

Hereditary Breast & Ovarian Cancer (BRCA)

A plain-English guide for you and your family

WHAT IS HAPPENING

Every cell in your body has a set of instructions called DNA that tells it how to grow and work properly. Sometimes that DNA gets small scratches or breaks from normal living—like sun exposure, stress, or just everyday wear and tear. Your body has special repair genes that act like a fix-it crew, patching up DNA damage before it causes problems. The BRCA1 and BRCA2 genes are two of the most important members of that repair crew. When someone inherits a broken BRCA gene from a parent, their cells cannot fix DNA damage as well, so errors pile up over time. This makes it much easier for breast and ovarian cells to turn cancerous.

What you might feel

- No symptoms (often discovered through genetic testing)
- Family history of early-onset breast cancer (before age 50)
- Family history of ovarian cancer at any age
- Male relative with breast cancer
- Multiple family members with breast or ovarian cancer on same side of family
- Ashkenazi Jewish ancestry with family history
- Personal history of pancreatic cancer
- Personal history of prostate cancer diagnosed before age 55

Call the doctor right away if...

- Family history of breast cancer before age 50 or ovarian cancer at any age (suggests hereditary mutation requiring genetic counseling)
- Male relative with breast cancer or personal/family history of pancreatic cancer (strongly suggests BRCA2 mutation)
- New breast mass, persistent nipple discharge, or palpable axillary lymph nodes (requires urgent imaging within 2 weeks)

- Abdominal bloating, pelvic pain, early satiety, or increased abdominal size in BRCA carrier (ovarian cancer symptoms requiring urgent ultrasound and CA-125)

What the care team will do

- Identify patients with strong family history of breast, ovarian, pancreatic, or prostate cancer for genetic counseling referral
- Support patients through genetic testing decision-making and informed consent process
- Coordinate multidisciplinary care including medical oncology, surgical oncology, and reproductive specialists
- Educate on lifetime cancer risks: 45-70% breast cancer, 11-40% ovarian cancer by age 70 in BRCA carriers
- Implement enhanced surveillance protocols for carriers who defer risk-reducing surgery
- Provide pre- and post-operative support for patients choosing risk-reducing bilateral mastectomy or salpingo-oophorectomy
- Address psychosocial and body image concerns related to preventive (prophylactic) surgeries and premature menopause
- Educate male BRCA carriers about increased prostate, pancreatic, and male breast cancer risks

Medicines you may be given — and why

Tamoxifen

Tamoxifen blocks estrogen from attaching to breast cells. Estrogen makes some breast cancer cells grow. By blocking estrogen, tamoxifen reduces the chance that estrogen-receptor-positive breast cancer will develop in women who carry BRCA mutations.

Olaparib or talazoparib

PARP inhibitors block an enzyme that helps cells repair damaged DNA. Normal cells have backup repair systems, but BRCA mutation carriers already have broken DNA repair. Cancer cells in BRCA carriers cannot survive without PARP, so blocking PARP kills cancer cells while sparing normal cells (synthetic lethality).

Oral contraceptives (birth control pills containing estrogen and progestin)

Birth control pills reduce ovarian cancer risk by 40-50% in BRCA carriers by stopping ovulation (egg release). Each ovulation creates small tears in ovary surface that must repair, and repeated repair increases cancer chance. Pills also thin the fallopian tube lining where many ovarian cancers actually start.

Enhanced surveillance (MRI and mammogram alternating)

Enhanced surveillance uses breast MRI every 6 months alternating with mammogram to catch breast cancers at earliest stage when cure rate is highest. MRI detects cancers in dense breast tissue of young women that mammogram misses. Early detection improves survival but does not prevent cancer from occurring.

Risk-reducing bilateral salpingo-oophorectomy surgery

Removing fallopian tubes and ovaries eliminates the tissue where most hereditary ovarian cancers start. Many ovarian cancers actually begin in fallopian tube tips and spread to ovaries. Surgery also reduces breast cancer risk by 50% if done before menopause because ovaries make estrogen that can fuel breast cancer growth.

Platinum chemotherapy (cisplatin or carboplatin)

Platinum drugs damage DNA in all rapidly dividing cells. BRCA mutation carriers have defective DNA repair, so their cancer cells cannot fix platinum damage and die. Normal cells can repair damage better. Platinum is especially effective in BRCA-related cancers for breast, ovarian, and pancreatic tumors that have already developed.

Where this information comes from

- National Comprehensive Cancer Network (NCCN) Clinical Practice Guidelines in Oncology: Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic (Version 3.2024)
- American College of Obstetricians and Gynecologists (ACOG) Practice Bulletin No. 182: Hereditary Breast and Ovarian Cancer Syndrome (2017, Reaffirmed 2023)
- American Society of Clinical Oncology (ASCO) Policy Statement Update: Genetic and Genomic Testing for Cancer Susceptibility (2020)
- U.S. Preventive Services Task Force (USPSTF) Recommendation Statement: Risk Assessment, Genetic Counseling, and Genetic Testing for BRCA-Related Cancer (2019)

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