



# DEMYSTIFYING DATA ENTRY FOR BREAST CANCER

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WK Breast Health & Surgical Specialists

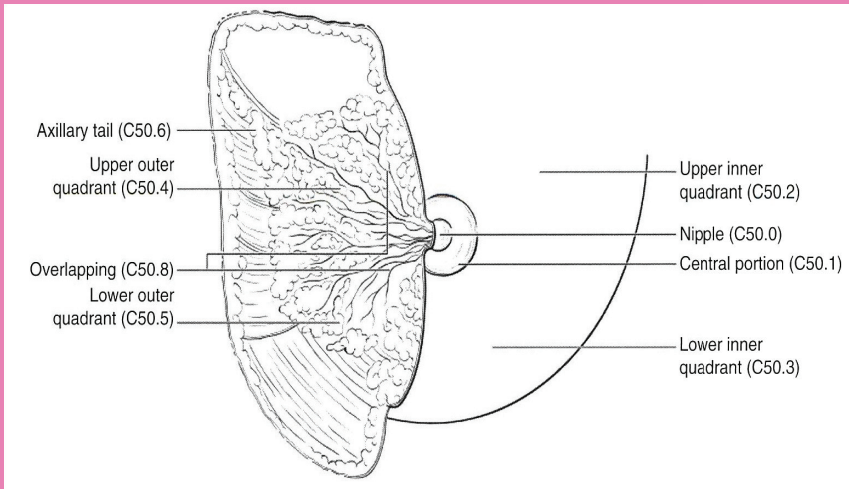


## Learning Objectives

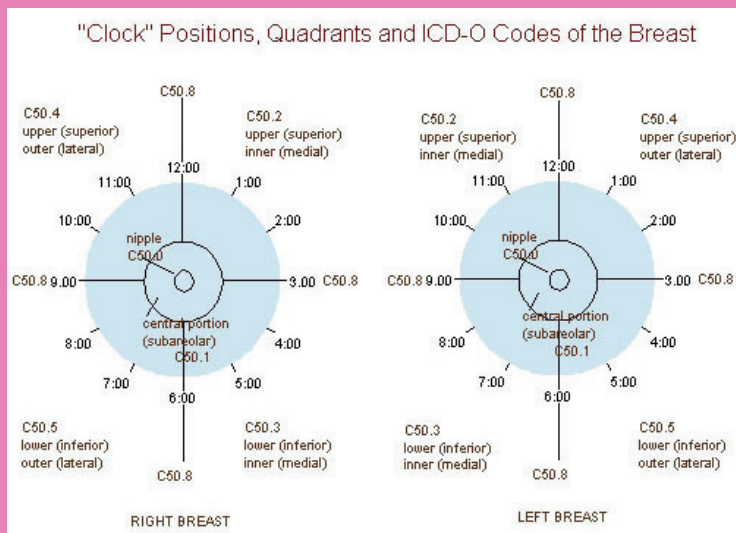
- Anatomy of the breast
- Breast cancer statistics
- TNM staging
- Surgical procedures and coding
- AJCC 8<sup>th</sup> edition Staging for Breast Cancer



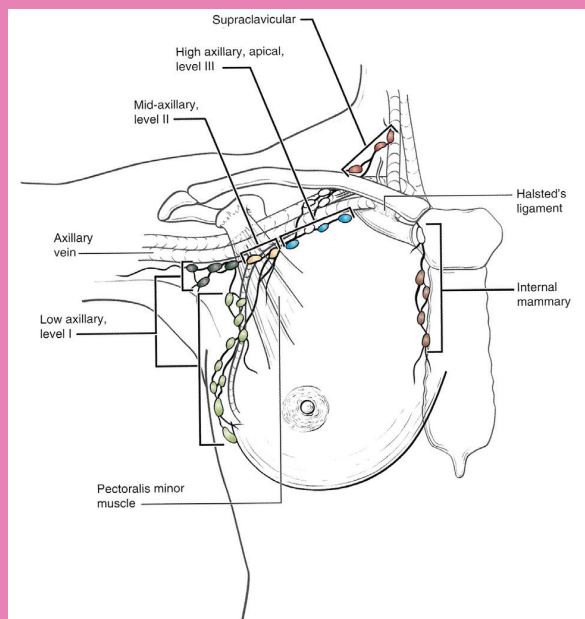
## ANATOMY



## Anatomy of the Breast



## Anatomy of the Breast

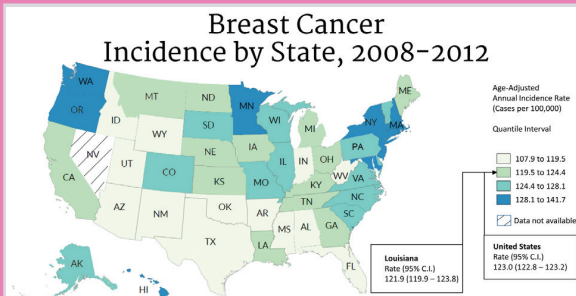


## Anatomy of the Lymph Nodes

# STATISTICS

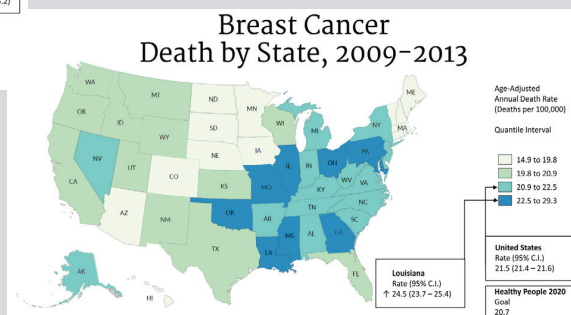
## Statistics

- **Louisiana has the 33rd highest incidence and second highest death (mortality) rate of breast cancer in the U.S.**
  - 123.4 people per 100,000 were diagnosed with breast cancer, while the national average was 125.0 per 100,000.
  - An average of 24.5 Louisiana residents per 100,000 died each year from this disease, while the national average was 21.5 deaths per 100,000.
- **Breast cancer is an equal-opportunity killer, with Louisiana white women are slightly below the national death rate while black women are significantly higher than the rest of the country.**



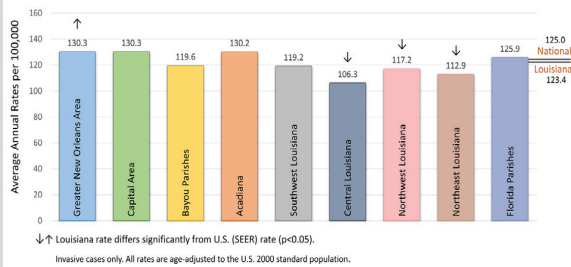
Invasive cases only. All rates are age-adjusted to the U.S. 2000 standard population.

