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A model of cancer prevention in British Columbia: The Breast Cancer Prevention and Risk Assessment Clinic

The Breast Cancer Prevention and Risk Assessment Clinic will provide risk assessments and counsel women on strategies for reducing their risks. The clinic will use two validated breast cancer risk assessment tools as well as evidence-based lifestyle counseling regarding physical activity, weight management, and nutrition.

ABSTRACT: Approximately 1 in 9 Canadian women will develop breast cancer at some time in life, while 1 in 29 can be expected to die from the disease. These figures mean that 2800 women will have been diagnosed with breast cancer in British Columbia in 2011, and 600 women will have died from the disease. Estimates suggest that as many as 40% of breast cancers can be prevented by modifying lifestyle risk factors, yet there has been little systematic focus within the health care system on achieving this benefit. A new clinic aims to lower risk rates for women who are at an increased, nongenetic risk of breast cancer. The Breast Cancer Prevention and Risk Assessment Clinic will do this by providing objective risk assessments and evidence-based counseling to promote lifestyle changes, as well as by providing preventive pharmacological options for appropriate candidates.

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Cancer has now surpassed cardiovascular disease as the leading cause of death in Canada, and accounts for 29.6% of Canadian deaths.[1] As the most common invasive female cancer in Canada, breast cancer represents a significant burden for women and society. Approximately 1 in 9 Canadian women will develop breast cancer at some time in life, while 1 in 29 can be expected to die from the disease. In 2011, 23 400 new breast cancers diagnoses were expected for Canada, accounting for 28% of all new cancers diagnosed in Canadian women. In addition, an estimated 5100 Canadian women will have died from breast cancer in 2011.[1] In British Columbia, these figures mean 2800 women will have been diagnosed with breast cancer, and 600 will have died from the disease.[2] If age-standardized incidence rates remain constant, the annual incidence may increase to more than 4223 by the year 2025, driven by population growth and aging. This could represent a 69% increase in new breast cancer cases over the 3054 diagnosed in 2010.[2]

Breast cancer prevention

While there have been positive developments in breast cancer control, including reduced mortality rates due to earlier diagnosis and treatment advances, this disease continues to place an enormous burden on women and society across Canada, and calls for an evidence-based prevention effort.

Research indicates that a large proportion of breast cancer is potentially preventable. Breast cancer genes, such as BRCA1 and BRCA2, confer considerable increased nonmodifiable risk. However, these mutations account for

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only 5% to 10% of all breast cancers. Other factors, including sociodemographics (e.g., higher income), reproductive history (e.g., parity, older age at first birth), and personal health history (e.g., exposure to ionizing radiation, the use of combined hormone replacement therapy), are also linked to increased breast cancer risk. Some of these modifiable factors are unlikely to be the target of public health interventions (e.g., age at first birth).

However, convincing epidemiological evidence also points to several more readily modifiable lifestyle risk factors that may account for considerable numbers of breast cancers. Specifically, the World Cancer Research Fund states that 38% to 42% of breast cancers in developed countries are caused by obesity, physical inactivity, and/or alcoholic beverage consumption. In fact, obesity may become the biggest attributable cause of cancer in women in the next decade.[3]

Despite the potential benefit of modifying risk factors, this information about breast cancer prevention remains unknown to many women. In addition, a large body of research has demonstrated that women's perceptions of their breast cancer risk do not reflect their actual risk. A BC-based study of 761 women found that women's ratings of their own breast cancer risk were, on average, 19% higher than their objective risk calculated by a standard risk assessment tool using the Gail model.[4] A study based on a large sample of 1700 women expanded on this finding when it showed that women at average objective risk overestimated their risk, whereas women at high risk underestimated their risk.[5] Given that a recent meta-analysis[6] showed women's acceptance of chemotherapy for breast cancer prevention depended on an accurate perception of their risk, women need to be provided with accurate risk information. This important information, as well as counseling regarding approaches to reduce risk, is not systematically incorporated in medical care on a wide-scale basis.[7,8]

Breast Cancer Prevention and Risk Assessment Clinic

The Breast Cancer Prevention and Risk Assessment Clinic demonstration project will provide risk assessments and counsel women on strategies for reducing their risks. The clinic will use two validated breast cancer risk assessment tools as well as evidence-based lifestyle counseling regarding physical activity, weight management, and nutrition. Participants will be referred to community resources, and selected participants will be offered options for evidence-based chemoprevention.

