for Disease Control and Prevention, has carried out an extensive review of factors that increase screening for colorectal cancer across all populations.

The table below (Table 2) shows the general population strategies for which evidence was reviewed in the CPSTF review.²⁶ Intervention strategies are classified as increasing (a) community demand, (b) community access or (c) provider delivery.

Table 2. Strength of evidence of cancer screening intervention, grouped by strategy

STRENGTH OF EVIDENCE	INCREASE COMMUNITY DEMAND	INCREASE COMMUNITY ACCESS	INCREASE PROVIDER DELIVERY
Strong ●●●	<ul style="list-style-type: none"> - Participant Reminders - Small Media 	<ul style="list-style-type: none"> - Reducing Access Barriers, including Increasing Self-Sampling; Reducing Administrative Barriers; Providing Translation 	<ul style="list-style-type: none"> - Provider Reminder and Recall Systems
Sufficient ●●	<ul style="list-style-type: none"> - One-on-one Education 		<ul style="list-style-type: none"> - Provider Assessment and Feedback
Insufficient ●	<ul style="list-style-type: none"> - Group Education - Mass Media - Participant Incentives 	<ul style="list-style-type: none"> - Reducing Participant Out-of-Pocket Costs 	<ul style="list-style-type: none"> - Provider Incentives



Participant reminders, small media (such as pamphlets and videos), reduced structural barriers, and provider reminder systems all have strong evidence to support their use in the general population.

As an example, mailing fecal testing kits is an effective strategy to increase community access and reduce structural barriers:

One Ontario study showed that people who received mailed kits were twice as likely to complete one of the two tests as those who received letters alone.²⁹ Direct mailing of fecal testing kits can increase access to cancer screening and reduce in-person interactions with health care providers, during times of particular pressure on the healthcare system, such as the COVID-19 pandemic.

PATIENT COMMENTS

The kit itself is pretty self-explanatory ... It's very simple, straight forward, well put together and simple to mail it in.



The largest increases in colorectal cancer screening rates, among all populations, were seen with multicomponent interventions that combined approaches from two or more of the three strategies noted.

Multicomponent interventions increased colorectal cancer screening by any test by a median of 15.4 percentage points when compared with no intervention.³⁰



Interventions using group education, mass media, participant and provider incentives and reduced out-of-pocket costs had insufficient evidence for the CPSTF to recommend them as stand-alone interventions for the population as a whole.²⁸

However, these approaches were also studied as part of effective multicomponent interventions, and demonstrated some effectiveness with some underscreened populations, and thus, they remain relevant as potentially effective strategies.³¹

4.3.2. Approaches for specific populations

PATIENT COMMENTS

I kind of delayed, avoided, I guess out of fear. I went back to the doctor and he asked, “Did you do the test?” I said, “No, not yet”. He said, “You better hurry up and do it.”

A review of evidence commissioned by the Partnership on interventions specifically for diverse population groups³¹ builds on the CPSTF findings²⁸ and the review of barriers.² The review of interventions identified a number of strategies that increased colorectal cancer screening rates (participation and/or up-to-dateness) among various audiences.³¹

Some strategies that are not supported by evidence for the general population (as shown in the CPSTF review) are effective in some cases for underscreened and specific populations, so interventions should be carefully chosen in collaboration with the intended population group.

For example, although the CPSTF found insufficient evidence to recommend group education to increase colorectal cancer screening, pre-screening group education was found to be effective in increasing fecal test uptake among low income and visible minority populations.

A recommendation by a primary care provider to perform screening appears to be the most important facilitator, particularly for participants affected by socio-economic disadvantage and poor health literacy, who have been shown to rely more upon their primary care providers to inform health decisions.^{2,32}

Other facilitators include increasing health literacy, having a health care provider, invitation letters and reminders, health education on colorectal cancer screening and the risks/benefits of testing, peer accompaniment, and training for health care providers and community outreach staff.²

Further research on interventions to increase screening uptake among specific populations and reduce disparities is warranted.

Collaboration and co-creation with population groups and communities yields insight and leads to more effective, tailored approaches.

