

Cancer among males in BC and Canada

Gender differences in cancer incidence and mortality rates can be attributed in part to modifiable risk factors—smoking, alcohol consumption, and occupational exposure to carcinogens—that more commonly affect men than women, and to fewer screening opportunities for men.

ABSTRACT: In 2006, males in BC had an age-standardized incidence rate for all cancers combined that was nearly 30% higher than the rate for females. Men also had an age-standardized cancer mortality rate that was about 33% higher than the rate for women. Types of cancer common to both sexes have higher incidence and mortality rates for men than for women in virtually every part of the world. Much of the gender disparity is due to modifiable risk factors, such as smoking, alcohol consumption, and occupational exposure to carcinogens, which more commonly affect males than females. Differences in health-related behavior between males and females, such as willingness to seek medical consultations for symptoms, may play a part in mortality differences as well. Males also have historically not participated to the same degree as women in cancer screening programs. This is partly because organized screening programs (mammography, Pap testing) have been directed toward cancers

occurring in women. However, a new pilot program aimed at developing province-wide screening for colorectal cancer (Colon Check) should offer opportunities for men to get involved in routine screening for cancer. Informal screening for prostate cancer in asymptomatic men using prostate-specific antigen testing has been under way for some time now, but an organized provincial program has not been put in place because of a lack of evidence that such programs reduce disease-specific mortality. Recent results from randomized trials in Europe, however, suggest that provincial screening should be reconsidered, especially since screening can provide further opportunities for dialogue between patients and physicians. This type of communication and collaboration between men and their caregivers across multiple specialties is being actively promoted by the Men's Health Initiative of BC in an effort to make an impact on rates of cancer and other chronic diseases.

Major differences in cancer incidence and mortality are seen between males and females, with male rates being higher for all cancers combined and for most cancers common to both genders. Some cancer types, such as oral cancers and colorectal cancer, occur more commonly or cause greater mortality in males than in females. A number of the factors identified as possible causes for the elevated risks seen in men are modifiable and could be targets for interventions by public health bodies or individual physicians. Screening

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opportunities for men might also be expanded. Until recently, provincial organized screening programs have focused exclusively on female cancer types (breast and cervix). However, a proposed BC screening program for colorectal cancer (Colon Check) is undergoing pilot testing, and such screening should soon be available to males as well as females across the province. Screening for prostate cancer using prostate-specific antigen (PSA) testing has not been supported financially by provincial governments in Canada because evidence from randomized trials has not shown a reduction in disease-specific mortality for such screening. However, the results of several European trials reported in the past 3 years suggest province-wide screening might be reconsidered.

Cancer incidence and mortality

When looking at the age-standardized incidence rate for all cancers combined, British Columbia males have a substantially higher rate than females (417/100 000 vs 323/100 000), according to 2006 statistics. This difference of nearly 30% in male-female incidence rates is seen across Canada¹ and holds for virtually all states, provinces, and countries where reliable incidence figures are collected.² For the province of BC, the overall age-standardized mortality rate for all cancers combined is also higher in males than in females (175/100 000 vs 131/100 000), with a 33% difference. Similar gender differences in mortality are seen across Canada. These statistics are not new—the same patterns have persisted for more than 50 years in Canada and other countries.¹ Gender-based disparities are also seen for individual malignancies, including oral neoplasms, as well as cancers of the liver, lung, colon and rectum, skin, bladder, and kidney.

Oral cancers

Age-standardized incidence and mortality rates for oral neoplasms, including cancers of the lip, tongue, mouth, and pharynx, were significantly higher in Canadian males than females in 2006, the last year for which national data are available,¹ and the same pattern holds within BC. Oral cancers are known to be strongly related to both smoking and alcohol consumption, with a synergistic effect on risk when both factors are present.³ Smoking rates and alcohol consumption in Canada have historically been higher among males, explaining much of the gender-related differences in incidence. There are some indications that poor diet, particularly a reduced consumption of fruit and vegetables, may also play a part in increasing oral cancer risk. As smokers have a reduced intake of vegetables and fruit when compared with nonsmokers,⁴ it is likely that both behavioral and dietary factors together contribute to the male-female disparity in oral cancer incidence. Data from the US do not indicate a difference in stage at diagnosis between women and men, suggesting that a delay in seeking treatment is unlikely to have contributed to the mortality difference.⁵

Colorectal cancer

Actual incidence rates for colorectal cancer across Canada as a whole in 2006 showed a rate nearly 50% higher in males than in females (61/100 000 vs 41/100 000), although this difference was less pronounced in British Columbia (53/100 000 vs 37/100 000).¹ Incidence rates among females and mortality rates for both sexes have been dropping slowly over the past 25 years, although the decline in mortality appears to be somewhat more pronounced among females.¹

Reasons for male-female differences in incidence of colorectal can-

cer are likely not all accounted for, and more research is needed. However, dietary factors, including consumption of alcohol⁶ and red or processed meat,⁷ appear to increase risk of colorectal cancer, as does a low level of physical activity, particularly among those who are already obese.⁸ With the possible exception of physical activity, all the risk factors noted are more common in males, accounting for at least some of the disparity.

