

Cancer screening in Canada

What's in, what's out, what's coming

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Family physicians are routinely asked to carry out cancer screening tests not in keeping with current guidelines or existing organized screening programs. It can be challenging for primary care providers to choose wisely and follow guidelines while also promoting patient-centred care. In these instances, an informed and shared decision approach between patients and physicians is essential. The Canadian Task Force on Preventive Health Care (CTFPHC) provides cancer screening guidelines and helpful resources for both patients and providers to aid in the cancer screening decision-making process (<https://canadiantaskforce.ca>). This article summarizes current CTFPHC guidelines for cancer screening of prostate, lung, colorectal, cervical, ovarian, and breast cancers, and offers clinical pearls for practice.

Prostate cancer screening

Prostate cancer is the most commonly diagnosed cancer and the second leading cause of cancer death in men.¹ A steady decrease in prostate cancer mortality rates has been noted in the past decade.² Considerable debate remains regarding the benefits of screening for prostate cancer using prostate-specific antigen (PSA) testing.³

What is recommended

- In men younger than 55 years of age, PSA testing is not recommended (strong recommendation, low-quality evidence).⁴
- In men aged 55 to 69 years, PSA testing is not recommended (weak recommendation, moderate-quality evidence).⁴
- In men 70 years of age and older, PSA testing is not recommended (strong recommendation, low-quality evidence).⁴

Clinical pearl. The use of PSA for screening is associated with the potential for false-positive results and overdiagnosis, leading to possible harms from biopsy or treatment: bleeding, infection, urinary incontinence, and erectile dysfunction.⁴ Resources such as Dr Mike Evans' PSA screening video are helpful in guiding discussions with patients (<https://www.youtube.com/watch?v=bTgS0DuhaUU>).⁵

Lung cancer screening

Lung cancer remains the most frequently diagnosed cancer and principal cause of cancer death in Canada.¹ Increasing evidence supports lung cancer screening using

low-dose computed tomography (LDCT), as it detects earlier-stage lung cancers, therefore statistically significantly reducing mortality.⁶ Provincial pilot studies are under way and will inform future organized lung cancer screening program implementation across Canada.^{7,8}

What is recommended

- Annual screening with LDCT is recommended up to 3 consecutive times for adults aged 55 to 74 years with at least a 30 pack-year smoking history, who currently smoke or quit fewer than 15 years ago (weak recommendation, low-quality evidence).⁹
- Screening with LDCT should only be performed in settings where early screening and treatment expertise are readily available.⁹
- Chest x-ray scan, with or without cytology screening, is not recommended for lung cancer screening (strong recommendation, low-quality evidence).⁹

Clinical pearl. Approximately 86% of lung cancers can be prevented and, of these, 70% are due to tobacco smoke.¹⁰ Primary care providers have a critical role to play in terms of prevention and must never underestimate the value of promoting tobacco smoking abstinence and providing cessation support and resources to patients.

Colorectal cancer screening

Colorectal cancer (CRC) is the third most diagnosed cancer in Canada.¹ Recent declines in CRC mortality rates are partially owing to increased screening, allowing for detection of more treatable earlier-stage disease and precancerous polyps.¹ Among high-risk patients including those with a personal history of known genetic mutation,¹¹ inflammatory bowel disease,¹² or a first-degree relative with CRC,¹³ screening colonoscopy remains the criterion standard investigation for detecting cancer and high-risk precancerous adenomas. In asymptomatic average-risk patients, diagnostic colonoscopy following positive stool-based test results (fecal occult blood tests, fecal immunochemical tests) has shown high-yield pathology results.¹⁴ Current evidence supports the use of stool-based tests as a safe, convenient, and effective CRC screening method among average-risk adults.¹⁵

What is recommended

- For average-risk adults aged 50 to 74 years, screening with fecal occult blood testing or fecal immunochemical testing is recommended every 2 years or flexible sigmoidoscopy every 10 years (50 to 59 years: weak

recommendation, moderate-quality evidence; 60 to 74 years: strong recommendation, moderate-quality evidence).¹⁵

- Screening of adults aged 75 years or older is not recommended (weak recommendation, low-quality evidence).¹⁵

