BREAST CANCER 101

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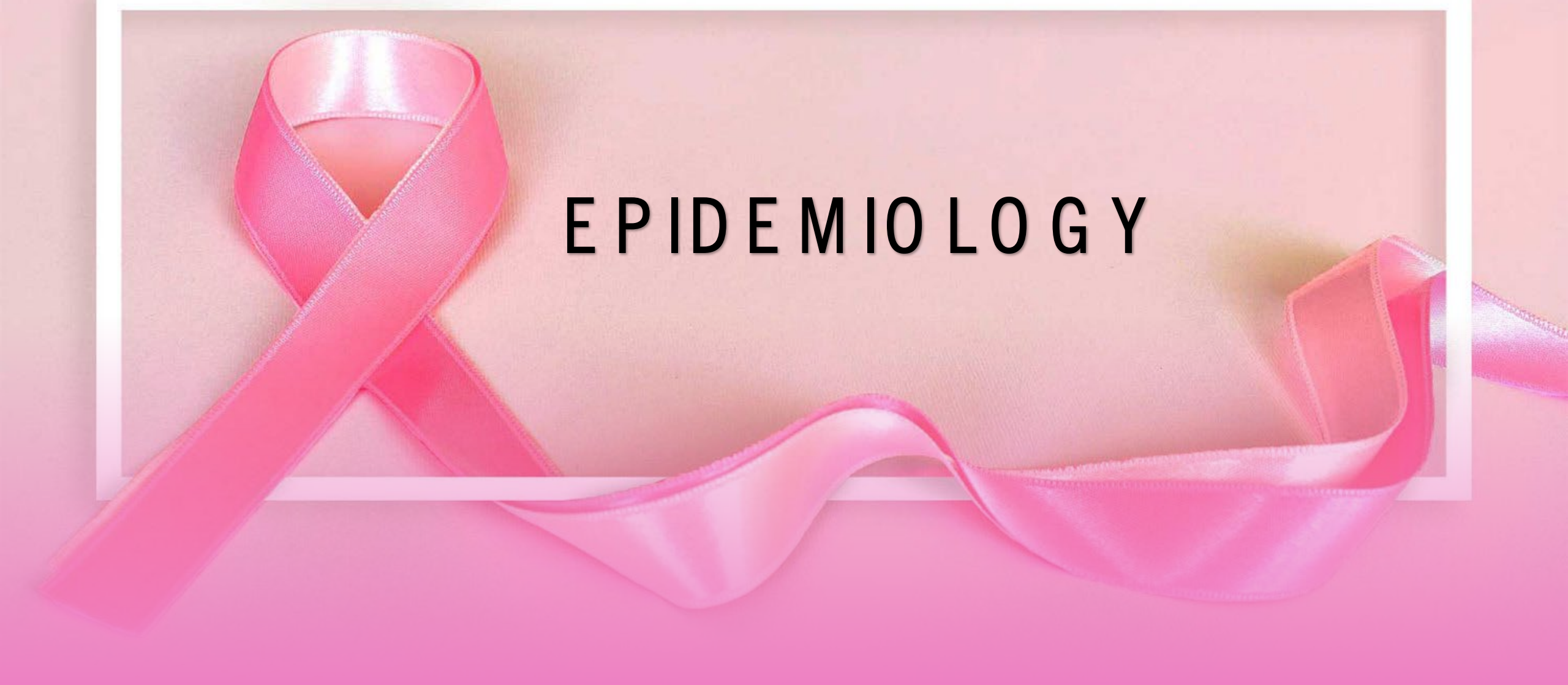
AAPA 2023 Conference

OBJECTIVES

- Discuss current data related to the incidence of breast cancer
- Develop an approach for screening patient who are at risk
- Perform an initial workup and promptly refer patients diagnosed with breast cancer
- Describe typical treatments that patients with breast cancer may undergo
- Develop an approach to the long-term health issues that those successfully treated for breast cancer may face