Organization and structure

The clinic is supported by 2 years of funding through a grant from the Canadian Breast Cancer Foundation, BC/Yukon, to the University of British Columbia (Carolyn Gotay, principal investigator). The clinic is located at BC Women's Hospital and Health Centre in Vancouver. The phone number is 604 822-9548 and the clinic website is http://breastcancerprevention.med.ubc.ca. The clinic is staffed by a medical oncologist specializing in breast cancer (medical director Dr Joseph Ragaz), a lifestyle counselor/health educator (Tracey Mager), an evaluation leader (Bonnie McCoy), and an administrator (Marliese Dawson). A multidisciplinary advisory board consisting of leading breast cancer and breast cancer prevention experts in BC, including representatives from the BC Cancer Agency Research Centre, the UBC surgical department specializing in breast cancer, the InspireHealth Integrative Cancer Care Centre, and community organizations, has been advising on the development of the clinic and will review its ongoing development.

Populations to be served

The clinic will focus on women at increased risk of breast cancer who do not meet the criteria for increased genetic risk required for referral to the Hereditary Cancer Program at the BC Cancer Agency. Participants at increased risk will be identified based on biological or lifestyle criteria: histology (e.g., atypical ductal and lobular hyperplasia); family history (at increased risk but not eligible for the Hereditary Cancer Program); mammography findings (e.g., noncancer abnormality or high breast density); lifestyle indicators (e.g., obesity); and/or self-perception. The intervention strategies will evolve over time, based on emerging research results, as well as the interest and participation of the medical community and public.

Clinic activities

While women may self-refer to the clinic, information from a surgeon, mammography screening program physician, or primary care physician will be required before an appointment is made. Information needed includes mammography and ultrasound reports; biopsy results (open, core, fine needle); breast surgery reports; and any pertinent health information. When a woman arrives at the clinic, she will complete a survey asking questions about her medical history and medication use; lifestyle habits, including physical activity, nutrition and weight management, and smoking and alcohol use; use of hormone replacement therapy; environmental exposures; and perceived risk of breast cancer. She will also use two self-assessment tools: the Breast Cancer Risk Assessment Tool (Gail model) and the Harvard Disease Risk Index.

The Gail model was developed by the National Cancer Institute and the National Surgical Adjuvant Breast and Bowel Project as a breast cancer risk assessment tool for health care providers. It calculates a woman's risk of developing breast cancer within the next 5 years and over her lifetime (up to age 90), and is based on current age, age at menarche, age at first birth, family history of breast cancer (mother, sister, or daughter), number of past breast biopsies, number of breast biopsies that showed atypical hyperplasia, and race/ethnicity.[9] Women who have a 5-year risk of 1.67% or higher using this tool (or the risk of an average 60-year-old woman) are classified as "high-risk." This classification is the cut-off point for guidelines when prescribing tamoxifen and raloxifene for breast cancer prevention.[10]

The Harvard Disease Risk Index is an interactive tool that estimates breast cancer risk based on questions about lifestyle factors. The index provides a risk estimate that compares the level of risk to other women of the same age, along with lifestyle recommendations based on the respondent's answers.[11]

Results from these two risk assessment tools will provide the foundation for personalized counseling and allow participants to receive tailored suggestions for lifestyle changes to reduce breast cancer risk.[12] Clinic staff will employ motivational interviewing and counseling techniques to encourage each woman to follow evidence-based approaches (e.g., dietary changes, enhanced physical activity, reduced alcohol consumption, breastfeeding). Realistic and achievable goals will be set. If medical regimens (e.g., tamoxifen or raloxifene) are deemed appropriate, the medications will be prescribed, with follow-up by the clinic oncologist or the woman's primary care physician. In addition, participants will be provided with information about community resources matched to their needs. A 3-month follow-up telephone call will assess success in making lifestyle changes and provide additional suggestions and support. The family physician and any other physicians involved in the woman's care will receive a consultation report after the initial visit, summarizing the risk assessment and interventions recommended.

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Clinic evaluation

Evaluation of the clinic will include assessment of both implementation (e.g., success in recruitment and referrals, efficiency of clinic protocols) and outcomes (e.g., changes in risk perception and lifestyle behaviors, behavioral outcomes such as weight change, adherence to exercise recommendations and preventive medications if indicated, and satisfaction of participants and clinicians). Evaluation of operating costs will also be undertaken to determine the economic sustainability of the clinic.

Summary

Key contributions of the clinic are anticipated to be:

- The development of an innovative model of cancer prevention in British Columbia.
- Stimulation of research and evaluation pertaining to breast cancer prevention and risk reduction.
- An opportunity for physicians to refer their high-risk female patients for an evidence-based intervention.

