



# **BRCA STATUS AND OVARIAN CANCER CARE**

**TEST. TREAT. PREVENT.**

## **A Guide for Healthcare Practitioners and Allied Health Professionals**

### **The landscape for determining *BRCA1* and *BRCA2* (*BRCA*) mutation is evolving rapidly.**

In Canada, profound advancements in next generation sequencing (NGS) technology can optimize your approach to the patient care pathway.<sup>1,2,3</sup>

### **The importance of knowing your patient's *BRCA* status.**

*BRCA* genes produce proteins that help cells repair damaged DNA. Mutations in these genes result in an increased life-time risk of ovarian, breast, and other cancers.<sup>2</sup>

#### **Definitions**

##### **tBRCAm: Tumour *BRCA* mutations**

The tumour sample is tested to detect **germline** mutations (present in every cell including the tumour) and **somatic** mutations (only present in the tumour). The tumour *BRCA* test does not distinguish between germline and somatic mutations.<sup>1,2</sup>

##### **gBRCAm: Germline *BRCA* mutations**

The blood (most common) sample is tested to detect **germline** mutations (present in every cell including the tumour). A positive **gBRCA** test has treatment implications for the patient and potential risks for family members.<sup>1,2</sup>

##### **sBRCAm: Somatic *BRCA* mutations**

These mutations are present only in the tumour. **sBRCA** mutations have treatment implications for the patient but do not identify the risk of developing cancer among family members.<sup>1,2</sup>

**A timely confirmation of *BRCA* mutations is essential  
for benefiting from the latest personalized cancer  
treatments and prevention strategies.**<sup>1,2,3</sup>

# IMPORTANT CONSIDERATIONS FOR REFLEX TUMOUR *BRCA* TESTING

- Can be initiated immediately upon sample collection (No Patient Left Behind)<sup>2</sup>
- Identifies 50% more patients than germline testing alone, as some patients may present with a mutation only found in the tumour tissue<sup>3</sup>
- Tumour testing can expedite test results, reducing the wait times commonly experienced with germline testing<sup>2</sup>

## BRCA STATUS AND THE PATIENT CARE PATHWAY<sup>1,3</sup>

TESTING	Sample	<ul style="list-style-type: none"> <li>• Tumour is removed and sent to pathology for analysis</li> </ul>
	Pathology	<ul style="list-style-type: none"> <li>• In cases of high-grade serous ovarian cancer, tissue samples are sent to a molecular genetics laboratory for confirmation of <i>BRCA</i> status</li> </ul>
	Tumour <i>BRCA</i> Test	<ul style="list-style-type: none"> <li>• Patient's tumour samples are tested for <i>BRCA</i> mutation status</li> <li>• Turnaround times vary, but on average results can be provided 2–4 weeks from receipt of tumour sample in the molecular genetics laboratory</li> </ul>
		<ul style="list-style-type: none"> <li>• The only way to confirm whether a t<i>BRCA</i> mutation is somatic or germline is to follow up with a <b>germline</b> test</li> <li>• t<i>BRCA</i>m and g<i>BRCA</i>m = <b>g<i>BRCA</i>m</b></li> <li>• t<i>BRCA</i>m and g<i>BRCA</i>wt = <b>s<i>BRCA</i>m</b></li> </ul>

## ONE TEST, TWO REASONS

### TREATMENT

#### t*BRCA*m

Knowing *BRCA* mutation status helps determine the eligibility of patients for different treatment options

### PREVENTION

#### g*BRCA*m

In addition to determining treatment eligibility, knowing germline *BRCA* mutation status determines family member's potential risk of developing cancers

1. Capoluongo, E *et al.* Guidance statement on *BRCA*A1/2 tumor testing in ovarian cancer patients. *Semin. Oncol.* 44, 187–197 (2017).
2. Optimizing *BRCA* gene testing for ovarian cancer. Outcomes of a stakeholder meeting. The Society of Gynecologic Oncology of Canada. February 8, 2018.
3. Neff, RT *et al.* *BRCA* mutation in ovarian cancer: testing, implications and treatment considerations. *Ther Adv Med Oncol* 2017, Vol. 9(8): 519–531.



## Overview of tumour *BRCA* testing pathway<sup>1</sup>



Sample collection



DNA extraction



Next-generation sequencing



*BRCA* mutation report



Next steps if deleterious mutation is found



Genetic counselling



Testing family members



Blood sample collection for germline testing



Results can be used for clinical management of the patient