

TREATMENT OF BREAST CANCER

This section was developed to assist the Case Managers in the BCC Program. It will be important for the case manager to understand the pathology report, and assist the patient in understanding their diagnosis. The specialist will have gone over this information with the woman, but it is usually difficult for the patient to “take it all in.” Repeated explanations are very helpful to the patient. It is important that the Case Manager also understands the implications of the pathology report and thus can help guide client advocacy. For this reason, this section has been structured to provide some basic information on the following topics:

- Types of Breast Cancer (Tumor Histology)
 - Invasive
 - Non-invasive
- Grading
 - Nottingham for Invasive
 - Van Nuys for DCIS
- Reading the Pathology Report - Implications
 - Hormone Receptivity
 - Oncogenes
 - Margins
 - Ductal Architecture
- Staging
 - Tumor Size
 - Degree of Nodal Involvement
 - Metastases
- Treatment
 - Goals of Treatment
 - Factors Involved in the Treatment Decision
- Treatment Options
 - Surgical treatment
 - Radiation therapy
 - Chemotherapy
- Checklist for the Patient

TYPES OF CANCER (TUMOR HISTOLOGY)

Invasive:

Ductal
Carcinomas
make up for
70% of all
breast cancers
in women.

Lobular
Carcinomas
make up to
10% of all
breast cancers
in women.

Note: The type of invasive cancer, while interesting, is not generally regarded as independently prognostic, and therefore is not as important as the other prognostic factors discussed below.

- **Ductal Carcinoma** - cancer originating from the lining of the ducts of the breast which has grown through the walls of the ducts and into the surrounding breast tissue, with the potential for spreading to adjacent lymph nodes and other body systems, (most commonly the bones, lungs, liver and brain). May be mildly to extremely aggressive, depending on prognostic factors.
- **Lobular Carcinoma** - cancer originating in the lobules of the breast which has grown through the walls of the lobules and into the surrounding tissue with the potential for spreading to adjacent lymph nodes and other body systems. May be mildly to extremely aggressive, depending on prognostic factors.
- **“Variant” Cancers** - the additional forms of invasive breast cancer are seen less frequently. They are generally considered less aggressive, although this depends on other prognostic factors.
 - **Medullary** - breast cancer which is surrounded by a rim of white blood cells (medulla).
 - **Mucinous/colloid** - mucous-making form of invasive ductal carcinoma.
 - **Paget’s Disease** - cancer of the nipple that presents as itching or scaling; it is a form of DCIS but may also be associated with an underlying invasive ductal cancer.
 - **Tubular** - cancer that form tubules microscopically.
 - **Papillary** - cancer that appears as little polyp-like projections under the microscope. There are invasive or DCIS forms of papillary cancers.
- **Inflammatory** - this cancer starts in the breast and invades the skin lymphatics; presents with redness and warmth. Poor prognosis; treated with multi-modal therapy (chemotherapy, surgery, and radiation therapy).

Non-invasive:

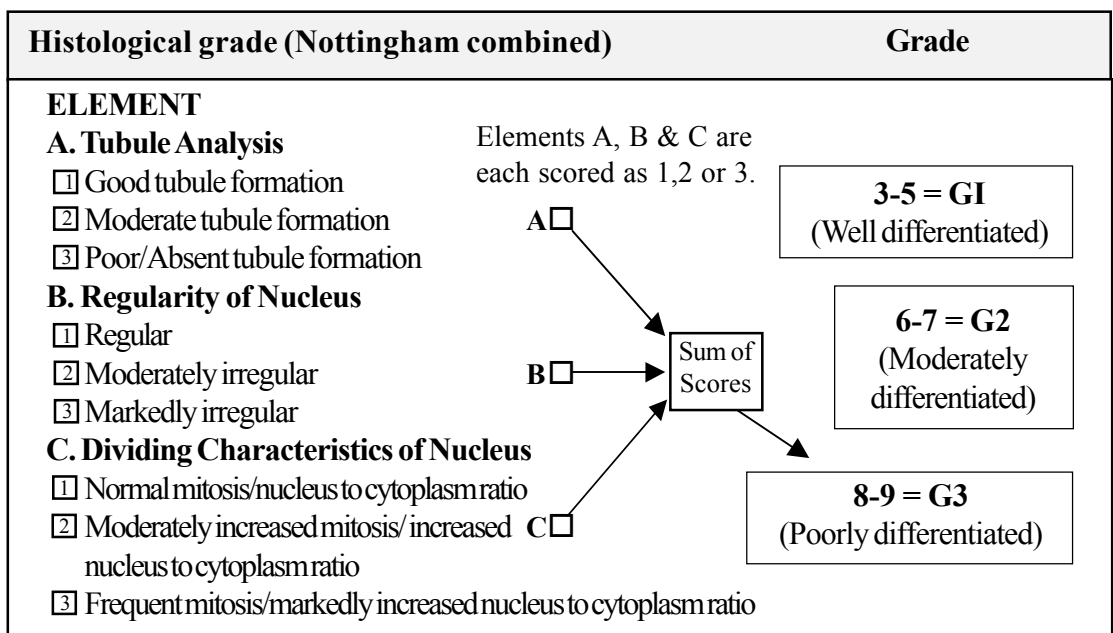
- **Ductal Carcinoma In Situ (DCIS)** - precancerous cells originating from the lining of the ducts of the breast. May be mildly to extremely aggressive.