In addition, the clinic is expected to help the population of high-risk women in BC learn how to lower their risk of breast cancer (see the Health Notes for patient information). We are exploring options beyond the one-to-one clinic setting, such as group programs and interventions delivered via Internet-assisted technologies, that would allow more women in more locations to benefit from these activities. Given that the clinic is a new initiative, evaluation is crucial and we invite comments, suggestions, and participation by anyone interested, so that together we can reduce the burden of breast cancer in BC.

Competing interests

None declared.

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Breast cancer: How to reduce your risk

Breast cancer is the most commonly diagnosed cancer in Canadian women. Although heredity is an important factor in developing breast cancer, genetic factors account for only 5% to 10% of diagnoses. Nearly half of all breast cancers are due to factors under your control. Your daily activities can have a tremendous impact on your breast health.

What modifiable risk factors are linked to breast cancer?

Several factors that you can modify are linked to your risk of breast cancer:

- Inactivity
- Obesity
- Alcohol consumption
- Hormone replacement therapy (HRT)
- Breastfeeding history

How can I reduce my risk?

Increasing physical activity, maintaining a healthy weight, minimizing or eliminating alcohol consumption, avoiding HRT, and choosing to breastfeed are key ways to improve your health and decrease your breast cancer risk.

Exercise

Increasing your physical activity is a great way to improve your health and reduce your risk of getting breast cancer. Participate every day in any physical activity that interests you. Consult your physician and Canada's Physical Activity Guidelines (www.csep.ca/guidelines) if you are unsure about how to start exercising.

Maintain a healthy weight

Achieving and staying at a healthy weight are important for breast health and general health as well. Weight reduction and control require attention to both nutrition and physical activity. It isn't easy. Consult your physician for referrals to programs that can help you.

Minimize alcohol consumption

Research indicates that drinking any kind of alcohol raises your risk of breast cancer. The less alcohol you drink, the more you reduce your risk. There is no safe amount of alcohol when it comes to breast cancer risk. See the Canadian Cancer Society website (www.cancer.ca) for ways to cut down on alcohol consumption.

Avoid hormone replacement therapy

Combined HRT, which includes estrogen and progestin, increases breast cancer risk. However, there are benefits as well as risks to HRT, and these should be carefully considered with your physician.

Breastfeed

Breastfeeding has been shown to reduce breast cancer risk. Plus, it's good for your baby! Breastfeed for as long as you can.

How do I get a risk assessment and advice about reducing my risk?

A new initiative can help British Columbian women reduce their risk of breast cancer: the Breast Cancer Prevention and Risk Assessment Clinic.

Located on the BC Women's Hospital and Health Centre site (4500 Oak Street, Vancouver, BC; phone 604 822-9548), the clinic operates one morning and one afternoon each week.

The clinic offers a number of services. Initially, you will complete a questionnaire and use two risk assessment tools. Next, a physician and lifestyle counselor will provide personalized recommendations to help you modify the risk factors you can control. You might learn about strategies to reduce weight, increase physical activity, or minimize alcohol consumption. You will also receive recommendations for community resources.

Finally, your primary care physician will receive a report on your consultation. After 3 months, a telephone follow-up session will help ensure you remain on track.

Eligibility

You may contact the clinic for an appointment by calling 604 822-9548, or you may be referred to the clinic by your physician.

Eligible women include those with biological or lifestyle risk factors for breast cancer. Remember, having a risk factor does not mean that you will get breast cancer, only that your chances of doing so are increased.

Biological risk factors include having high-density breast tissue or a history of biopsies. Lifestyle risk factors include obesity or sedentary habits. Women with these kinds of nongenetic risk factors are invited to attend, as are any women who want to learn about and reduce their risk of breast cancer.

GLOSSARY OF TERMS

estrogen–hormones that develop and maintain female body characteristics.
genetic–relating to genes, which determine our characteristics.
heredity–characteristics able to be passed down from one generation to the next.
obesity–overweight and obesity both refer to excessive fat accumulation that presents a risk to health. Overweight refers to having a body mass index of 25 or more, and obesity refers to having a body mass index of 30 or more. Calculate your body mass index (BMI) at www.bmicalculator.org or talk to your doctor.
progestin–a synthetic or natural drug that acts on the uterine lining, often used in combination with estrogen for hormone replacement therapy.

The clinic will focus on women at increased risk of breast cancer who do not meet the criteria for increased genetic risk required for referral to the Hereditary Cancer Program at the BC Cancer Agency.

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