



# A Survey of BRCA Biomarker Testing

Nichole Allen, MD; Yingtao Zhang, MD, PhD; Masoumeh Ghayouri, MD and Ardeshir Hakam, MD  
Department of Pathology, Moffitt Cancer Center, Tampa, FL



## Background

BRCA, a tumor suppressor gene, can be mutated in various types of cancers, but are especially implicated in breast and ovarian carcinomas. Testing for BRCA mutations can be done by performing germline blood or saliva tests, germline inherited cancer panels, or by testing the tumor for the mutation either in a panel or by itself. BRCA mutation status is important for predicting the risk of developing additional cancers as well as for genetic counselling for families.

## Design

An online survey was offered to all oncologists who were members of FLASCO which included 11 questions regarding biomarker testing of BRCA, with 8 regarding the use of testing. 91 oncologists/medical professionals responded to the questions.

## Results

### 1. Which breast cancer patients do you test for BRCA?

All breast cancer subtype	All advanced breast cancer subtypes	Specific advanced breast cancer subtypes i.e. TNBC, HER2+, ER+, PR+	Any breast cancer patient with a family history
28.74%	13.79%	36.78%	60.92%

### 2. When do you order BRCA testing in breast cancer?

At initial consult with patient	At diagnostic workup	At initiation of 1L treatment	During 1L treatment	At initiation of 2L treatment	At the request of the patient
61.36%	44.32%	6.82%	3.41%	3.41%	17.05%

### 3. Which ovarian cancer patients do you test BRCA?

All ovarian cancer subtypes (stage 1-4)	All metastatic ovarian cancer patients	Specific ovarian cancer subtypes	Ovarian cancer patients with a family history
65.91%	14.77%	10.23%	38.64%

### 4. When do you order BRCA testing in ovarian cancer?

At initial consult with patient	At diagnostic workup	During debulking surgery	At initiation of 1L treatment	During 1L treatment	At initiation of 2L treatment	At the request of the patient
57.95%	45.45%	4.55%	7.95%	4.55%	3.41%	15.91%

### 5. How is BRCA testing ordered in your institution?

Through EMR system	Office staff submits paperwork to pathology/reference lab	BRCA testing is a reflexive/automatically done at pathologic staging	Other (please specify)
39.77%	43.18%	3.41%	19.32%

### 6. Which test do you use for BRCA?

Germline BRCA blood test	Germline saliva test	Germline inherited cancer panel	Tumor test for BRCA1/2	Tumor panel test
60.47%	6.98%	30.23%	22.09%	26.74%

### 7. What do you test for BRCA primarily?

To assess familial risk	Familial history 1 or 2 family members with known BRCA mutation or cancer	Personal history of breast, ovarian, prostate, or pancreatic cancer	For treatment with a PARP inhibitor	For clinical trial assessment
54.02%	44.83%	62.07%	54.02%	29.89%

### 8. Does somatic BRCA status change over time (i.e. stage of disease or post treatment)?

Yes	No	I'm not sure
30.23%	23.26%	47.67%

### 9. What are the reasons why patients would not or could not be tested for BRCA?

Patient refusal	Cost	Age of patient	Gender of a patient	Other (please specify)
65.52%	85.06%	18.39%	2.30%	8.05%

### 10. What is the estimated turnaround time to receive a BRCA result (from when you order the test)?

2 weeks	3 weeks	4 weeks	5-6 weeks	Longer than 6 weeks
50.00%	39.53%	18.60%	2.33%	1.16%

### 11. Which clinical laboratory do you use for BRCA testing?

Tempest	Ambry	Myriad	Invitae	Caris	Foundation Medicine	In-house	Other (please specify)
2.41%	21.69%	61.45%	34.94%	15.66%	27.71%	9.64%	14.46%

## Conclusion

- Physicians most commonly order BRCA testing at the patient’s initial consult in both breast and ovarian cancers.
- In ovarian cancer, BRCA is most commonly ordered in all ovarian subtypes (stage 1-4), in 65.91% of cases. However, in breast cancer, it is most commonly ordered in any breast cancer patient with a family history (60.92%), and only ordered in all breast cancer subtypes in 28.74% of cases.
- Germline BRCA blood tests are the most common method used to test for BRCA mutations, followed by a germline inherited cancer panel.
- BRCA testing is most commonly ordered by office staff submitting paperwork to the pathology/reference lab, followed by ordering through an EMR system.
- Cost is the most common reason that a patient could not be tested for BRCA.