Ensuring that strategies to increase access to care are aligned with community needs, priorities and infrastructure during times of particular pressure on the system, such as the COVID-19 pandemic, will lead to improved access to and uptake of screening. Detailed reporting on methods to select, adapt and implement interventions to help determine which interventions work best in specific settings, populations and communities would support widespread implementation.¹⁶



Low-Income

A systematic review of low-income populations³³ found that both pre-screening reminders and physician endorsement led to modest increases in participation rates in underscreened populations.

More personalized reminders for non-participants, whether by enhanced written materials or telephone contact (notably from primary care), were effective in increasing participation.



Visible Minority Groups

A 2012 systematic review of 33 studies of interventions directed to racial and ethnic minorities in the US found that the most effective interventions were participant education involving phone or in-person contact, combined with navigation through at least the basic steps of the colorectal cancer screening process.⁵

All modalities of testing were included in this review, including FOBT, sigmoidoscopy, and colonoscopy, with no analysis provided of the results by different modalities.



Rural/Remote

Mobile clinics, mailing kits directly to participants and involving community workers are interventions that have been shown to facilitate screening uptake in remote settings.²¹

Although fecal tests do not require specialized on-site equipment as breast cancer screening does, a mobile breast cancer screening van being used in Ontario also distributes fecal tests in rural and remote areas, reducing some access barriers and providing an opportunity for providers to recommend the tests.²¹

The descriptions of interventions below include evidence ratings provided by CPSTF and details on how these strategies may be effective in multicomponent interventions and/or for one or more population groups.

- Strong Evidence ● ● ●
- Sufficient Evidence ● ●
- Insufficient Evidence ●



Multicomponent interventions – As noted previously, multicomponent interventions result in the largest increases in colorectal cancer screening rates among all populations, in the order of 15.4 percentage points when compared with no intervention.³⁰ The review of strategies commissioned by the Partnership found that 21 out of 27 studies that increased colorectal cancer fecal testing were multicomponent.³¹ Similarly, a systematic review of studies to improve colorectal cancer screening in low-income and rural/remote populations identified many multicomponent interventions.¹⁶ Effective multicomponent approaches included strategies to increase community demand, such as participant reminders, and strategies to increase community access, including direct mail of self-sampling kits and in-clinic kit distribution. Interventions that were effective with underscreened populations most commonly used a patient navigation approach that featured one-on-one education to increase demand, and strategies to reduce barriers.³¹ In some studies, a number of approaches were ‘layered’, with components added in sequence to try to reach non-responders.

Example approach: A study that compared various forms of intervention for breast and colorectal cancer screening found that nurse support was the most successful, with participants more than twice as likely to be screened compared with those who received culturally appropriate education alone and almost 1.5 times more likely to be screened compared with those who received enhanced care (after adjusting for age, race, and literacy).³⁴ In this resource-intensive intervention, the nurse-supported participants with in-person education and up to three phone calls to encourage compliance for both tests.



Participant reminders
– Letters, postcards

and phone calls used to remind participants that screening is due and offer follow-up information (e.g., benefits of screening, ways to address barriers, help to schedule appointments) showed **strong evidence** of effectiveness in increasing screening with fecal test.²⁸ This finding held across all underscreened populations studied.³¹

Example approach: Ontario Health (Cancer Care Ontario), offers physician-linked correspondence, which includes physicians’ names in their rostered patients’ cancer screening reminder letters.³⁵

PATIENT COMMENTS

The way it's set up now, getting involved with that program, there were definitely communications that were sent to the home. There was some educational material that came with it, to educate people about why this is an important thing to do.



Small media –

Videos and printed materials such as brochures were shown to have **strong**

evidence of effectiveness to inform and motivate people to access fecal test screening.³⁶

Information can be tailored to specific individuals or groups, such as through translation and the use of plain language, or geared towards general audiences.

The findings for the general population held in reviewing interventions for underscreened groups as well.