High Risk Lesions - certain lesions, especially lobular carcinoma in situ (LCIS) and **atypical hyperplasia** (lobular or ductal), are markers for increased risk for subsequent breast cancers. They are usually found incidentally on biopsies done for other reasons. Despite their names, they are not cancers and do not require specific therapy. ***Atypical hyperplasia found by core biopsy should always be followed by excisional biopsy to rule out DCIS.***

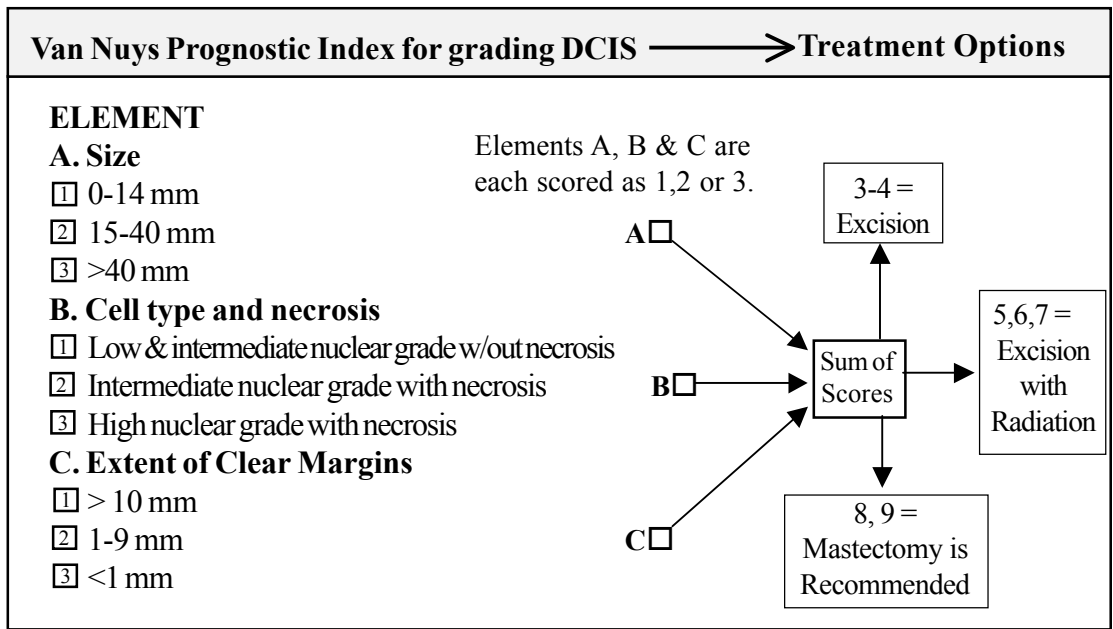
GRADING

Grading (determining the degree of cellular abnormality in the tumor on microscopic examination) of the breast cancer is suggestive of prognosis and guides treatment. Diagnosing and grading of breast cancer requires histologic material obtained by at least one of the following procedures: core needle biopsy, excisional biopsy, or lumpectomy

There are two different grading systems: (1) Nottingham combined (for invasive cancers) and (2) Van Nuys (for non-invasive cancers [DCIS]). Charts for both grading systems are included below.



