

# BREAST CANCER

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## Overview

Breast cancer (BC) is the second leading cause of cancer-related death in women<sup>1</sup>. Like many cancers, early detection saves lives. A palpable breast mass is the most common presenting complaint of patients diagnosed with BC<sup>2</sup>, and thus requires appropriate evaluation.

## Risk factors for BC<sup>3</sup>

- Major (>3 times relative risk):
  - Gender
  - Age (80% of cancers occur in women >50 yrs)<sup>3</sup>
  - Dense breast tissue
  - 1st degree relative with BC (especially if diagnosed before age 60)
  - BRCA1 or BRCA2
  - History of chest radiation
  - History of atypical hyperplasia/LCIS/DCIS
  - History of breast cancer
- Minor:
  - Nulliparity
  - First child >30 yrs
  - Early menarche (before age 12)
  - Late menopause (after age 55)
  - Postmenopausal weight gain
  - Alcohol use
  - Hormonal therapy
  - High SES

## Canadian Task Force Screening Recommendations<sup>4</sup>

- For average risk women (defined as those with no personal or family history in 1st degree relatives of BC, no known mutations of the BRCA1/BRCA2 genes or no previous chest wall radiation), screening mammography is recommended:
  - For women 50-74 years
  - Every 2-3 years
- No evidence that screening women at average risk of BC using MRI, breast self-exam or clinical breast exam reduces the risk of mortality or other clinically relevant adverse outcomes<sup>7</sup>
- No guideline on when to discontinue screening; if life expectancy >10 years, generally continue<sup>3</sup>
  - Due to limited data, no recommendations are made for women 75 years and older<sup>4</sup>
- For higher risk women, can use the GAIL risk calculator [www.cancer.gov/bcrisktool/Default.aspx](http://www.cancer.gov/bcrisktool/Default.aspx)
  - Higher risk women generally start screening earlier, and with two modalities

## Subtypes of Breast Cancer

\*Note: Differential diagnosis and approach to breast mass are discussed in the One-Pager topic "Breast Mass"

- **Atypical Ductal Hyperplasia, Atypical Lobular Hyperplasia:**
  - Premalignant breast lesions with 4-6 times relative risk of developing subsequent BC<sup>7</sup>
  - Often found incidentally on biopsy and require full excision
- **Carcinoma in Situ:**
  - **Ductal Carcinoma in Situ (DCIS):**
    - ~85% of in-situ breast cancers
    - Defined as cancer confined to the duct that does not cross the basement membrane
    - The risk of developing invasive disease is increased if it is of a high nuclear grade and of the comedo subtype<sup>10</sup>
    - Often asymptomatic and detected on screening but 10% of DCIS present as a breast mass<sup>8</sup> or rarely as bloody nipple discharge
    - Requires surgical management +/- adjuvant therapy
  - **Lobular Carcinoma in Situ (LCIS):**
    - Much less common than DCIS (~15%)
    - Marker of increased invasive cancer risk in either breast
- **Invasive Cancer:**
  - Types of invasive cancer include ductal carcinoma (most common), lobular carcinoma, medullary carcinoma, and tubular carcinoma
  - Two rare types of breast cancer with unique presentations:
    - **Inflammatory BC:** Invades lymphatics thus causing the characteristic erythema, pain and skin changes (peau d'orange); more aggressive form of cancer; occurs in ~1-3% of cases<sup>1</sup>
    - **Paget's disease:** incidence <5%<sup>1</sup>; typically presents with unilateral nipple-areolar dermatitis/eczema

## Management<sup>5</sup>

- General management depends on the stage of the cancer, based on the tumor-node-metastasis staging system, as well as the hormone and receptor status of the tumor
  - o Management is typically coordinated by a surgeon and oncologist, and includes a combination of surgery, chemotherapy, radiation and hormonal therapy
- Surgical Management:
  - o Breast-conserving surgery plus post-surgical radiation is the primary treatment for stage I and II cancers, but can also be offered to appropriate patients with locally-advanced cancers
  - o Modified radical mastectomy remains the treatment of choice for patients with contraindications to radiation therapy, at high risk of local recurrence (including inflammatory cancer) or with large tumors
  - o Stage III cancers generally require induction systemic therapy prior to surgical therapy
- Lymph node biopsy:
  - o With clinically negative nodes, sentinel lymph node biopsy is preferred over full axillary lymph node dissection
  - o Axillary lymph node dissection is indicated for women with palpable lymph nodes or an abnormal sentinel lymph node biopsy
- Systemic therapies:
  - o Includes chemotherapy, radiation therapy, hormonal therapy, and receptor-targeted therapy
  - o The choice of adjuvant therapy depends on a number of factors, including tumor stage, receptor status, and the patient's age and menopausal status

### Prognosis:

- Prognosis is based upon a myriad of factors that take into account type of BC, location & spread, hormone sensitivity, tumour markers, and gene expression profiling
- Crudely, 5 year survival rates for all BC based upon stage are as follows<sup>10</sup>:
  - o Stage 0: 93%
  - o Stage I: 88%
  - o Stage IIA: 81%
  - o Stage IIB: 74%
  - o Stage IIIA: 67%
  - o Stage IIIB: 41%
  - o Stage IIIC: 49%
  - o Stage IV: 15%

## Bottom Line

Breast cancer is the second leading cause of cancer-related death in women. The Canadian Task Force on Preventative Health Care has produced screening guidelines in Canada. Management of breast cancer relies upon the coordination of multimodal specialists. For further information about the approach to an undifferentiated breast mass, please see the One-pager topic "Breast Mass".

## Useful resources

Decision-Aid for BC Screening: <http://www.phac-aspc.gc.ca/cd-mc/mammography-mammographie-eng.php#chap2>

References can be found online at [http://www.dfcm.utoronto.ca/programs/postgraduateprograme/One\\_Pager\\_Project\\_References.htm](http://www.dfcm.utoronto.ca/programs/postgraduateprograme/One_Pager_Project_References.htm)