Numerous studies identified the effectiveness of brochures and handouts, combined with other interventions in multicomponent approaches, as being effective in increasing colorectal cancer screening among all underscreened populations.³¹



Reducing structural barriers – **Strong evidence** was

found for increasing fecal test screening rates by reducing access barriers, such as simplified administrative procedures and translation.²⁸



Example approach: Direct mailing of fecal tests consistently resulted in higher rates of participation for all populations, including low-income, rural, visible minorities and uninsured people, compared to various types of interventions that made up usual careⁱⁱ in the studies reviewed.^{31,37}

Example approach: Integrating Screening Services: An intervention for women living in rural and remote communities in Alberta (predominantly First Nations, Métis, and Hutterite) integrated colorectal cancer screening into existing mobile mammography clinics by distributing FIT kits.³⁸

ii) "Usual care" included no intervention, no mailing, and opportunistic, clinic visit-based offers to complete CRC screening.



Provider reminder and recall systems –

For the general population, reminders to providers that it is time for a participant to be screened for cancer or that the participant is overdue for a test (e.g., in electronic medical records, via email, etc.) show strong evidence of effectiveness. Evidence supports this finding for fecal test uptake among low-income, rural/remote, and visible minority patients.³¹

Example approach: Participant reminder systems were effective as part of a study of clinics that used health navigators to conduct chart audits to identify patients due for screening and manage provider reminder systems to prompt health care providers to refer patients for screening. A number of other interventions were included in this multicomponent intervention, such as coordination of screening and follow-up services, one-on-one patient education and appointment reminders, and support to overcome barriers to screening (e.g., costs, transportation, literacy).³⁹

Example approach: Ontario’s Screening Activity Report (SAR) is an online tool available to primary care physicians who practice as part of a patient enrolment model, and to physicians and nurses who practice in the Sioux Lookout Municipality and Sioux Lookout Zone (27 First Nations communities). It provides screening data for breast, cervical and colorectal cancers to help physicians improve their cancer screening rates and appropriate follow-up. The report platform is interactive, allowing physicians to quickly find specific cancer screening information for each patient.⁴⁰



One-on-one education – Sufficient evidence

of effectiveness was shown for increasing fecal test screening through programs wherein health care providers or laypersons explain the benefits of screening and ways to overcome barriers to participants individually, either in person or by phone.²⁸ This finding held across all underscreened populations studied.³¹ Patient navigation is a particularly effective approach to one-on-one education combined with strategies to reduce access and structural barriers. Providing virtual patient navigation as an alternate to in-person navigation, can be an area to explore in light of the pandemic.

Example approach: A 2012 systematic review of 33 studies of interventions directed to visible minorities in the US found that the most effective interventions were multicomponent interventions, with participant education involving phone or in-person contact combined with navigation through at least the basic steps of the colorectal cancer screening process.⁵ One intervention that used telephone outreach and education increased colorectal cancer screening more than four-fold.⁵ Among visible minority groups, even the most basic patient navigation model increased colorectal cancer screening rates by about 15%.⁵ For rural/remote participants, either professional³⁹ or lay⁴¹ patient navigators successfully increased screening rates by 28% and 10%, respectively, by providing education and assisting participants with structural barriers, including out-of-pocket costs, appointment scheduling, transportation and translation.

Patient navigation and outreach, while effective, are often time intensive. In one study, between three and five phone calls of 15-20 minutes each were required for each patient, so about 1-1.5 hours of staff time were spent per patient.⁵ When direct patient contact is not possible, culturally tailored printed materials showed better results than standard materials.⁵ Approaches that ensure contact is culturally appropriate, whether through health providers, patient navigators or outreach workers, have shown promise.⁴²

PATIENT COMMENTS

I made the appointment for the colonoscopy which is something I hesitated to do, I think out of fear. I think it would be better if they made the appointment for you, gave you an order and instructions.



Provider assessment and feedback -

Interventions that evaluate provider performance and give providers information about their performance in offering screening services have **sufficient evidence** of effectiveness for increasing fecal test screening for the general population.⁴³ Teaching sessions for providers were found to be effective among those who serve low-income, rural/remote and visible minority patients.³¹

Example approach: In a US study, training physicians to communicate effectively with patients with low health literacy was particularly successful in increasing screening rates.⁴⁴



Group Education - CPSTF found **insufficient evidence** of effectiveness of pre-screening group education

for fecal test uptake among the general population.²⁸ Some studies support the effectiveness of group education about screening, especially by lay health educators, among low-income, visible minority and immigrant groups.³¹

Example approach: One study used lay health promoters from the Hispanic community to provide group education in participants' homes.⁴¹ The use of recognized and respected "*promotoras*" provided support, comfort and a cultural context to discuss colorectal health among people of the same language and culture, resulting in increased awareness and reduced misconceptions of colorectal cancer screening, and about a 10% increase in the number of people reporting having had either fecal test screening, sigmoidoscopy or colonoscopy.