GX is used when grade cannot be assessed.



READING THE PATHOLOGY REPORT-IMPLICATIONS

Hormone Receptivity

- Estrogen
- Progesterone

Positive = Better prognosis and
Hormone suppression treatment possible.

Positive Hormone Receptors : Anti-estrogen therapy such as Tamoxifen or Arimilex, is usually part of the treatment plan. Some physicians recommend hormone suppression even on hormone negative tumors if the patient is young and the tumor aggressive, but evidence does not support this.

Oncogenes

- Her-2-neu

Positive =
More likely to recur

Margins

- Clear
- Not clear
- Focally clear

Effect treatment
recommendations

Ductal Architecture

- Papillary
- Cribriform
- Comedo

Comedo =
More aggressive

STAGING (TNM)

Staging correlates with outcome. The American Joint Committee on Cancer (AJCC) has system of staging breast cancer for prognostic features. Though the Committee’s system is provided in this handbook, staging is the responsibility of the provider involved in the initial diagnosis of breast cancer and the hospital’s tumor registrar. The Case Manager may refer to the definitions for clarification, or where staging is not specified to match the client’s medical report to the new classification system.

Staging includes both clinical (c) evaluation and pathological (p) evaluation. Any staging element determined by clinical exam will be preceded by a “c,” while those staging components determined by pathology will be preceded by a “p”. Additional specifications indicate other pathologic measurements.

Staging and grading are not the same. Grading gives you an indication of how aggressive the cells look under the microscope. Staging involves both clinical and pathologic measurements that provide information on the anatomical extent of the lesion and implications on prognosis.

Staging of breast cancer involves determining:

1. **Tumor size (T)** either by clinical exam or imaging, or pathological (biopsy, surgical removal).
2. **Degree of nodal involvement (N)** either by clinical (adenopathy) or pathological (sentinel node biopsy and/or axillary node dissection).
3. **Degree of metastasis (M)** T such as bone scan, CT scan of chest, abdomen and MRI of the brain.

Clinical findings on exam or imaging is used for staging in the absence of pathological reports, as in the case of neoadjuvant chemotherapy provided before tumor excision, or when treatment does not include tumor excision or nodal dissection.

Below are tables to illustrate how to code each component, and finally, how determine or estimate the stage of the invasive breast cancer based on pathological or clinical results.

Primary Tumor (T)	
TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
Tis (DCIS)	Ductal carcinoma <i>in situ</i>
Tis (LCIS)	Lobular carcinoma <i>in situ</i> (<i>not a real cancer</i>)
Tis (Paget's)	Paget's disease of the nipple with no underlying tumor
T-1	Tumor 2 cm or less in greatest dimension ($T \leq 2$ cm)
T-2	Tumor more than 2 cm but not more than 5 cm in greatest dimension ($2\text{cm} < T \leq 5$ cm)
T-3	Tumor more than 5 cm in greatest dimension ($T > 5$ cm)
T-4	Tumor of any size with direct extension to (a) chest wall or (b) skin, edema (including peau d'orange) or ulceration of the skin of the breast, or satellite skin nodules confined to the same breast. Includes inflammatory carcinoma.
Regional Lymph Nodes (N)	
NX	Regional lymph nodes cannot be assessed (e.g. previously removed or not biopsied)
N0	No regional lymph node metastasis
N1	Metastasis to movable ipsilateral axillary lymph node(s) (not fixed or matted)
N2	Metastasis in ipsilateral axillary lymph nodes fixed or matted , or in clinically apparent ipsilateral internal mammary nodes in the absence of clinically evident axillary lymph node metastasis (clinically apparent is defined as detected by imaging studies or by clinical examination or grossly visible pathologically)
N3	Metastasis in ipsilateral infraclavicular lymph nodes with or without axillary lymph node involvement, or in clinically apparent ipsilateral internal mammary lymph node(s) and in the presence of clinically evident axillary lymph node metastasis; or metastasis in ipsilateral supraclavicular lymph node(s) with or without axillary or internal mammary lymph node involvement.

When nodes are negative, **M** is often assumed to be "M0."