EPIDEMIOLOGY



INCIDENCE AND DEATHS — 2023 ESTIMATES

- Total New Cases: 300,590

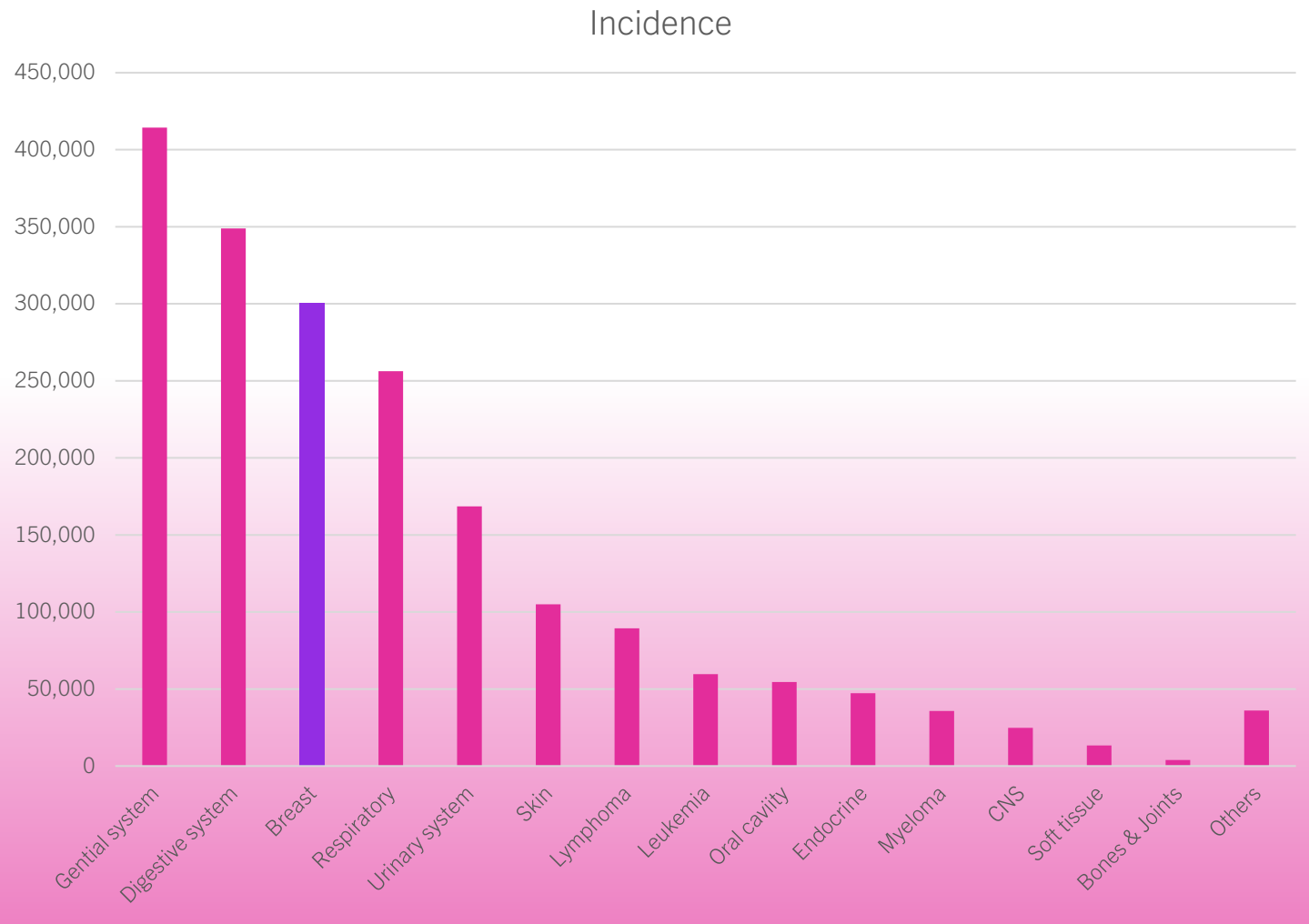
  Male: 2800

  Female: 297,790

- Estimated Deaths: 43,700

  Male: 530

  Female: 43,170



NEW CASES

Females

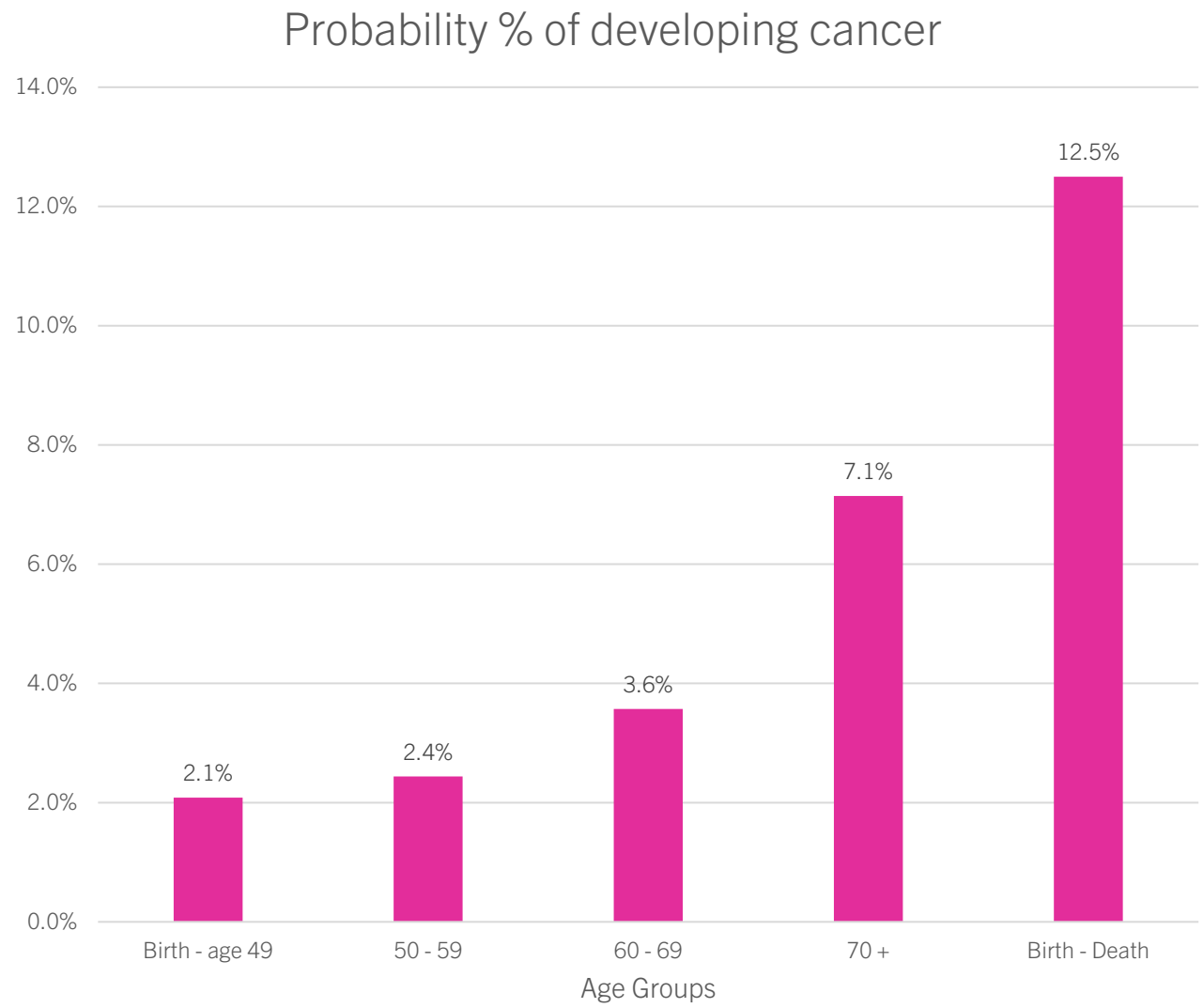
Breast	297,790	31%
Lung & bronchus	120,790	13%
Colon & rectum	71,160	8%
Uterine corpus	66,200	7%
Melanoma of the skin	39,490	4%
Non-Hodgkin lymphoma	35,670	4%
Thyroid	31,180	3%
Pancreas	30,920	3%
Kidney & renal pelvis	29,440	3%
Leukemia	23,940	3%
All Sites	**948,000**	**100%**