**Mass media –
Insufficient
evidence**

was found

to support the effectiveness of social media, television, radio, billboards, newspapers, and magazines, including translated media and those using culturally appropriate messaging.³⁶ In multicomponent approaches, successful interventions used mass media, such as posters, billboards, and bus shelter ads, in combination with activities such as community and participant education, provider training and education, and patient navigation.⁴⁵



**Participant
incentives –
Insufficient
evidence**

was

found to indicate that participant incentives, such as a small payment or gift for completing screening, effectively increase demand.²⁸ No studies were found within the underscreened populations evidence review that used incentives for participants as part of the research protocol.³¹



**Reduce out-
of-pocket
costs for
participants –**

CPSTF found **insufficient evidence** of the effectiveness of reduced out-of-pocket expenses for the general population.⁴³ Some studies supported its effectiveness among low-income, visible minority and immigrant groups, and those living in rural/remote areas.³¹ Note that most of these studies were conducted in the US, with the most effective intervention being ‘waived or no-cost screening’.



**Provider
incentives –**
Provider
incentives

are direct or indirect rewards (often monetary but can include non-monetary incentives also (e.g., continuing medical education credit intended to motivate providers to perform cancer screening or make appropriate referral for their patients to receive these services) have **insufficient evidence** of effectiveness for colorectal cancer screening. These strategies were not supported with evidence for specific underscreened groups.

Appendix Dⁱⁱⁱ provides a combined summary of the strategies found to increase colorectal cancer screening for the general population and for specific population groups.³¹

iii) Interventions with only one study showing effectiveness have not been included in the Table.

5

Implementing Evidence-Based Approaches to Address Specific Barriers



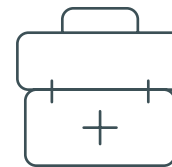
PATIENT COMMENTS

I think the FIT test is good because at least you can do it in the privacy of your own home.

As noted in Table 1, the barriers experienced by underscreened populations can be grouped as relating to:



Health care provider barriers: Lack of health care provider recommendation; Lack of regular health care provider.



Health system barriers: Difficulty accessing/navigating the health system; Low health literacy; Lack of culturally appropriate health promotion material; Language barriers; Non-receipt of test kit by mail (very remote areas).



Support and education barriers: Fear of cancer / misconceptions / negative attitude towards testing; Embarrassment / discomfort handling fecal samples; Dependency on family members.

Population groups also intersect, such that individuals belong to more than one population group. Thus, it may be helpful to consider approaches that are supported by evidence to address common barriers across underscreened populations.

Table 3 brings together what is known about barriers for underscreened groups (see Table 1) with evidence-based intervention approaches (see Table 2) that have been shown to be effective for underscreened groups. Interventions that are currently being implemented in jurisdictions across Canada are noted in the final column of the table.⁴⁴

Table 3. Type of barrier experienced by underscreened groups, and potential associated interventions

EVIDENCE-BASED INTERVENTION APPROACH	TYPE OF BARRIER EXPERIENCED BY UNDERSCREENED GROUPS			CURRENTLY IN PLACE IN CANADA (Reported in 2019-2020 e-scan)
	HEALTH CARE PROVIDER-RELATED	HEALTH CARE SYSTEM-RELATED	SUPPORT AND EDUCATION-RELATED	
Participant reminders	Letters from programs or health providers	Letters from programs or health providers		NU, SK, MB, ON, NB, NS, PE
Small media		Translated, culturally appropriate materials	Translated, culturally appropriate, and low-literacy materials	MB, NB, SK, YT
Reducing access barriers		Direct mailing of kits or requisitions, mobile clinics		SK, ON, BC, MB, NB
Provider reminder and recall	Use of electronic medical record reminders			AB, BC, ON, MB, YT
One-on-one education		Patient navigation, involvement of community workers	Peer health educators, involvement of community workers	MB, NB
Provider assessment and feedback	Education and training for providers			BC, ON
Group education		Education in community settings with translation available	Education in community settings with translation available	AB, MB, NB, ON, SK
Mass media				MB, ON, SK, YT
Participant incentives				
Reduce out-of-pocket costs for participants		Direct mailing of kits		YT, SK, MB, NB, NS, PE, NL
Provider incentives				ON