<http://lbchp.org/breast-cancer/>

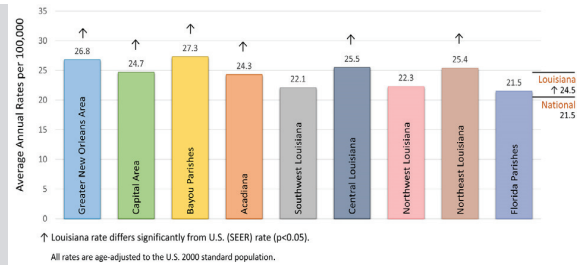


↑ Louisiana rate differs significantly from U.S. (SEER) rate ( $p < 0.05$ ).  
All rates are age-adjusted to the U.S. 2000 standard population.

## Breast Cancer Incidence by Region, 2009-2013

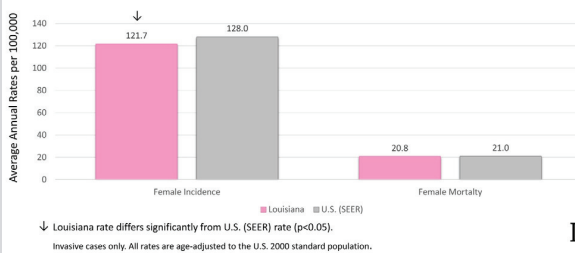


## Breast Cancer Mortality by Region, 2009-2013

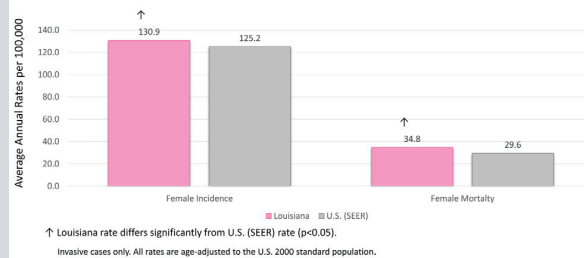


<http://lbchp.org/breast-cancer/>

## Whites: Breast Cancer, 2009-2013 Incidence & Mortality: Louisiana & US (SEER)



## Blacks: Breast Cancer, 2009-2013 Incidence & Mortality: Louisiana & US (SEER)



<http://lbchp.org/breast-cancer/>

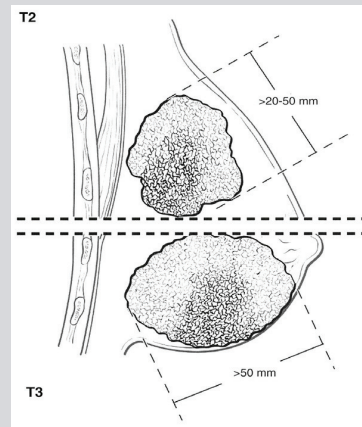
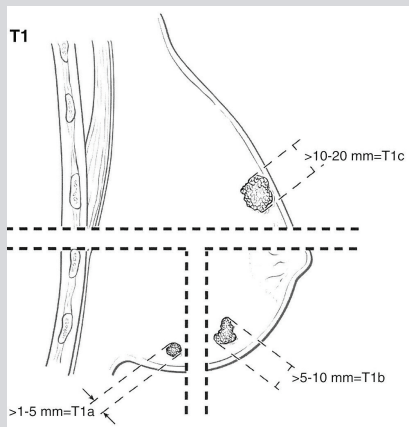
TNM



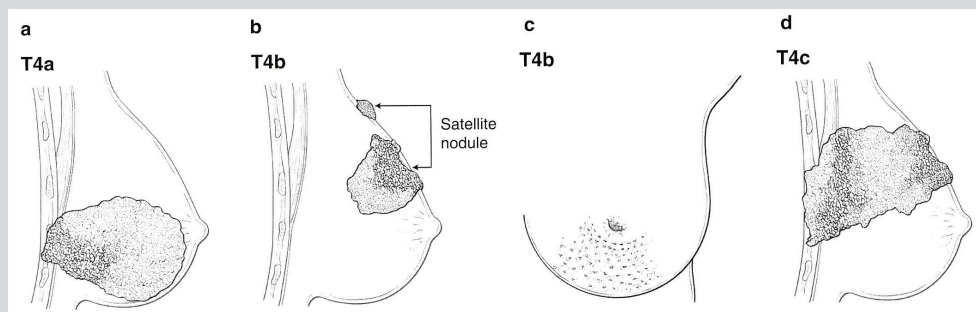
## Staging Classifications – Time Points of Staging

- **Clinical**
  - Before initiation of treatment: prefix "c" – cT, cN
  - All information from history, physical examination and imaging
  - Whatever is available – advanced imaging NOT required
- **Pathological**
  - Clinical information
  - PLUS results of surgery (if surgery initial treatment): prefix pT, pN
- **Prognostic**
  - Anatomic T, N, M plus relevant non-anatomic factors (e.g. grade, HER2, ER, PR)
- **Post-therapy (post-neoadjuvant)**
  - Clinical or pathologic information after completion of systemic or radiation therapy if this treatment precedes / replaces surgery: prefix ypT; ypN
- **Less Commonly Used:**
  - Recurrent – Extent of disease at recurrence: prefix rT, rN
  - Autopsy – For cancer identified only at autopsy