Liver cancer

Although liver cancer rates (mostly hepatocellular carcinoma) are low in British Columbia, they are rising as the ethnic composition of the population changes with immigration. The 2006 incidence rate for males in BC is proportionally much higher than that for females (6/100 000 vs 2/100 000).¹ Risk factors for liver cancer include previous hepatitis B⁹ and hepatitis C infection,¹⁰ both of which are more common in males. There is still some question about whether alcohol has a significant effect in the presence of chronic hepatitis B infection, although the effect of HBV may simply be so strong that it is not possible to separate out the independent effect of alcohol consumption. A true positive relationship between alcohol consumption and liver cancer is seen in populations in which hepatitis C is common,¹¹ and these factors appear to act synergistically. The relationship of liver cancer with smoking is unclear because of conflicting trial results,¹¹ but the weight of evidence suggests that there is at least a modest positive association, particularly in those with hepatitis C.¹¹

Lung cancer

Across Canada, higher male than female lung cancer incidence rates are seen (66/100 000 vs 48/100 000),¹ and gender comparisons in each province

reflect the country-wide differences. The gender disparity is greatest in Newfoundland and Quebec, and lowest in BC (50/100 000 vs 48/100 000).¹ Smoking rates in males remain higher than rates in females in Canada.¹² Peto and colleagues¹³ have estimated that the cumulative risk of death to age 75 for smokers is 16%, and the higher rate of smoking in males drives much of the gender difference. In addition, men are more likely than women to be exposed to occupational carcinogens such as asbestos, cadmium, nickel, and chromium,¹⁴ which are known to increase the risk of lung cancer.

As noted earlier, epidemiological evidence has also shown that smokers are likely to have less-healthy dietary intake patterns than nonsmokers,¹⁵ and since a diet low in vegetables appears to increase risk, and as there are more male than female smokers, this will accentuate the gender disparity.

Melanoma and nonmelanocytic skin cancers

Although the incidence of malignant melanoma in Canada and BC is relatively low, age-standardized rates are somewhat higher in males than females for 2006 (15/100 000 vs 12/100 000).¹ The overall difference is relatively small, but incidence disparities by gender increase at ages 60 to 79 and beyond 80, and older men also suffer significantly higher mortality from this disease. The excess incidence in males is due in part to their greater recreational and cumulative lifetime sun exposure and lower use of sun protection outdoors. Men also perform skin self-examination infrequently, and are apt to be less observant of changes in pigmented lesions on their bodies than females,¹⁶ likely contributing to their elevated mortality.

Although increases in non-melanocytic skin cancers have recently been seen in young women, males

have a much higher lifetime risk of both cutaneous basal and squamous cell carcinoma than females,¹⁷ due again to higher levels of recreational and occupational sun exposure.^{18,19} Most of these cancers are not life threatening, but their treatment represents a significant cost to the health system.

Bladder and renal cancers

Incidence and mortality rates for bladder and renal cancers are higher in men in BC and Canada than in women.¹ A number of risk factors for bladder cancer are similar to those for lung cancer and are more likely to affect men, including cigarette smoking and occupational exposure to carcinogens. Common carcinogens are aromatic amines,²⁰ such as 2-naphthylamine used in rubber work,²¹ and coal-tar pitch volatiles used in aluminum pot room work.²²

Risk factors for renal cancer that might help explain the gender discrepancy include smoking²³ and being overweight or obese. The proportion of Canadians who are obese is roughly the same in males and females; however, being overweight is more common in males.²⁴ More etiologic work is needed to account for gender discrepancies in both of these cancers.

What can BC physicians do?

A number of common factors appear to put men at higher risk of cancer than women, and present an opportunity for physicians to tailor counseling and public health messages to male patients.

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Tobacco use

One of the strongest factors influencing a patient's decision to stop smoking is a physician's advice, and patients influenced by physician advice are less likely to relapse.²⁵ Since physicians who are trained and confident in patient counseling can improve their success rates in persuading patients to stop smoking,²⁶ this seems to be an important public health educational opportunity to be addressed by medical schools and continuing medical education programs.

Alcohol consumption

Alcohol consumption is less strongly related to cancers than smoking, but has been found to be associated with oral neoplasms, colorectal cancer, liver cancer, and likely bladder and renal cancer. As men generally tend to consume significantly higher amounts of alcohol than women,²⁷ population-

level public health interventions and perhaps one-on-one counseling sessions with physicians present good opportunities for reducing male consumption.