DEATHS

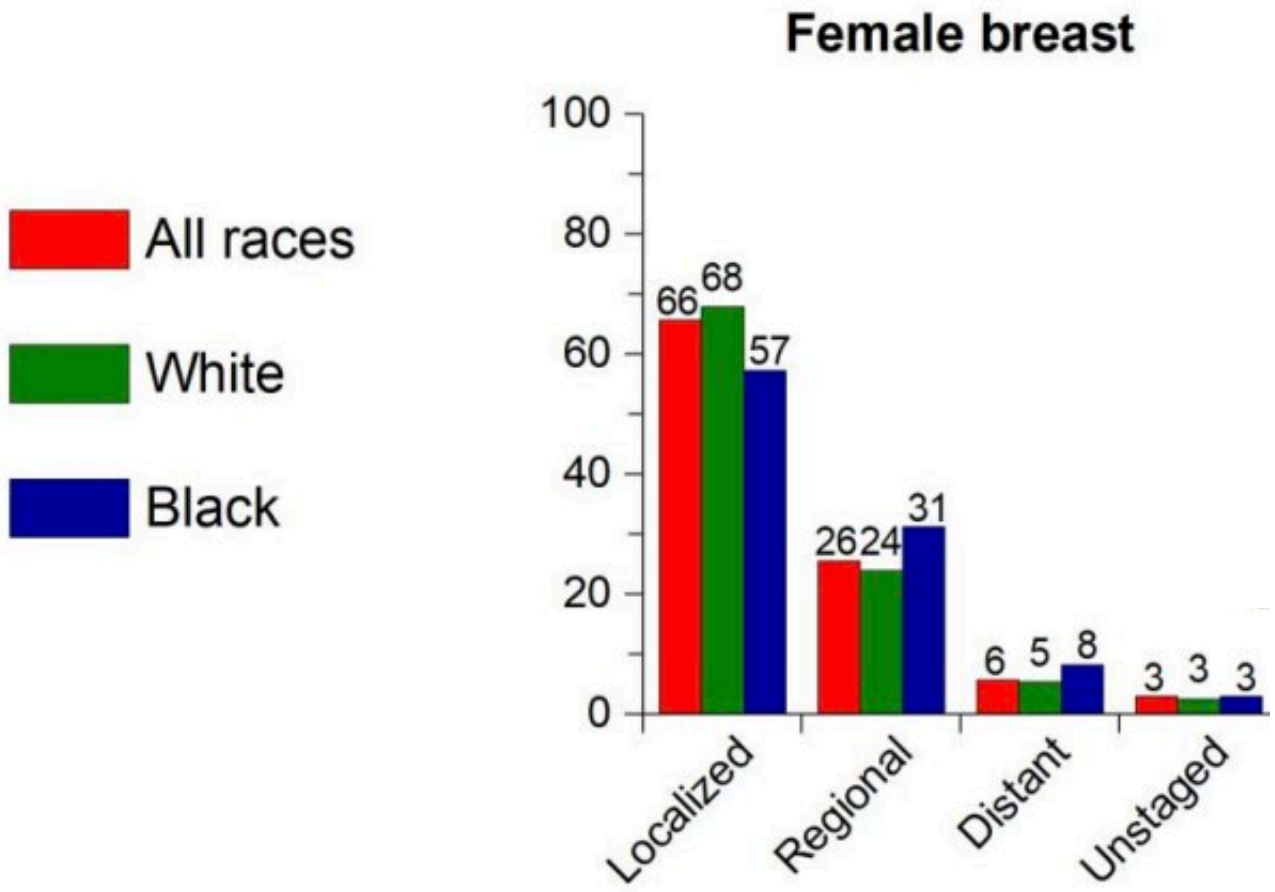
Females

Lung & bronchus	59,910	21%
Breast	43,170	15%
Colon & rectum	24,080	8%
Pancreas	23,930	8%
Ovary	13,270	5%
Uterine corpus	13,030	5%
Liver & intrahepatic bile duct	10,380	4%
Leukemia	9,810	3%
Non-Hodgkin lymphoma	8,400	3%
Brain & other nervous system	7,970	3%
All Sites	**287,740**	**100%**