## T – Tumor Size



## T – Tumor Size

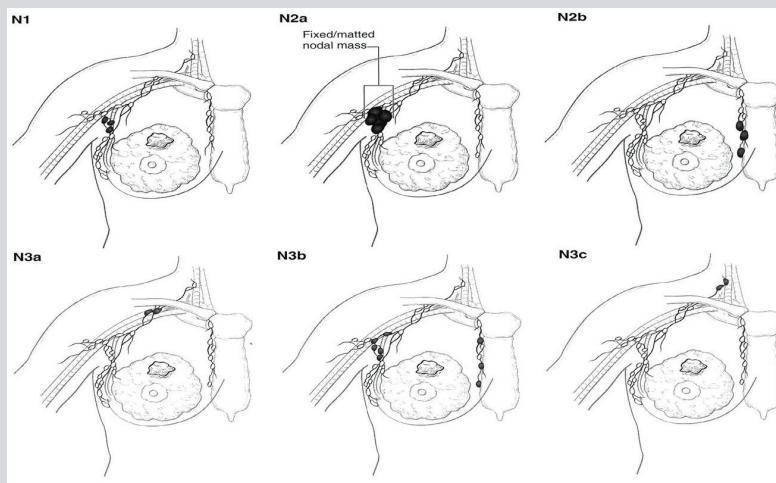


## T – Tumor Size

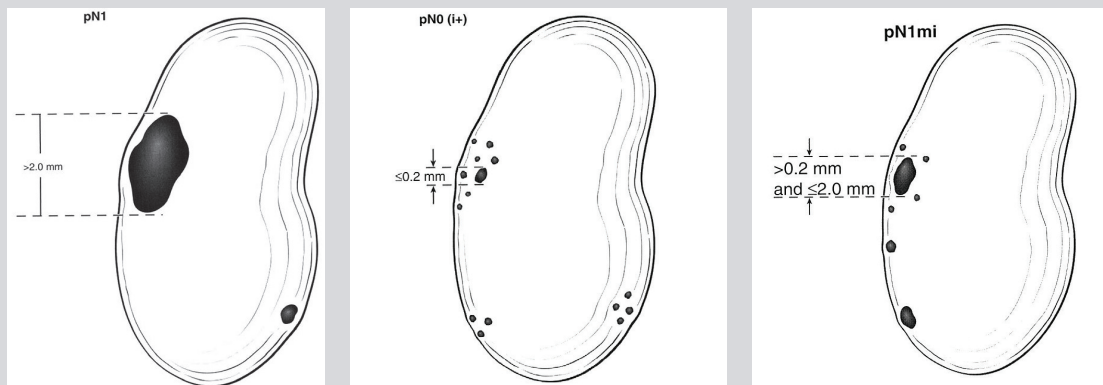
### ◦ **T4d – Inflammatory Breast cancer**

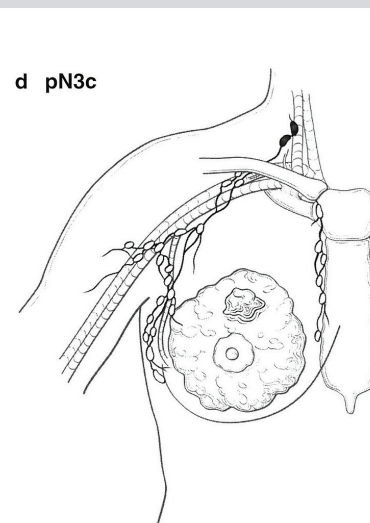
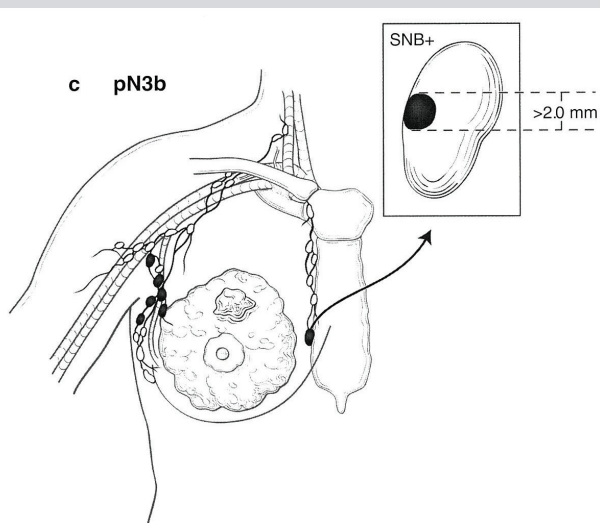
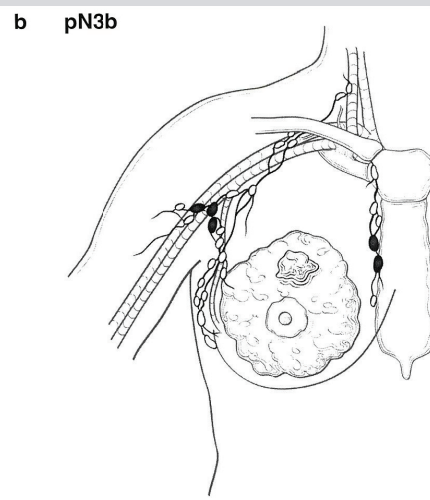
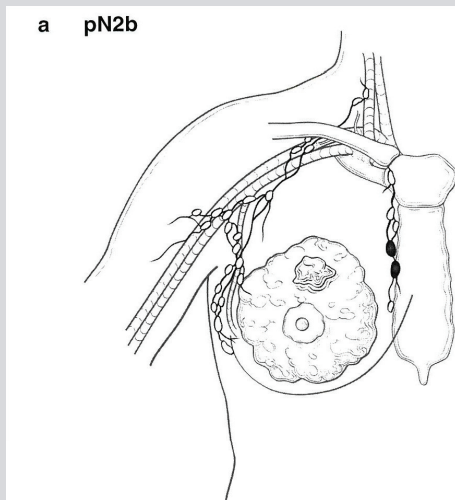
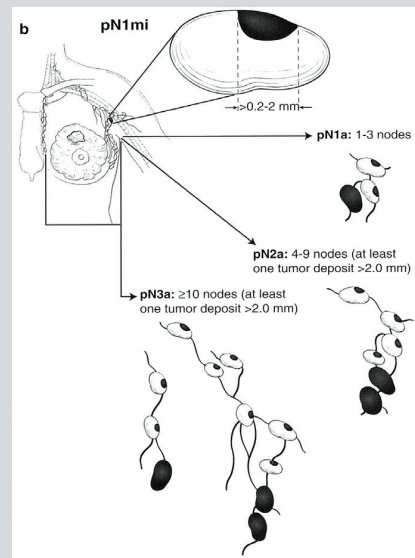
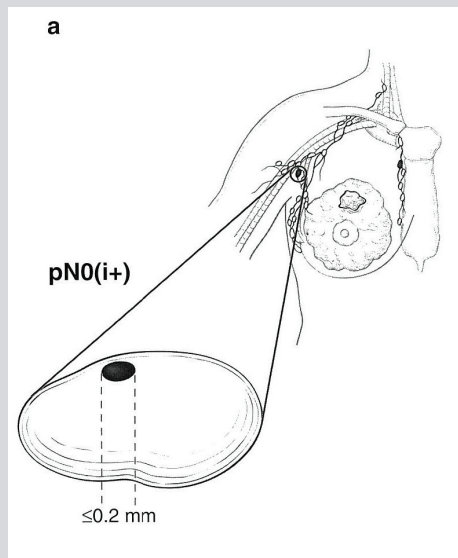
- A clinical-pathological entity characterized by diffuse erythema and edema (peau d'orange) involving a third or more of the skin of the breast.
- Primarily a clinical diagnosis.
- Must have a tissue diagnosis of breast cancer from the breast parenchyma but skin punch biopsy may be negative for tumor in the dermal lymphatics.