Diet, obesity, and physical activity

There is abundant, though sometimes conflicting, evidence that diet plays a role in many cancers, including esophageal and oral cancer (alcohol) and colorectal cancer (red and processed meats). An authoritative review of the evidence by the American Institute of Cancer Research (AICR) finds obesity and weight gain to be convincingly implicated in esophageal, pancreatic, colorectal, and prostate cancer, and a sedentary pattern of living associated with colon, lung, and pancreatic cancers in males.²⁸ The major public health recommendations coming from these findings are:

- Be as lean as possible within the normal (WHO) range of body weight.
- Be physically active as part of daily life.
- Limit consumption of energy-dense foods and avoid sugary drinks.
- Eat mostly foods of plant origin. Limit intake of red meat and avoid processed meats.
- Limit alcoholic drinks.
- Limit consumption of salt.
- Aim to meet nutritional needs through diet alone.

The AICR monograph also proposes a series of recommendations for individuals²⁸ that physicians may wish to evaluate as counseling points for use with their patients.

Cancer screening opportunities for males

Historically, the two major cancer screening programs related to female malignancies, breast and cervix, have been successful in reducing mortality. Opportunities for reducing male mor-

tality from colorectal and prostate cancer through screening need to be explored.

Colorectal cancer screening

There is substantial and convincing evidence from randomized clinical trials that screening asymptomatic individuals for colorectal cancer will reduce disease-specific mortality.²⁹ Screening for colon cancer and rectal cancer using a fecal occult blood test followed by colonoscopy has been conducted informally by many, but not all, physicians. In British Columbia a provincially organized screening program called Colon Check is undergoing pilot testing in three communities, with the hope of expansion throughout the province in future. Recent Canadian research demonstrated that high-sensitivity occult blood testing annually using a fecal immunochemical test, or colonoscopy every 10 years, offers the best cost-benefit in Canada.³⁰ Until a province-wide application of Colon Check is available, however, physicians should encourage asymptomatic males (and females) age 50 to 74 to utilize currently available fecal occult blood test screening, with close medical follow-up of those with positive results.

Prostate cancer screening using PSA

Prostate cancer screening is more controversial than colorectal screening. The prostate-specific antigen (PSA) test is a very useful tool for following prostate cancer patients' response to treatment, but in asymptomatic men PSA screening has been thought to lead to overdiagnosis and treatment of low-risk cancers. Until recently there was a lack of evidence that such screening reduced disease-specific mortality. Recent randomized trials in Europe that used an intent-to-treat analysis showed a 20%³¹ and a 44%³² relative

reduction in prostate cancer deaths among those offered screening compared with those who were not. The ERSPC study found that 1410 men would need to be screened and 48 additional cases of cancer would need to be treated to prevent one death from prostate cancer, but in the Göteborg study, with longer follow-up, these numbers dropped to only 273 and 12. The Göteborg trial³³ estimated that among men invited for PSA screening, more would become impotent (120/10 000) and more would need incontinence pads (25/10 000) compared with men not invited for PSA screening.

The US National Cancer Institute's trial called the Prostate Lung Colorectal and Ovarian (PLCO) Cancer Screening Trial found no difference in prostate cancer deaths at 7 to 10 years of follow-up when comparing screened and unscreened men.³⁴

The current BC Cancer Agency recommendations regarding screening indicate that the decision to use PSA testing should be individualized, that patients should be made aware of potential risks and benefits before testing,³⁵ and that physicians may wish to discuss testing with all their asymptomatic patients age 50 and older. The BC Cancer Agency also recommends that physicians consult the American Cancer Society guideline about the early detection of prostate cancer for a clear statement of the risks and benefits of PSA testing.³⁶

Need for male involvement

Several modifiable risk factors are associated with the increased incidence of cancers among BC males. Some of these might be positively influenced by government policy directed at increasing physical activity and by male-friendly public health campaigns and promotions. However, for the most part, changing many risk

factors requires active involvement of men themselves, which has been shown to be a challenge. Thus, physicians should be aware that counseling and providing quality educational resources during office visits may be key to behavior modifications involving diet, exercise, and smoking. Screening for colorectal cancer and perhaps for prostate cancer also presents the opportunity for dialogue between patients and their physicians, which in turn may improve communication on a host of other non-cancer-related health issues.

The Men's Health Initiative of BC is dedicated to improving communication and collaboration between men and their caregivers across multiple specialties. One of the potential benefits will be the collation of existing educational information, and development of new physician and patient materials (printed, digital, and audio-visual) to inform men of their disease risks, and how to modify these risks. The materials will also help guide and facilitate physician-patient discussion on whether to request a screening test. Standards of care will be distributed as widely as possible on many issues in men's and boys' health. Educational opportunities arising through public forums and continuing medical education events will enhance the understanding of male health issues in professional and public domains. Such partnerships across our province can be expected to make a substantial impact over time on rates of cancer and other chronic diseases.

Competing interests

None declared.

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