6

Recommendations



Health equity considerations must be brought into decisions about approaches to increasing colorectal cancer screening uptake. No single approach will be effective for all population groups. Rather, approaches should be co-created, tailored, and adapted with communities to address the specific needs of people in each province and territory in Canada.

Local-level data and community engagement can add to demographic and geographic characteristics to create a detailed profile of specific populations and to determine which interventions are most effective with specific groups.

Ideally, customized interventions will be fully integrated into organized population cancer screening programs.⁴²

Screening programs and cancer control agencies should consider these key findings of evidence-based interventions that increase uptake of colorectal cancer screening among underscreened populations:



The importance of health provider recommendation and improved health literacy² as facilitators of screening uptake;



The effectiveness of multicomponent interventions that combine strategies,³⁰ with patient navigation as a well-researched, effective strategy for diverse population groups, combining one-on-one education and reduction of access barriers;³¹



The single interventions with the most evidence for effectiveness across diverse populations: participant reminders, small media, reduced structural barriers, such as mailed kits, and one-on-one education.³¹ These interventions have also been effectively used as part of multicomponent approaches.

The Strategy³ identifies specific directions for respectful progress on equity-focused priorities.

More research is needed to understand the barriers, facilitators, and optimal approaches to increasing screening uptake among population groups that experience inequities,¹⁶ including **those with disabilities** and **chronic diseases, LGBTQ2S+, houseless** and **transient individuals**.

Effective approaches for increasing uptake of colorectal cancer screening among **First Nations, Inuit, and Métis** need to be grounded in reconciliation, and be both distinctions-based and First Nations, Inuit, and Métis-specific – additional collaborative exploration is recommended.

Specific guidance on implementation of optimal approaches will be a valuable future step to support jurisdictions in enhancing equity-focused interventions. Effective implementation will draw on community collaborations and will involve innovative solutions, such as the use of technology to provide electronic reminders for screening or providing patient and provider education via an interactive electronic platform.

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Appendix A. Members of the Program Pack Advisory Team

Program Pack Advisory Team

JURISDICTION	NAME	TITLE
ON	Dr. Aisha Lofters	Family Physician, Women’s College Hospital Family Practice Health Centre Associate Professor and Clinician Scientist, Department of Family and Community Medicine, University of Toronto Chair in Implementation Science, Peter Gilgan Centre for Women’s Cancers, Women’s College Hospital
MB	Laura Coulter	Screening Programs Lead, CancerCare Manitoba Screening Programs
AB	Barbara Moysey	Program Manager, Alberta Colorectal Cancer Screening Program (ACRCSP), Alberta Health Services
Pan-Canadian	Dr. Beverley Essue	Manager, Health Economics & Organizational Performance, Canadian Partnership Against Cancer

Appendix B. Canadian Partnership Against Cancer Team

NAME	TEAM
Dr. David Armstrong	Chair, National Colorectal Cancer Screening Network Professor, Division of Gastroenterology, McMaster University Medical Centre
Dr. Heather Bryant	Senior Scientific Lead, Population Health
Erika Nicholson	Director, Screening
Chris Politis	Manager, Screening
Nicolette Baines	Specialist, Screening
Zahra Sayyed	Analyst, Screening
Chandra Howlett	First Nations, Inuit and Métis Lead, Screening
Reitchell Mateo	Project Manager, Screening
Susete Pacheco	Coordinator, Screening
Sharon Fung	Manager, Analytics and Data Integration, Biostatistician
Natalie Fitzgerald	Director, Performance
Saima Memon	Analyst and Knowledge Mobilization Lead, Health Economics

Appendix C. Definitions

The definitions presented below originate from the applicable data source: Statistics Canada, Canadian Community Health Survey (CCHS), or other sources. When possible, the Program Pack uses person-centred terminology, while still employing the original terms when describing data from these sources.