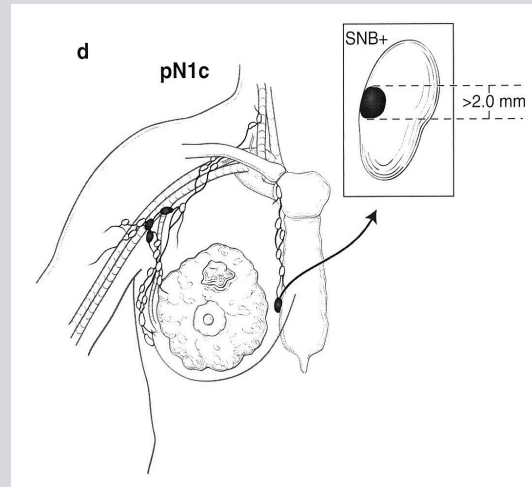
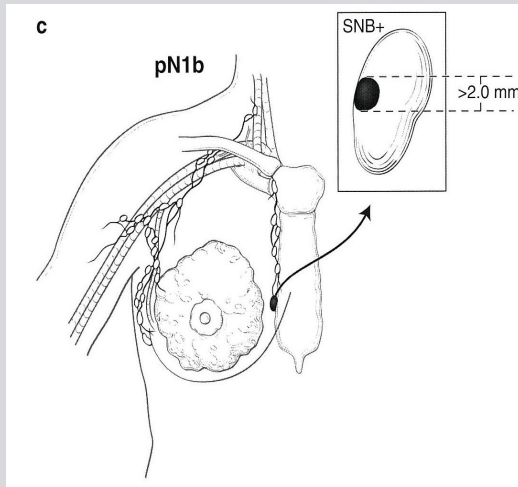
## N – Nodal Status - Clinical



## N – Nodal Status - Pathological



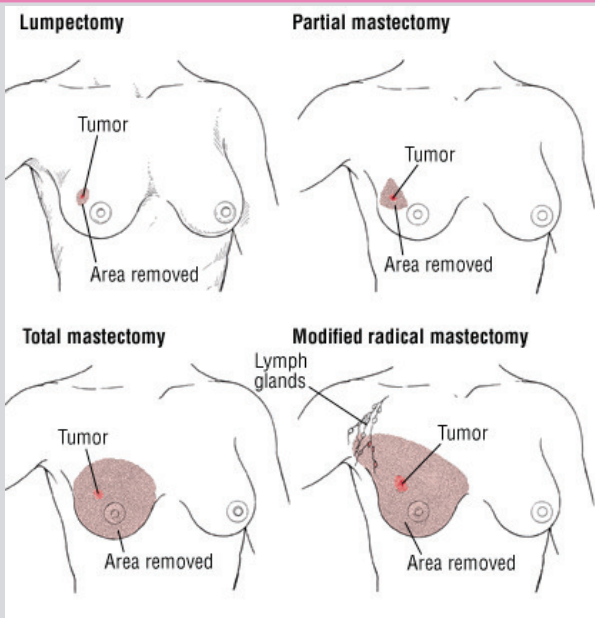




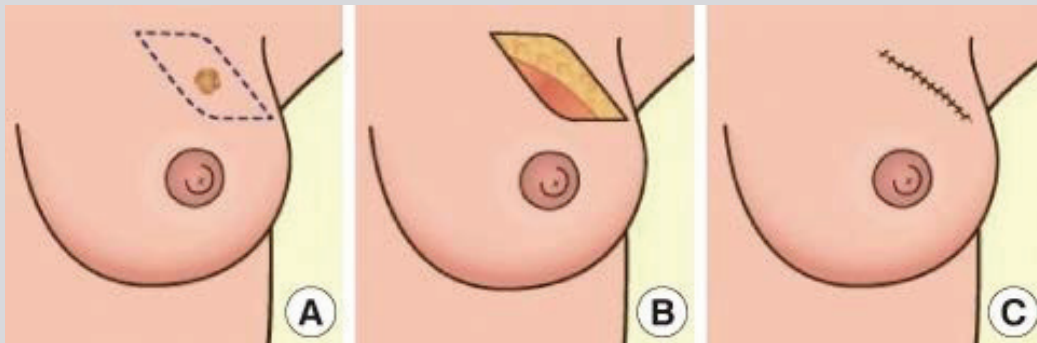
## M – Distant Metastasis

- Based on clinical exam
  - Must include history and physical exam and appropriate imaging
  - Biopsy confirmation is done when feasible.
  - The classification of M1 continues even when there is no evidence of disease after treatment.