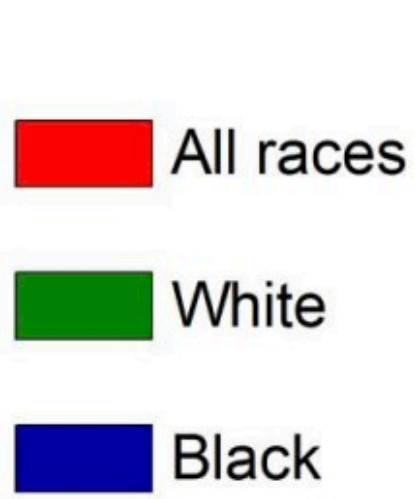
AGE WISE INCIDENCE

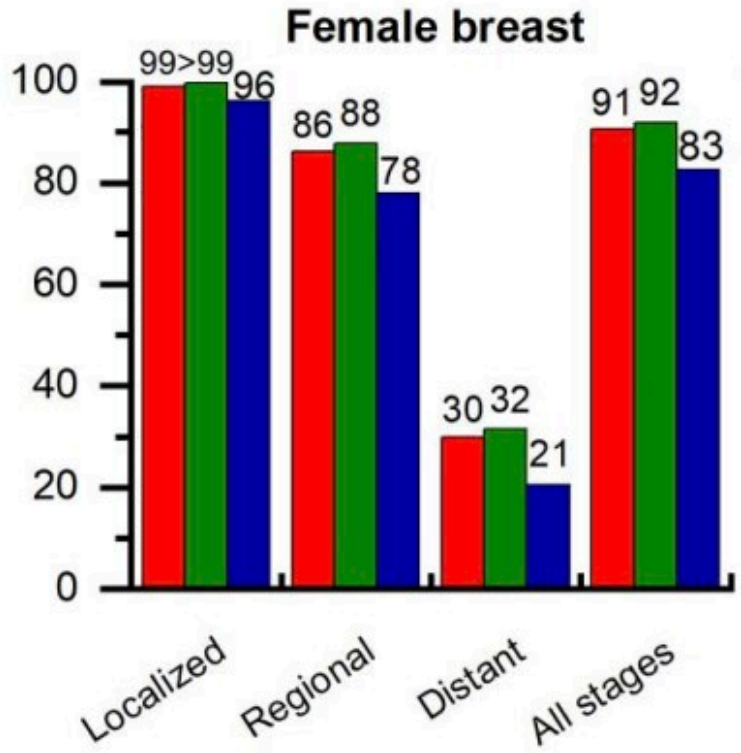


STAGE DISTRIBUTION BY RACE

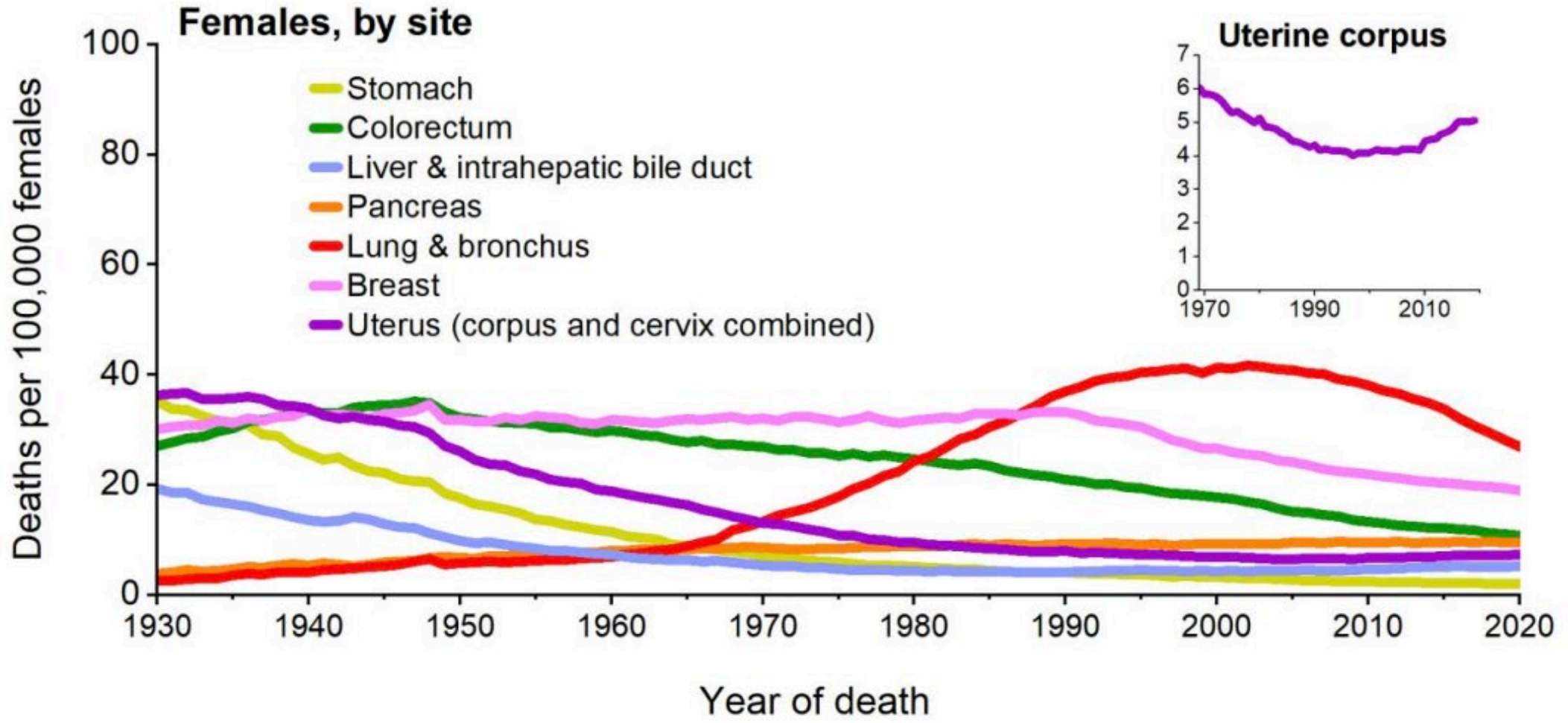


5-YEAR SURVIVAL



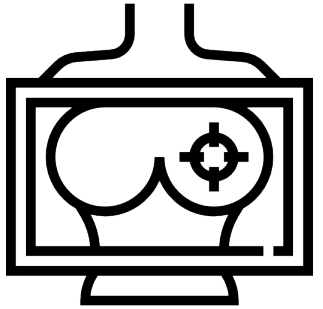


MORTALITY RATES



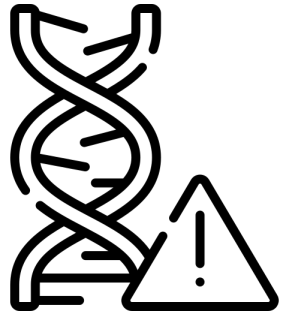
SCRE E NING

FOR AVERAGE-RISK WOMEN



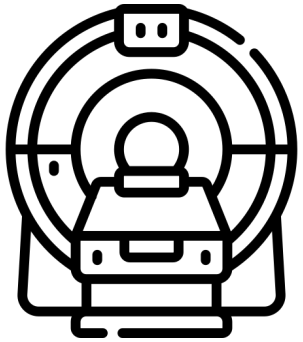
- Age 40 – 44: option to begin yearly mammogram
- Age 45 – 54: yearly mammogram strongly recommended
- Age 55+ : can switch to biennial mammogram, or they can choose to continue yearly mammograms.
- Screening should continue as long as a woman is in good health and is expected to live at least 10 more years.
- Clinical breast exams are not recommended for breast cancer screening among average-risk women at any age.

HIGH-RISK WOMEN



- Have known BRCA1 or BRCA2 gene mutation (based on genetic testing)
- Have a first-degree relative (parent, brother, sister, or child) with a BRCA1 or BRCA2 gene mutation, and have not had genetic testing themselves
- Had radiation therapy to the chest when they were between the ages of 10 and 30 years
- Have Li-Fraumeni syndrome, Cowden syndrome, or Bannayan-Riley-Ruvalcaba syndrome, or have first-degree relatives with one of these syndromes