EQUITY:

Equity – Equity is the practice of ensuring fair, inclusive and respectful treatment of all people, with consideration of individual and group diversities. Access to services, supports and opportunities and attaining economic, political and social fairness cannot be achieved by treating individuals in exactly the same way. Equity honours and accommodates the specific needs of individuals/groups.^{iv}

GEOGRAPHIC REGIONS:^v

Urban – Census metropolitan areas (CMAs) and census agglomerations (CAs)^{vi} with a core population of 10,000 or more.

- **Census metropolitan areas (CMAs)** have a total population of at least 100,000 of which 50,000 or more must live in the core.
- **Census Agglomerations (CAs)** have a core population of at least 10,000.

Rural – Census subdivision outside CMA/CA with population of less than 10,000 and at least 30% of the employed labour force commutes to work in any urban areas.

Rural-Remote – Census subdivision outside CMA/CA areas with population of less than 10,000 and at least 5% of the employed labour force commutes to work in any urban areas.

Rural / Very Remote – Census subdivision outside CMA/CA areas with populations of less than 10,000 and more than 0 and less than 5% of the employed labour force commutes to work in any urban areas. Non-urban parts of the territories are also included in this category.

iv) <https://www.the519.org/education-training/glossary>

v) <https://www150.statcan.gc.ca/n1/pub/21-006-x/2008002/def-eng.htm>

vi) <https://www150.statcan.gc.ca/n1/pub/92-195-x/2011001/geo/cma-rmr/def-eng.htm>

Appendix C. Definitions

MINORITY AND IMMIGRANT GROUPS:

Ethnic origin – Defined by Statistics Canada as the ethnic or cultural groups to which an individual’s ancestors belonged.^{vii}

Visible minorities – Defined by Statistics Canada as persons, other than Indigenous peoples, who are non-Caucasian in race or non-white in colour.^{viii}

Immigrant – Defined by CCHS as a person who is, or who has ever been, a landed immigrant or permanent resident. Immigrants who have obtained Canadian citizenship by naturalization are included in this group.^{ix}

Immigrant status – As defined by CCHS, immigrant status is reported using three categories: Canadian-born; length of time in Canada since immigration less than 10 years; length of time in Canada since immigration 10 years or more.

Immigrant density – As defined by CCHS, using a neighbourhood-level approach, immigrant density is measured as the percentage of immigrant and non-permanent residents living in a dissemination area, divided by the area’s total population.

INCOME AND SOCIOECONOMIC STATUS:

Income – Income is measured based on earnings, including from government sources such as social assistance, child benefits, employment insurance and pensions.^x

Income quintile – Canadians are grouped in one of five income levels – or quintiles – based on either household or neighbourhood income. The lowest income quintile represents the one-fifth of households with the lowest income, while the highest income quintile comprises the one-fifth of households with the highest income.^{xi}

Low Income Threshold – Defined by CCHS as the adjusted ratio of total household income to the low-income cut-off corresponding to a respondent’s household and community size. It provides, for each respondent, a relative measure of household income to the household income of all other respondents.^{xii}

vii) <https://www23.statcan.gc.ca/imdb/p3Var.pl?Function=DEC&Id=103475>

viii) <https://www23.statcan.gc.ca/imdb/p3Var.pl?Function=DEC&Id=45152>

ix) <https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=assembleDESURV&DECID=302556&RepClass=591&Id=329241&DFID=180541>

x) <https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=assembleDESURV&DECID=252475&RepClass=591&Id=329241&DFID=180541>

xi) <https://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=433496>

xii) <https://www150.statcan.gc.ca/t1/tbl/en/tv.action?pid=1110024101>

Appendix C. Definitions

DISABILITY:

Disabilities are physical, mental, intellectual, or sensory impairments which, in interaction with various barriers, may hinder an individual's full and effective participation in society on an equal basis with others. Disability reflects the interaction between a person's body and mind, and the society in which they live. It can occur at any time; be permanent, temporary, or episodic; and has a wide variety of causes, effects, and trajectory.^{xiii}

xiii) https://www.canada.ca/content/dam/esdc-edsc/migration/documents/eng/disability/arc/reference_guide.pdf

xiv) <https://www.cancer.gov/publications/dictionaries/cancer-terms/def/fobt>

xv) <https://www.partnershipagainstcancer.ca/topics/colorectal-cancer-screening-quality-indicators-2017/>

xvi) <https://www.partnershipagainstcancer.ca/topics/colorectal-cancer-screening-quality-indicators-2017/>

SCREENING:

Organized colorectal cancer screening programs – Provincial/Territorial Programs are available in Canada to individuals who are asymptomatic (no signs or symptoms of colorectal cancer present) and at average risk for colorectal cancer. Organized colorectal cancer screening programs administer recruitment, reminder, and promotional strategies to invite eligible individuals to screen as per guidelines.

Fecal test – A test that checks for occult (hidden) blood in the stool. A small sample of stool is placed in a special collection tube or on a special card and sent to a doctor or laboratory for testing. Blood in the stool may be a sign of colorectal cancer or other problems, such as polyps, ulcers, or hemorrhoids. FIT and Guaiac FOBT are two types of fecal tests (see definitions below).^{xiv}

- **Fecal immunochemical test (FIT)** – A fecal test that uses an antibody to check for blood in the stool.
- **Guaiac fecal occult blood test (gFOBT)** – A fecal test that uses a chemical substance called guaiac to check for blood in the stool.

Participation rate – The percentage of the eligible population who successfully completed a fecal test in an organized cancer screening program within a two-year period.^{xv}

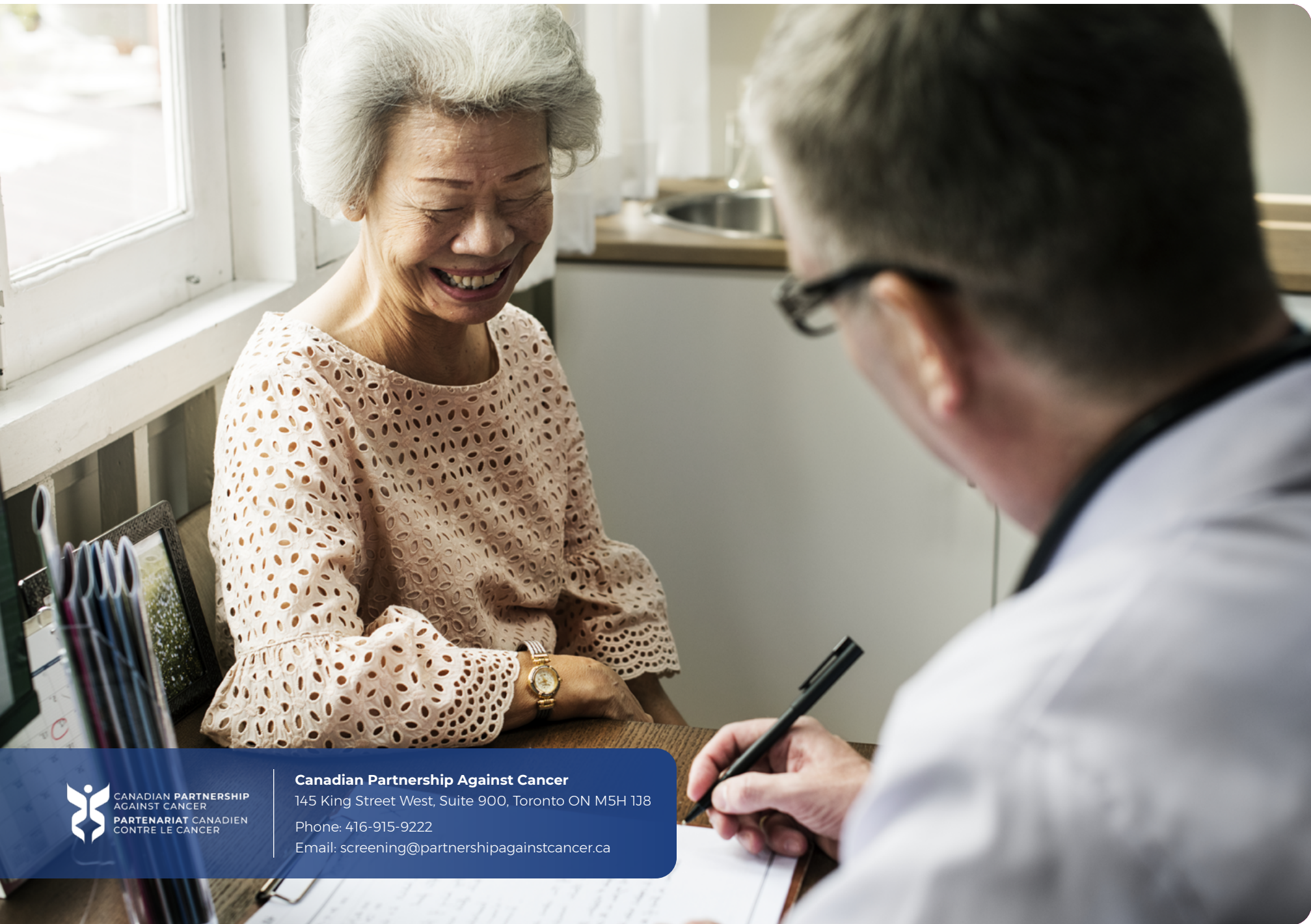
Up-to-dateness – Individuals are considered up to date for colorectal cancer screening when they have completed a fecal test within the past two years, a sigmoidoscopy within the past 10 years, and/or a colonoscopy within the past 10 years.^{xvi}