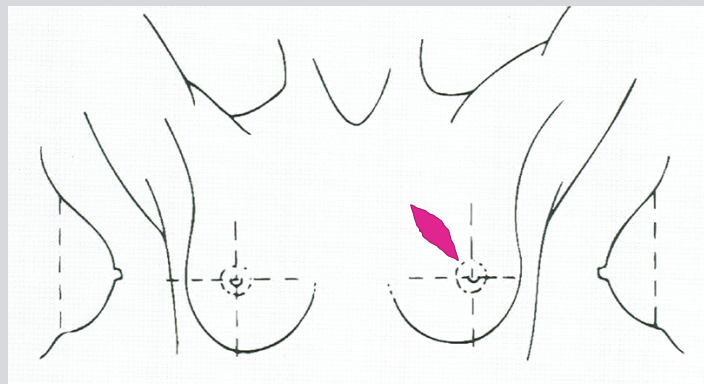
## SURGICAL PROCEDURES



## Lumpectomy

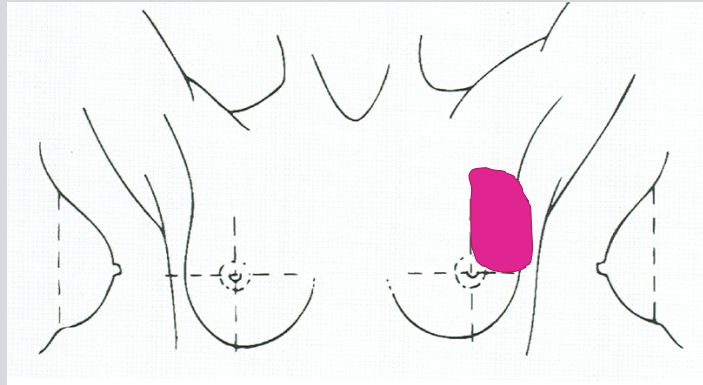


## Segmental Mastectomy

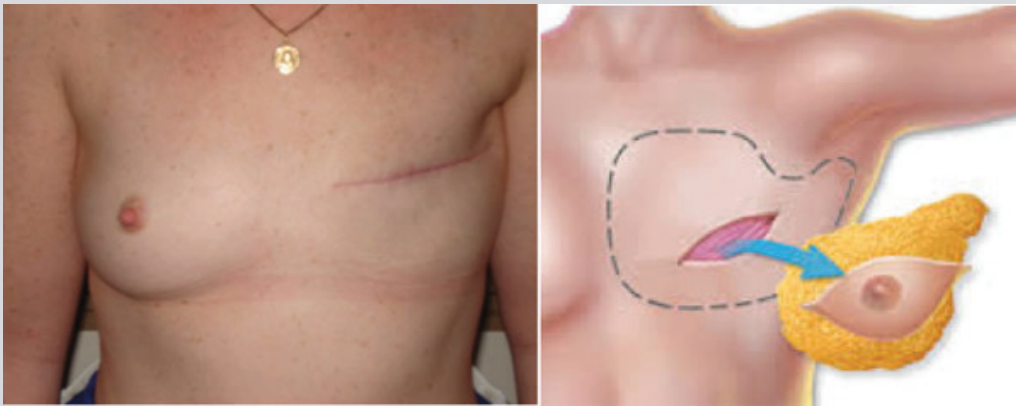




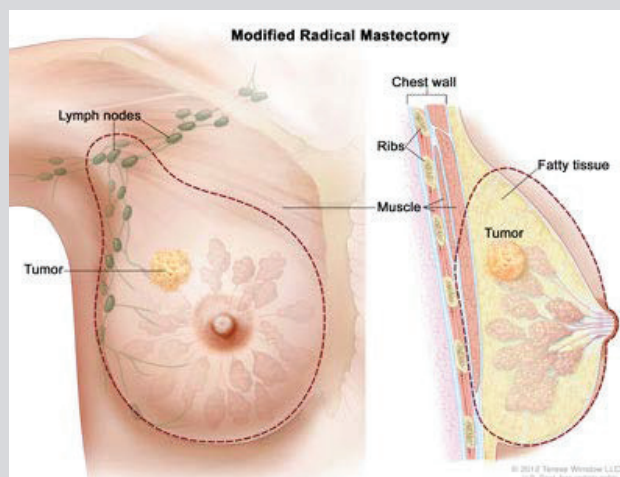
## Quadrantectomy



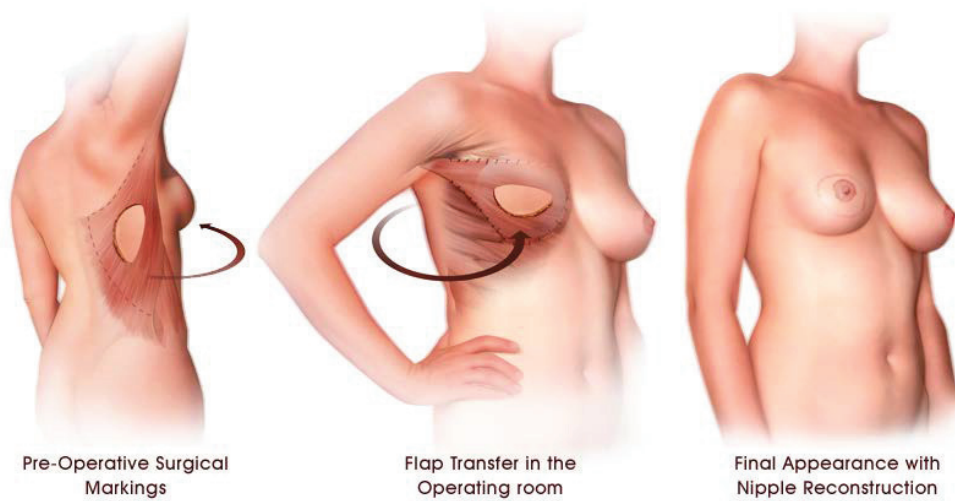
## Simple Mastectomy



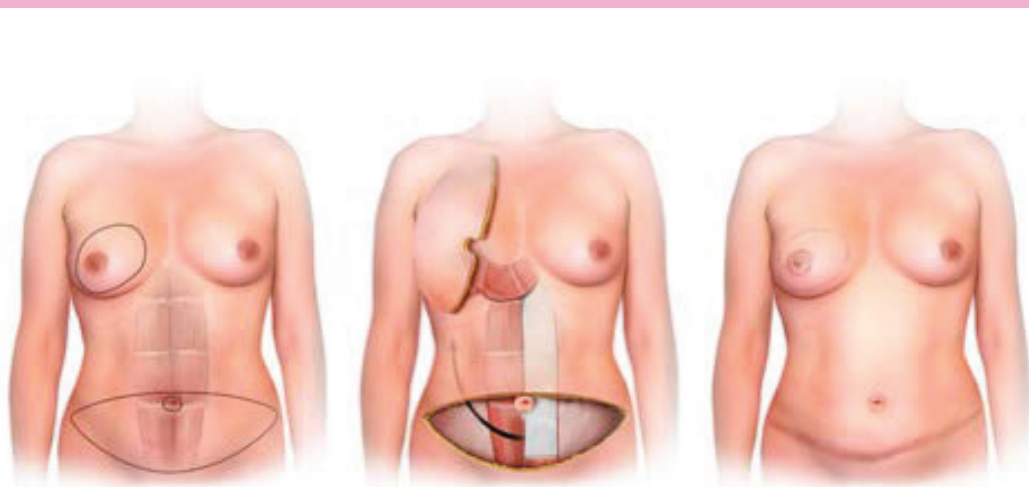
## Modified Radical Mastectomy



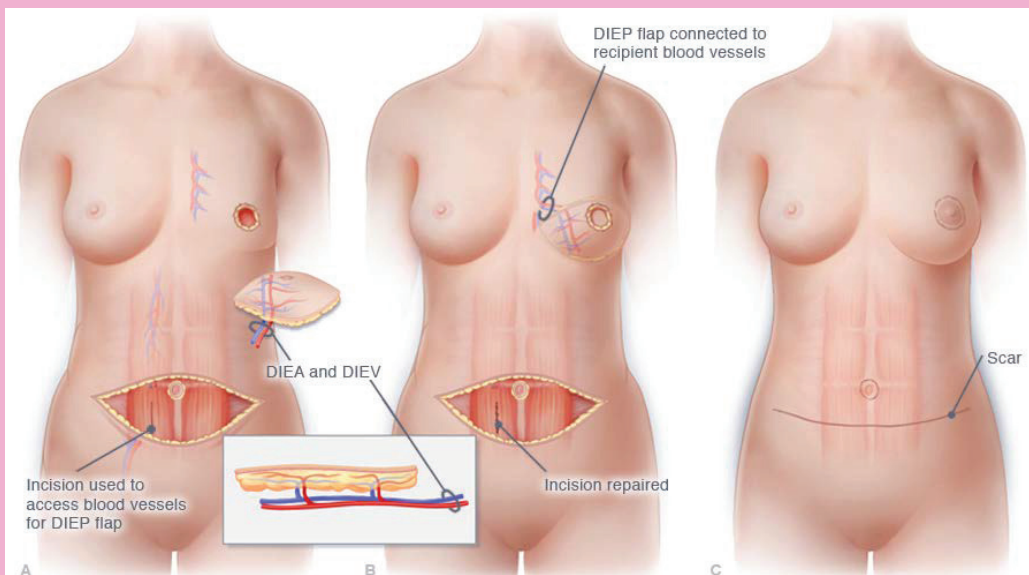
# Latissimus Dorsi Flap Reconstruction



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The logo features a purple background with a repeating pattern of white leaves and circles. In the center is a white rectangular box with a thin black border. At the top center of this box is a grey tab-like shape. The text "AJCC 8<sup>TH</sup> EDITION" is centered within the white box in a black, sans-serif font.

# AJCC 8<sup>TH</sup> EDITION

## Changes in the 8<sup>th</sup> edition

- The addition of Prognostic Stage Groups
- LCIS – no longer included as it is benign
- Tumors <1mm are not rounded to nearest mm.  
Tumors >1 and <2mm are rounded to 2mm
- Multiple tumors are based on largest tumor and designated by an “m” – example T1b(m)

## Changes in the 8<sup>th</sup> edition

- Complete pathologic response is no residual invasive tumor, may have residual non-invasive, fibrosis does not count as residual disease
- Inclusion of receptors (ER, PR, HER2), grade, and multigene panels (Oncotype, Mammaprint)

When T is...	And N is...	And M is...	Then the stage group is...
Tis	N0	M0	0
T1	N0	M0	IA
T0	N1mi	M0	IB
T1	N1mi	M0	IB
T0	N1	M0	IIA
T1	N1	M0	IIA
T2	N0	M0	IIA
T2	N1	M0	IIB
T3	N0	M0	IIB
T0	N2	M0	IIIA