Clinical pearl. Results from several randomized controlled trials are expected during the next decade.^{16,17} Currently, there is a lack of evidence from randomized controlled trials demonstrating the safety and superiority of colonoscopy compared with stool-based testing for CRC screening in average-risk asymptomatic individuals.^{16,17} Colonoscopy should be reserved for high-risk adults: it is recommended that individuals who have at least 1 first-degree relative with CRC or an advanced adenoma diagnosed at any age undergo colonoscopy every 5 to 10 years starting at 40 to 50 years of age, or 10 years before the age at diagnosis of the first-degree relative.¹³

Cervical cancer screening

Cervical cancer is one of the most preventable and treatable cancers. The advent of screening using the Papanicolaou test has led to dramatic declines in Canadian cervical cancer incidence and mortality,¹⁸ which is currently estimated at 1350 new cases and 410 deaths per year.¹ The World Health Organization is currently leading a global effort aiming to eradicate this cancer by 2040. This includes a comprehensive human papillomavirus (HPV) vaccination and primary HPV screening strategy.¹⁹ Based on an abundance of RCT evidence,²⁰ during the next decade there will likely be a transition to primary HPV screening in most provinces across Canada.²¹ Moreover, the outcomes of comprehensive HPV vaccination on initial cohorts now reaching cervical screening age are expected to soon emerge, which will further inform future cervical cancer screening practices.

What is recommended

- Pap test screening remains the standard of care and is recommended every 3 years for asymptomatic women who are or who have been sexually active aged 25 to 69 years (25 to 29 years: weak recommendation, moderate-quality evidence; 30 to 69 years: strong recommendation, high-quality evidence).²²
- For women 70 years of age and older, if adequate screening has been performed (ie, 3 successive negative Pap test results in the past 10 years), screening can cease (weak recommendation, low-quality evidence).²²

Clinical pearl. Most provincial programs offer organized HPV vaccination programs. Primary care providers play a key role in cervical cancer prevention and screening through patient education and Pap testing. A shift from Pap tests to HPV testing can likely be anticipated in the next decade.

Ovarian cancer screening

To date, ovarian cancer survival rates remain poor.¹ It is estimated 3100 Canadian women will receive an ovarian cancer diagnosis in 2020: among these, nearly 2000 deaths are expected.^{1,23} Currently, there are no organized ovarian cancer screening programs, and early detection procedures remain limited.²⁴ The CTFPHC guidelines report an absence of evidence to support the effects of screening on mortality.²⁵ The US Preventive Services Task Force's 2018 updated evidence report and systematic review further indicated no difference in ovarian cancer mortality among screened versus unscreened average-risk asymptomatic women.²⁶

What is recommended

- Screening of asymptomatic women using transvaginal ultrasound or cancer antigen 125 is not recommended (high screening harms compared with any small potential benefit).²⁵

Clinical pearl. Despite current evidence against ovarian cancer screening in asymptomatic women, clinical vigilance is of utmost importance. Ovarian cancer symptoms can be ill defined and might include bloating, early satiety or loss of appetite, and abdominal or pelvic discomfort, rendering it difficult to diagnose. The onset of new symptoms warrants further assessment and close monitoring.

Breast cancer screening

Approximately 1 in 8 women will develop breast cancer, and an estimated 1 in 33 will die from this disease.²⁷ Average risk of breast cancer is defined as no personal history of breast cancer, no first-degree relative family history of breast cancer, no known mutations in the *BRCA1* and *BRCA2* genes, and no previous exposure to radiation of the chest wall.²⁸ The CTFPHC's updated guidelines focus on shared decision making, as recommendations are conditional on a patient's relative value of potential harms and benefits of screening.²⁸

What is recommended

- In women aged 40 to 49 years, mammography is not recommended (conditional recommendation, low-certainty evidence).²⁸
- In women aged 50 to 74 years, mammography every 2 to 3 years is recommended (conditional recommendation, very low-certainty evidence).²⁸
- Magnetic resonance imaging, computed tomography, and ultrasound scans are not recommended for screening (strong recommendation, no evidence).²⁸

Clinical pearl. False-positive results lead to negative physical and psychosocial outcomes in women.²⁸ Given current low-certainty evidence and differences in patient preferences, patient education and engagement in shared decision making are imperative.

Conclusion

Primary care providers play an essential role in preventive medicine and have a critical part in the early detection of cancer. This article briefly summarizes new developments in cancer screening and in screening outside organized programs to allow family physicians to engage in better-informed discussions with their patients.

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Competing interests

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