Distant Metastasis (M)

MX	Cannot be assessed
M0	No distant metastasis. A negative clinical history and examination is sufficient for early stage disease; extensive imaging or other testing is not required for stages IIB and III.
M1	One or more distant metastasis.

Staging Based on the Three Components (TNM)

	Tumor Size (T)	Regional Nodes(N)	Metastasis (M)
Stage 0	Tis	N0	M0
Stage I	T1	N0	M0
Stage IIA	T0/T1	N1	M0
	T2	N0	M0
Stage IIB	T2	N1	M0
	T3	N0	M0
Stage IIIA	T0/T1/T2	N2	M0
	T3	N1/N2	M0
Stage IIIB	T4	N0/N1/N2	M0
Stage IIIC	Any T	N3	M0
Stage IV	Any T	Any N	M1

Common difficulties in staging: Sometimes metastatic workups are incomplete, lymph nodes are not checked because of patient ill health or refusal, etc. Staging is not complete without all the information. If neoadjuvant chemotherapy is done prior to excision and nodal dissection, pre-treatment mammogram or ultrasound are relied upon for estimate of size (i.e. size at diagnosis is used to stage, not post-chemo size). This is known as "clinical staging" as opposed to "pathological staging." Cancer can "skip" nodes, so even a negative sentinel node does not guarantee lack of nodal involvement (possible false negative), although it does increase the likelihood of nodes being negative.

The staging information here is abbreviated for case managers. For more information please refer to the American Joint committee on Cancer (AJCC) Cancer Staging Manual and Handbook, Sixth Edition.

TREATMENT

Goals of Treatment:

The treatment of breast cancer involves both local and systemic therapy. Because it is believed that breast cancer may be a cancer that spreads early through the lymphatic and vascular systems, systemic treatment (chemotherapy and/or hormonal that treats the whole body) may be part of even the treatment of early breast cancers. In terms of local therapy, studies have shown that lumpectomy followed by radiation is as effective a local treatment for breast cancer as mastectomy. Many prognostic and technical factors go into the decisions of how to treat breast cancer.

Factors involved in the Treatment Decision:

The decision the individual will make with her/his breast specialist regarding the appropriate treatment will depend on the characteristics (discussed above) specific to the patient, including:

- Nuclear Grade
- Hormone Receptivity
- Oncogene Expression
- Margins
- Degree of invasion
- Staging
- Type of Cancer
- Personal preference of the patient.
- Overall health of the patient.
 (“performance status”)

TREATMENT OPTIONS

Surgical treatment (considered “local” treatment):

- Lumpectomy: surgical removal of breast mass and the immediately surrounding tissue; axillary lymph node staging is often done (by sentinel lymph node biopsy and/or axillary dissection) through a separate incision during the same operation. May be preceded (neoadjuvant) or followed (adjuvant) by additional treatments. At present, neoadjuvant therapy is preferred over adjuvant only for locally advanced cancers or on a study.
- Mastectomy: surgical removal of the breast (simple or total); the breast and some axillary lymph nodes (modified radical); the breast, axillary lymph nodes and chest wall musculature (radical, rarely done); may be preceded (neo adjuvant) or followed (adjuvant) by additional treatments.

Six randomized clinical trails have shown lumpectomy (with radiation) and mastectomy to be equally effective for the local control of early stage breast cancer.

Radiation therapy (considered “local” treatment):

- The use of computer-directed radioactive particles, placed very precisely to destroy cancer cells which may remain in the tissue following surgery. Usually used after lumpectomy as an alternative to mastectomy.
- The use of an electron beam or the temporary implantation of tubes containing a shallow-penetrating radioactive substance used to “boost” the radiation treatment specifically at the surgical site, when used after lumpectomy, is part of the treatment.

Chemotherapy (systemic/total body treatment):

- The intravenous and/or oral administration of anticancer drugs which are intended to destroy cancer cells both at the surgical site and wherever they may have migrated (metastasized) within the body.
- The administration of hormone antagonists (e.g. Tamoxifen, Arimidex) which bind to receptor sites in breast cells. This blocks the estrogen from stimulating the tumor cell. Only works in estrogen receptor positive tumors.
- The use of oncogene antibodies (e.g. Herceptin) for the treatment of recurrence in her2neu over-expressing cancers.