FOR HIGH-RISK WOMEN

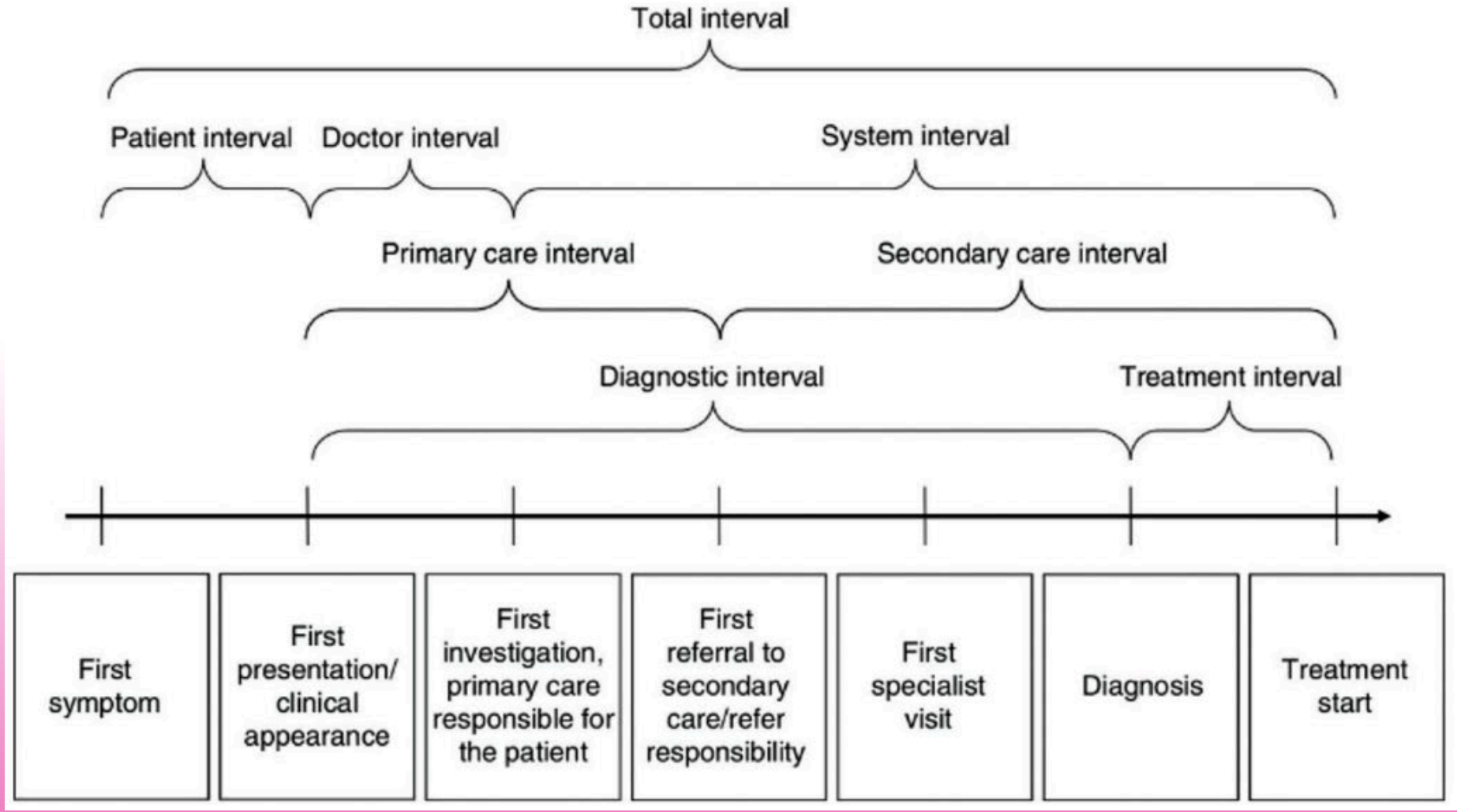


- Starting age 30:
- Yearly breast MRI (better for dense breasts noted in young individuals)
- Yearly mammogram
- Yearly breast ultrasound if MRI is not medically appropriate

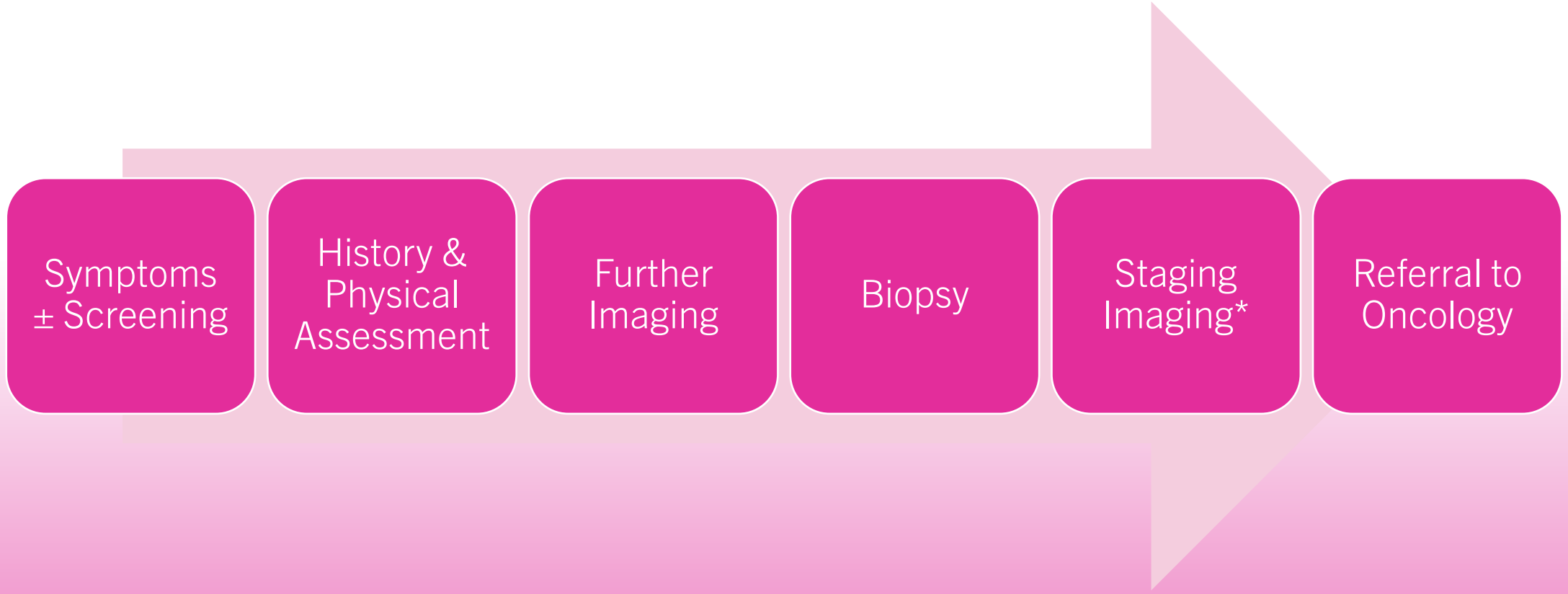
- Little evidence that routine breast self-exam help find breast cancer early when women also get screening mammograms

