



January 31, 2017

## GOC POSITION STATEMENT

### ***NO WOMAN LEFT BEHIND: TOWARD A PAN-CANADIAN STRATEGY FOR UNIVERSAL BRCA TESTING IN OVARIAN CANCER\****

*\* Note: The term “ovarian” cancer, as used in this paper, refers to a family of cancers that originate in the ovary, the fallopian tube and/or the peritoneum.*

#### **SUMMARY STATEMENT**

Many cases of hereditary ovarian cancer can be traced to mutations in the BRCA 1 and 2 genes. These mutations interfere with normal DNA repair mechanisms, resulting in an increased risk of ovarian as well as breast cancer. Women with these mutations have a 50% chance of eventually developing ovarian cancer, compared to fewer than 3% of women in the general population.

When a woman develops ovarian cancer, genetic testing can determine whether she carries a BRCA mutation. A positive BRCA test has implications for both the patient and her genetically related family members. For the patient, it predicts a better response to certain medications that target DNA repair mechanisms. For family members, it provides potentially life-changing information: if they choose to get tested and discover they also have a BRCA mutation, they can take steps to reduce their own risk of ovarian cancer, such as prophylactic oophorectomy.

Given these substantial benefits, The Society of Gynecologic Oncology of Canada (GOC) and its partner societies\*\* strongly recommend universal BRCA testing as part of the ovarian cancer care pathway. While the technology and infrastructure for universal BRCA testing are in place, a recent pan-Canadian survey found that most eligible women do not get tested. The GOC’s “No Woman Left Behind” campaign seeks to unite all stakeholders toward the goal of universal BRCA testing for women with high-grade ovarian cancer in Canada. Ensuring that “no woman is left behind” in the treatment and risk reduction of ovarian cancer is GOC’s most pressing current concern.

*\*\*The commitment to universal BRCA testing is supported by GOC, the Canadian College of Medical Geneticists (CCMG), the Canadian Association of Genetic Counsellors (CAGC), the Canadian Association of Pathologists (CAP), and Ovarian Cancer Canada (OCC).*

#### **BACKGROUND**

##### **Ovarian cancer statistics**

- Ovarian cancer represents 2.9% of all cancer cases in women
- One in 69 women develops ovarian cancer in her lifetime
- About 38% of women with high-grade ovarian cancer survive for 10 years
- Over 60% of diagnosed women eventually die from the disease
- Rates of OC are expected to increase by more than 50% by 2032

### **Types of ovarian cancer**

The most common type of ovarian cancer is high-grade serous carcinoma (HGSC), which may also occur in areas surrounding the ovaries. HGSC is often diagnosed at an advanced stage, when surgery no longer resolves the illness. In contrast, low-grade forms of ovarian cancer (such as most endometrioid and mucinous disease) are generally localized in the ovary and can be cured by surgery alone. Most women with high-grade ovarian cancer undergo multiple rounds of chemotherapy, ultimately succumbing to the disease.

### **Current status of BRCA testing**

BRCA testing is available throughout Canada, but disparities in accessibility and awareness have stood in the way of universal testing. Fear of “genetic discrimination” (e.g. reprisal from health insurers or employers) may also discourage some women. Such fears may have a basis in reality, as Canada remains the only G7 country without laws to protect genetic test information. The combined impact of these barriers is that only 30% of Canadian women with high-grade ovarian cancer get tested. This “failure to test” robs numerous women of opportunities for ovarian cancer treatment and risk reduction.

### **Impact of BRCA mutations**

Inherited BRCA mutations account for 10 to 15% of cases of high-grade ovarian cancer. These mutations are highly penetrant, which means that affected women have a high probability of manifesting a specific trait (in this case, ovarian cancer). In fact, the risk of developing high-grade ovarian cancer by age 70 approaches 60% in women with a BRCA1 mutation and 16% in those with a BRCA2 mutation.

### **Implications for treatment**

Under normal conditions, DNA has mechanisms for maintaining its integrity and aborting tumor growth. BRCA mutations disrupt these mechanisms, thus enabling ovarian cancer and breast tumors to proliferate. A class of drugs called PARP inhibitors has the unique ability to inactivate DNA repair in BRCA-mutated cancer cells, leading to cell death. PARP inhibitors do not have this effect on non-cancer cells, which carry one normal BRCA allele. This targeted destruction, called “synthetic lethality,” represents a significant step forward in anti-cancer treatment. In 2016, Health Canada approved the PARP inhibitor olaparib based on the drug’s significant survival benefit and good tolerability in patients with BRCA mutations.

### **Implications for risk reduction**

BRCA genes are inherited in an autosomal dominant pattern, such that first-degree relatives of a woman with a BRCA mutation have a 50% chance of carrying the same mutation. For these relatives, genetic testing can have significant – in some cases life-changing – benefits. Those who test positive can elect to have prophylactic surgery to remove their ovaries, which would reduce their risk of ovarian cancer by 95% and may also reduce their risk of breast cancer. Those who test negative can gain peace of mind and avoid additional interventions.

### Health-economic implications

The total cost of treating ovarian cancer has been estimated at \$150,000. This figure includes the cost of surgery, hospitalization, outpatient visits, and medication. Given that 10 to 15% of ovarian cancer arises in the context of BRCA mutations, universal BRCA testing could save millions of dollars every year, as illustrated in the scenario below.

#### Savings from BRCA testing: case scenario

- A woman with a BRCA mutation has four female first-degree relatives; two of them are likely to carry the mutation and one to eventually develop ovarian cancer
- Genetic counselling and BRCA testing for these relatives costs \$4,000
- Prophylactic surgery for one of these relatives (a reasonable assumption) costs \$40,000, while saving \$75,000 (50% risk of ovarian cancer x \$150,000 for treatment)
- Net savings: \$75,000 - \$40,000 - \$4,000 = \$31,000 (per case)

On behalf of The Society of Gynecologic Oncology of Canada,



Walter H. Gotlieb, MD, PhD  
President



Past-President

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### OUR MISSION

The Society of Gynecologic Oncology of Canada is a nonprofit organization consisting of physicians, nurses, scientists and other health care professionals specializing in gynecologic oncology. Its purpose is to improve the care of women with or at risk of gynecologic cancer by raising standards of practice, encouraging ongoing research, promoting innovation in prevention, care and discovery, and advancing awareness. GOC also seeks to disseminate knowledge to practitioners, patients and the general public on gynecologic cancer as well as cooperate with other organizations committed to women's health care, oncology, and related fields.