T1	N2	M0	IIIA
T2	N2	M0	IIIA
T3	N1	M0	IIIA
T3	N2	M0	IIIA
T4	N0	M0	IIIB
T4	N1	M0	IIIB
T4	N2	M0	IIIB
Any T	N3	M0	IIIC
Any T	Any N	M1	IV

## Anatomic Staging

When T is...	And N is...	And M is...	And G is...	And HER2 Status* is...	And ER Status is...	And PR Status is...	Then the Prognostic Stage Group is...
Tis	N0	M0	1-3	Any	Any	Any	0
T1	N0	M0	1	Positive	Any	Any	IA
T1	N0	M0	1-2	Negative	Positive	Positive	IA
T1	N0	M0	2	Positive	Positive	Positive	IA
T1	N0	M0	3	Positive	Positive	Any	IA
T0-1	N1mi	M0	1	Positive	Any	Any	IA
T0-1	N1mi	M0	1-2	Negative	Positive	Positive	IA
T0-1	N1mi	M0	2	Positive	Positive	Positive	IA
T0-1	N1mi	M0	3	Positive	Positive	Any	IA
MultiGene Panel** – Oncotype Dx® Recurrence Score Less Than 11							
T1-2	N0	M0	1-3	Negative	Positive	Any	IA
T1	N0	M0	1	Negative	Positive	Negative	IB
T1	N0	M0	1	Negative	Negative	Positive	IB
T1	N0	M0	2	Positive	Positive	Negative	IB
T1	N0	M0	2	Positive	Negative	Any	IB
T1	N0	M0	2	Negative	Negative	Positive	IB
T1	N0	M0	3	Positive	Negative	Any	IB
T1	N0	M0	3	Negative	Positive	Positive	IB
T0-1	N1mi	M0	1	Negative	Positive	Negative	IB
T0-1	N1mi	M0	1	Negative	Negative	Positive	IB
T0-1	N1mi	M0	2	Positive	Positive	Negative	IB
T0-1	N1mi	M0	2	Positive	Negative	Any	IB
T0-1	N1mi	M0	2	Negative	Negative	Positive	IB
T0-1	N1mi	M0	3	Positive	Negative	Any	IB
T0-1	N1mi	M0	3	Negative	Positive	Positive	IB
T2	N0	M0	1-3	Positive	Positive	Positive	IB
T2	N0	M0	1,2	Negative	Positive	Positive	IB
T1	N1	M0	1-3	Positive	Positive	Positive	IB
T1	N1	M0	1-2	Negative	Positive	Positive	IB
T2	N1	M0	1	Negative	Positive	Positive	IB***
T2	N1	M0	2	Positive	Positive	Positive	IB***
T0-2	N2	M0	1-2	Positive	Positive	Positive	IB***