INITIAL WO RKUP

DIAGNOSTIC INTERVAL



DIAGNOSTIC PROCESS



SYMPTOMS

- New lump or mass
- Unilateral edema
- Peau d'orange
- Breast or nipple pain
- Nipple retraction, or discharge
- Skin dimpling
- Skin erythema
- Palpable lymph nodes

FOCUSED HISTORY

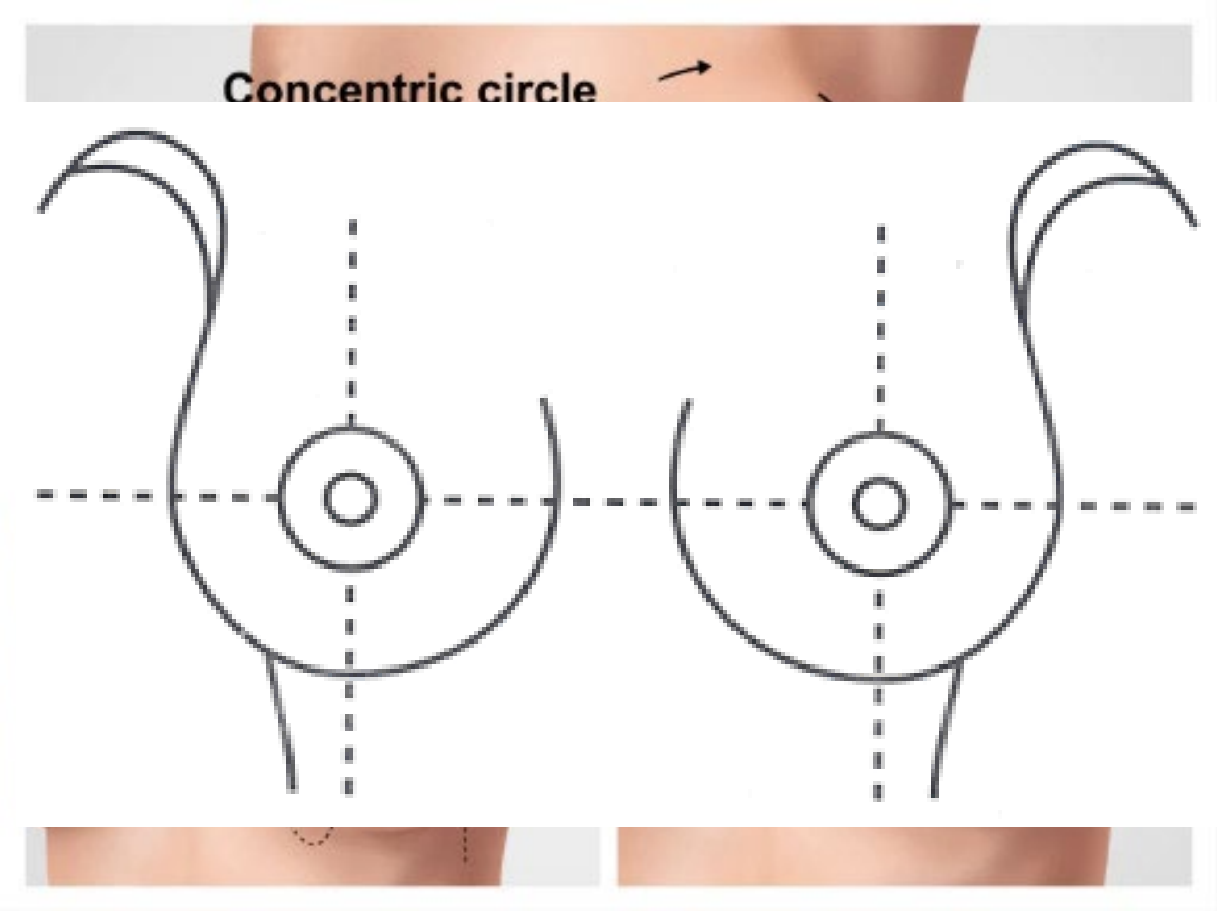
- OBHx: GTPAL
- GYNHx: Menarche, menses, LMP, menopause
- OCP, HRT, IVF use
- PMHx, PSHx, Meds, Allergies
- FHx: Breast and ovarian cancers
  - If yes, Who and Ages
- SHx: smoking, EtOH

RISK FACTORS

- Early menarche, late menopause
- Nulliparity
- Not breastfeeding
- Ashkenazi Jewish ancestry
- Obesity
- Prior chest irradiation (<age 30)
- Prior breast biopsies
  - LCIS, atypical hyperplasia, etc.

