Breast Cancer Surgical Panel

Features of Hereditary Breast Cancer
Genetic testing with the Breast Cancer Surgical Panel may be appropriate if your personal and/or family history is suggestive of a hereditary predisposition to breast cancer. This includes:

- Breast cancer diagnosed under 50 years of age or triple negative breast cancer diagnosed under the age of 60
- Multiple cancers in one person, either of the same origin (such as two separate breast cancers) or of different origins (such as breast cancer and ovarian cancer)
- Ovarian cancer or male breast cancer at any age
- Multiple relatives diagnosed with the same or related cancers (including breast, ovarian, pancreatic and/or prostate) on the same side of the family and spanning multiple generations
- Ashkenazi Jewish ancestry with a history of breast, ovarian or pancreatic cancer

Genes Included on the Breast Cancer Surgical Panel
The genes included in the Breast Cancer Surgical Panel are: BRCA1, BRCA2, and PALB2.

Lifetime Cancer and/or Tumor Risks

<table>
<thead>
<tr>
<th>Gene</th>
<th>Lifetime Cancer and/or Tumor Risks*</th>
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</thead>
<tbody>
<tr>
<td>BRCA1</td>
<td>Female breast (57-87%), Ovarian (24-54%), Prostate, Male breast, Pancreatic, Fallopian tube, Primary peritoneal, Endometrial</td>
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<tr>
<td>BRCA2</td>
<td>Female breast (41-84%), Prostate (up to 34%), Ovarian (11-27%), Pancreatic (5-7%), Male breast (4-7%), Melanoma, Fallopian tube, Primary peritoneal, Endometrial</td>
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<tr>
<td>PALB2</td>
<td>Female breast (25-58%), Male breast, Pancreatic, Ovarian</td>
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*Most commonly associated cancers/tumors listed; lifetime risks provided when available. Risks relate to carriers of a single pathogenic variant.

Lifetime Risk of Select Cancers Associated with BRCA1, BRCA2, and PALB2

*Lifetime risks of cancer are known to be significantly increased for individuals with a pathogenic variant, although a precise lifetime risk is unknown.
Possible Outcomes of Genetic Testing:
There are four possible outcomes of genetic testing: positive (pathogenic variant), likely pathogenic variant, variant of uncertain significance (VUS), and negative. Genetic counseling is recommended prior to genetic testing to understand the benefits and limitations of testing.

A positive result indicates a genetic variant (change) was identified in a specific gene and that variant is pathogenic (harmful). With a positive test result, the risk to develop a particular disease (in this case, cancer and/or tumors) is increased.

A likely pathogenic variant result indicates that there is a variant in a specific gene for which there is significant, but not conclusive, evidence of an increased risk to develop a particular disease (in this case, cancer and/or tumors).

A variant of uncertain significance (VUS) result means that a change in a specific gene was identified, however the effect of the variant cannot be clearly established. There may be conflicting or incomplete information in the medical literature about this variant and its association with an increased risk of cancers and/or tumors is unknown. In other words, it cannot be determined yet whether this variant is associated with an increased risk of cancer and/or tumors or it is a harmless (normal) variant.

A negative result means that no reportable variants were identified.

Medical Management Based on Genetic Test Results
Clinical guidelines may be available which provide options and recommendations for patients who have a positive (pathogenic variant) test result indicating an increased risk for cancer and/or tumors. Guidelines and recommendations for early detection and/or risk reduction are specific to the gene in which the pathogenic variant was found.

Recommendations may include:

- Breast awareness, including breast self-examination for both men and women
- Clinical exams, such as skin and/or breast exams
- Imaging exams, such as a mammogram, MRI, and/or ultrasound
- Risk-reducing medications and/or surgery

If you have a positive or a likely pathogenic variant result, your test report will have additional information regarding the available medical management options.

If you have a negative or variant of uncertain significance (VUS) test result, medical management should be based upon your personal and/or family history of cancer and/or tumors.

Once your test results are available, a discussion with your healthcare provider is recommended to determine the most appropriate medical management options for you and your family.

Regardless of the outcome, consider sharing your test result with family members so that they may discuss them with their healthcare providers. If you have a positive or a likely pathogenic variant result, family members are at risk to have the same result, and should consider genetic testing to best understand their chance of developing cancer and/or tumors.

Patient Resources
Bright Pink: www.brightpink.org
Facing Our Risk of Cancer Empowered (FORCE): www.facingourrisk.org
GeneDx: www.oncogenedx.com
National Cancer Institute: www.cancer.gov/cancertopics/genetics