## Prognostic Staging

When T is...	And N is...	And M is...	And G is...	And HER2 Status* is...	And ER Status is...	And PR Status is...	Then the Prognostic Stage Group is...
T3	N1-2	M0	1	Positive	Positive	Positive	IB***
T3	N1-2	M0	2	Positive	Positive	Positive	IB***
T1	N0	M0	1	Negative	Negative	Negative	IIA***
T1	N0	M0	2	Negative	Negative	Negative	IIA***
T1	N0	M0	3	Negative	Positive	Negative	IIA***
T1	N0	M0	3	Negative	Negative	Positive	IIA***
T1	N0	M0	3	Negative	Negative	Negative	IIA***
T0-1	N1mi	M0	1	Negative	Negative	Negative	IIA
T0-1	N1mi	M0	2	Negative	Negative	Negative	IIA
T0-1	N1mi	M0	3	Negative	Positive	Negative	IIA
T0-1	N1mi	M0	3	Negative	Negative	Positive	IIA
T0-1	N1mi	M0	3	Negative	Negative	Negative	IIA
T0-1	N1	M0	1	Positive	Positive	Negative	IIA
T0-1	N1	M0	1 - 2	Positive	Negative	Any	IIA
T0-1	N1	M0	1	Negative	Positive	Negative	IIA
T0-1	N1	M0	1	Negative	Negative	Positive	IIA
T0-1	N1	M0	3	Negative	Positive	Positive	IIA
T2	N0	M0	1	Positive	Positive	Negative	IIA
T2	N0	M0	1 - 2	Positive	Negative	Any	IIA
T2	N0	M0	1	Negative	Positive	Negative	IIA
T2	N0	M0	1	Negative	Negative	Positive	IIA
T2	N0	M0	3	Negative	Positive	Positive	IIA
T0-2	N2	M0	1	Negative	Positive	Positive	IIA***
T3	N1-2	M0	1	Negative	Positive	Positive	IIA

## Prognostic Staging

T0-1	N1	M0	1	Negative	Negative	Negative	IIB
T0-1	N1	M0	2	Positive	Positive	Negative	IIB
T0-1	N1	M0	2	Negative	Positive	Negative	IIB
T0-1	N1	M0	2	Negative	Negative	Positive	IIB
T0-1	N1	M0	3	Positive	Positive	Negative	IIB
T0-1	N1	M0	3	Positive	Negative	Any	IIB
T2	N0	M0	1	Negative	Negative	Negative	IIB
T2	N0	M0	2	Positive	Positive	Negative	IIB
T2	N0	M0	2	Negative	Positive	Negative	IIB
T2	N0	M0	2	Negative	Negative	Positive	IIB
T2	N0	M0	3	Positive	Positive	Negative	IIB
T2	N0	M0	3	Positive	Negative	Any	IIB
T2	N1	M0	1	Positive	Any	Any	IIB
T2	N1	M0	1	Negative	Negative	Positive	IIB
T0-2	N2	M0	2	Negative	Positive	Positive	IIB
T0-2	N2	M0	3	Positive	Positive	Positive	IIB
T3	N1-2	M0	2	Negative	Positive	Positive	IIB
T3	N1-2	M0	3	Positive	Positive	Positive	IIB
T0-1	N1	M0	2	Negative	Negative	Negative	IIIA***
T0-1	N1	M0	3	Negative	Positive	Negative	IIIA

## Prognostic Staging

When T is...	And N is...	And M is...	And G is...	And HER2 Status* is...	And ER Status is...	And PR Status is...	Then the Prognostic Stage Group is...
T0-1	N1	M0	3	Negative	Negative	Any	IIIA
T2	N0	M0	2	Negative	Negative	Negative	IIIA***
T2	N0	M0	3	Negative	Positive	Negative	IIIA***
T2	N0	M0	3	Negative	Negative	Any	IIIA***
T2	N1	M0	1	Negative	Positive	Negative	IIIA
T2	N1	M0	2	Positive	Negative	Negative	IIIA
T2	N1	M0	2	Negative	Positive	Negative	IIIA
T2	N1	M0	3	Positive	Positive	Negative	IIIA
T2	N1	M0	3	Positive	Negative	Negative	IIIA
T3	N0	M0	1	Negative	Positive	Negative	IIIA
T3	N0	M0	2	Positive	Negative	Negative	IIIA
T3	N0	M0	2	Negative	Positive	Negative	IIIA
T3	N0	M0	3	Positive	Positive	Negative	IIIA
T3	N0	M0	3	Positive	Negative	Negative	IIIA
T0-2	N2	M0	1	Positive	Positive	Negative	IIIA
T0-2	N2	M0	1	Positive	Negative	Any	IIIA
T0-2	N2	M0	1	Negative	Positive	Negative	IIIA
T0-2	N2	M0	1	Negative	Negative	Positive	IIIA
T0-2	N2	M0	2	Positive	Positive	Negative	IIIA
T0-2	N2	M0	2	Positive	Negative	Any	IIIA
T3	N1-2	M0	1	Positive	Positive	Negative	IIIA
T3	N1-2	M0	1	Positive	Negative	Any	IIIA
T3	N1-2	M0	1	Negative	Positive	Negative	IIIA
T3	N1-2	M0	1	Negative	Negative	Positive	IIIA
T3	N1-2	M0	2	Positive	Positive	Negative	IIIA
T3	N1-2	M0	2	Positive	Negative	Any	IIIA
T4	N0-2	M0	1	Negative	Positive	Positive	IIIA
Any	N3	M0	1	Negative	Positive	Positive	IIIA***