Usual care – When measuring the effectiveness of an intervention, studies often compare the results for people who do not receive the intervention to results for people who don't receive the intervention but still have their usual care. Examples of "usual care" among the studies cited (two) include: "no intervention", "no mailings", and "opportunistic, clinic visit-based offers to complete CRC screening."

Appendix D. Interventions shown to improve colorectal cancer screening across populations

Legend: Highlighted cells indicate interventions with strong or considerable evidence and sufficient or some evidence .

	General population (CPSTF) ²⁸	Low-income ³¹	Visible and minority populations ³¹	Rural/Remote ³¹	Currently in place in Canada ⁴⁶
Participant reminders	Strong	Via electronic system to identify under-screened Via letter, in-person or telephone reminder With translation available	Via letter, in-person or telephone reminder With translation available	Via electronic system to identify under-screened Via letter or telephone reminder	MB, NU, ON
Small media	Strong	Brochures/handouts, videos Culturally appropriate messaging Translated media	Brochures/handouts, videos Culturally appropriate messaging Translated media	Brochures/handouts, videos Culturally appropriate messaging Translated media	MB, NB, SK, YT
Reduce access barriers	Strong	Reducing access barriers through: self-sampling; Reduced administration; Translation	Reducing access barriers through: self-sampling; Reduced administration; Translation	Reducing access barriers through: self-sampling; Reduced administration; Translation	BC, MB, NB, ON, SK
Provider reminder and recall	Strong	Using an electronic system	Using an electronic system (evidence for visible minority populations only)	Using an electronic system	AB, BC, ON, MB, YT
One-on-one education	Sufficient	Provided by a nurse, patient navigator or lay health educator In one or more sessions With translation available Held in clinics or participant homes	Provided by a nurse, patient navigator or lay health educator In one or more sessions With translation available Held in clinics or participant homes	Provided by a nurse, patient navigator or lay health educator In one session Held in clinics	MB, NB
Provider assessment and feedback	Sufficient	Education / teaching sessions		Education / teaching sessions	BC, ON
Group education	Insufficient	Held in one or more sessions In a community organization or participant homes With translation available	Held in one or more sessions With translation available Success is more likely in community settings than participants' homes	Education / teaching sessions	AB, MB, NB, ON, SK
Mass media	Insufficient				MB, ON, SK, YT
Participant incentives	Insufficient				
Reduce out-of-pocket costs for participants	Insufficient	Mailed kit / self-sampling		Mailed kit / self-sampling	NB
Provider incentives	Insufficient				ON



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