## Prognostic Staging

T2	N1	M0	1 - 2	Negative	Negative	Negative	IIIB***
T2	N1	M0	3	Negative	Positive	Negative	IIIB***
T3	N0	M0	1 - 2	Negative	Negative	Negative	IIIB
T3	N0	M0	3	Negative	Positive	Negative	IIIB
T0-2	N2	M0	2	Negative	Positive	Negative	IIIB
T0-2	N2	M0	2	Negative	Negative	Positive	IIIB
T0-2	N2	M0	3	Positive	Positive	Negative	IIIB
T0-2	N2	M0	3	Positive	Negative	Any	IIIB
T0-2	N2	M0	3	Negative	Positive	Positive	IIIB
T3	N1-2	M0	2	Negative	Positive	Negative	IIIB
T3	N1-2	M0	2	Negative	Negative	Positive	IIIB
T3	N1-2	M0	3	Positive	Positive	Negative	IIIB
T3	N1-2	M0	3	Positive	Negative	Any	IIIB
T3	N1-2	M0	3	Negative	Positive	Positive	IIIB
T4	N0-2	M0	1	Positive	Any	Any	IIIB
T4	N0-2	M0	2	Positive	Positive	Positive	IIIB

## Prognostic Staging

When T is...	And N is...	And M is...	And G is...	And HER2 Status* is...	And ER Status is...	And PR Status is...	Then the Prognostic Stage Group is...
T4	N0-2	M0	2	Negative	Positive	Positive	IIIB
T4	N0-2	M0	3	Positive	Positive	Positive	IIIB
Any	N3	M0	1	Positive	Any	Any	IIIB
Any	N3	M0	2	Positive	Positive	Positive	IIIB
Any	N3	M0	2	Negative	Positive	Positive	IIIB
Any	N3	M0	3	Positive	Positive	Positive	IIIB
T2	N1	M0	3	Negative	Negative	Any	IIIC***
T3	N0	M0	3	Negative	Negative	Any	IIIC
T0-2	N2	M0	2	Negative	Negative	Negative	IIIC***
T0-2	N2	M0	3	Negative	Positive	Negative	IIIC***
T0-2	N2	M0	3	Negative	Negative	Any	IIIC***
T3	N1-2	M0	2	Negative	Negative	Negative	IIIC***
T3	N1-2	M0	3	Negative	Positive	Negative	IIIC***
T3	N1-2	M0	3	Negative	Negative	Any	IIIC***
T4	N0-2	M0	1	Negative	Positive	Negative	IIIC
T4	N0-2	M0	1	Negative	Negative	Any	IIIC
T4	N0-2	M0	2	Positive	Positive	Negative	IIIC
T4	N0-2	M0	2	Positive	Negative	Any	IIIC
T4	N0-2	M0	2	Negative	Positive	Negative	IIIC
T4	N0-2	M0	2	Negative	Negative	Any	IIIC
T4	N0-2	M0	3	Positive	Positive	Negative	IIIC
T4	N0-2	M0	3	Positive	Negative	Any	IIIC
T4	N0-2	M0	3	Negative	Any	Any	IIIC
Any	N3	M0	1	Negative	Positive	Negative	IIIC
Any	N3	M0	1	Negative	Negative	Any	IIIC
Any	N3	M0	2	Positive	Positive	Negative	IIIC
Any	N3	M0	2	Positive	Negative	Any	IIIC
Any	N3	M0	2	Negative	Positive	Negative	IIIC
Any	N3	M0	3	Negative	Negative	Any	IIIC
Any	N3	M0	3	Positive	Positive	Negative	IIIC
Any	N3	M0	3	Positive	Negative	Any	IIIC
Any	N3	M0	3	Negative	Any	Any	IIIC
AnyT	AnyN	M1	1-3	Any	Any	Any	IV

## Prognostic Staging

## Major changes in Stage Groups from Anatomic Staging for Many Situations - Examples

TNM			Biomarkers				Genomic Profile	Stage Groups	
T	N	M	Grade	HER2	ER	PR	Oncotype Dx	7 <sup>th</sup> Edition Anatomic	8 <sup>th</sup> Edition Prognostic
1	0	0	1	Neg	Neg	Neg	N/A	IA	IIA
3	1-2	0	1	Pos	Pos	Pos	N/A	IIIA	IB
0-2	2	0	1-2	Pos	Pos	Pos	N/A	IIIA	IB
2	0	0	Any	Neg	Pos	Any	< 11	IIA	IA

## Registry Data Collection Variables

- ER: positive versus negative; percent positive; Allred score, if available
- PR: positive versus negative; percent positive; Allred score, if available
- HER2 – IHC: 0, 1+, 2+, 3+; or unknown or not performed
- HER2 – FISH: negative, positive; HER2:CEP17 ratio; and HER2 copy number, if available; or unknown or not performed



## Registry Data Collection Variables

- HER2: Overall result, negative, positive, unknown if done; not performed
- Nottingham histologic grade: low (1), intermediate (2), high (3)
- Ki-67, if available: percent positive
- Oncotype Dx® recurrence score (numeric score preferred over risk level)
- Oncotype DX® DCIS recurrence score (numeric score preferred over risk level)

## Registry Data Collection Variables

- Mammaprint® (numeric score preferred over risk level)
- PAM50 intrinsic subtypes and Risk of Recurrence score (ProSigna) (numeric score preferred over risk level)
- Breast Cancer Index (numeric score preferred over risk level)
- EndoPredict (numeric score preferred over risk level)
- IHC4 (numeric score preferred over risk level)

## Registry Data Collection Variables

- Urokinase plasminogen activator (uPA) and plasminogen activator inhibitor type 1 (PAI-1)<sup>101</sup>
- Response to treatment: CR, PR, NR