PHYSICAL ASSESSMENT

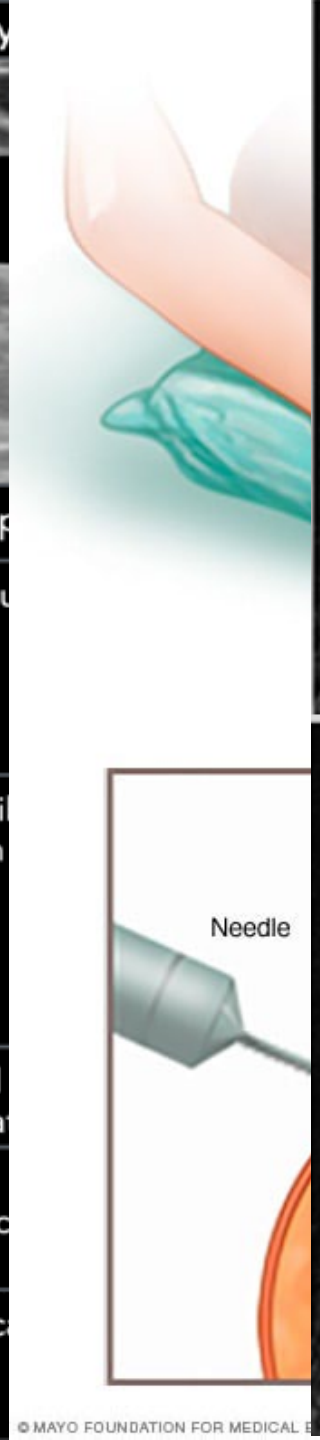
- Symmetrical or asymmetrical
- Shape
- Texture
- Masses (clock position)
- Nipple-areolar complex
- Skin (warm, dry, of erythema, edema, peau d'orange, open sores, fluid collections)

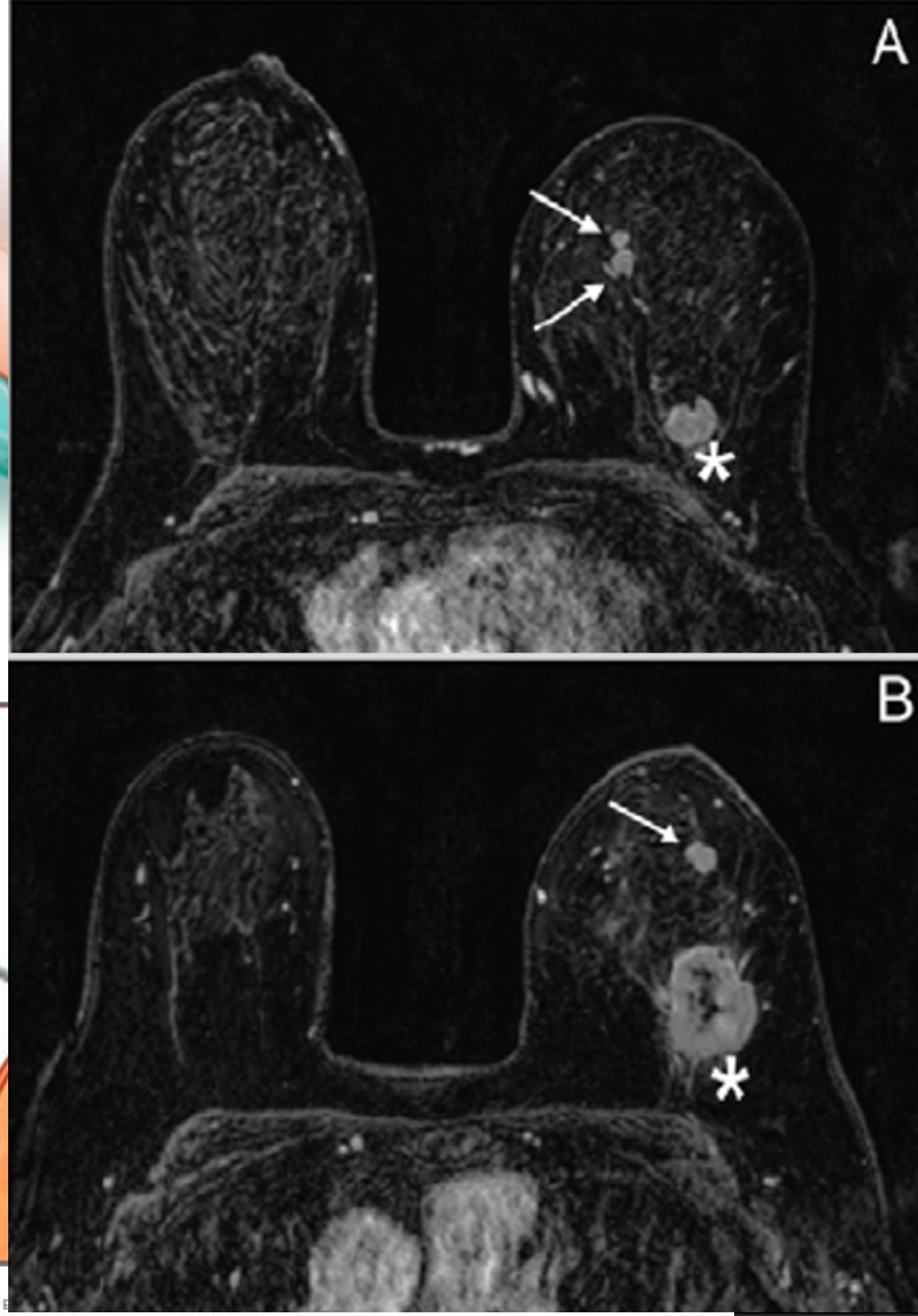


WORKUP

- Diagnostic mammography
- Ultrasonography
- Core Needle biopsy

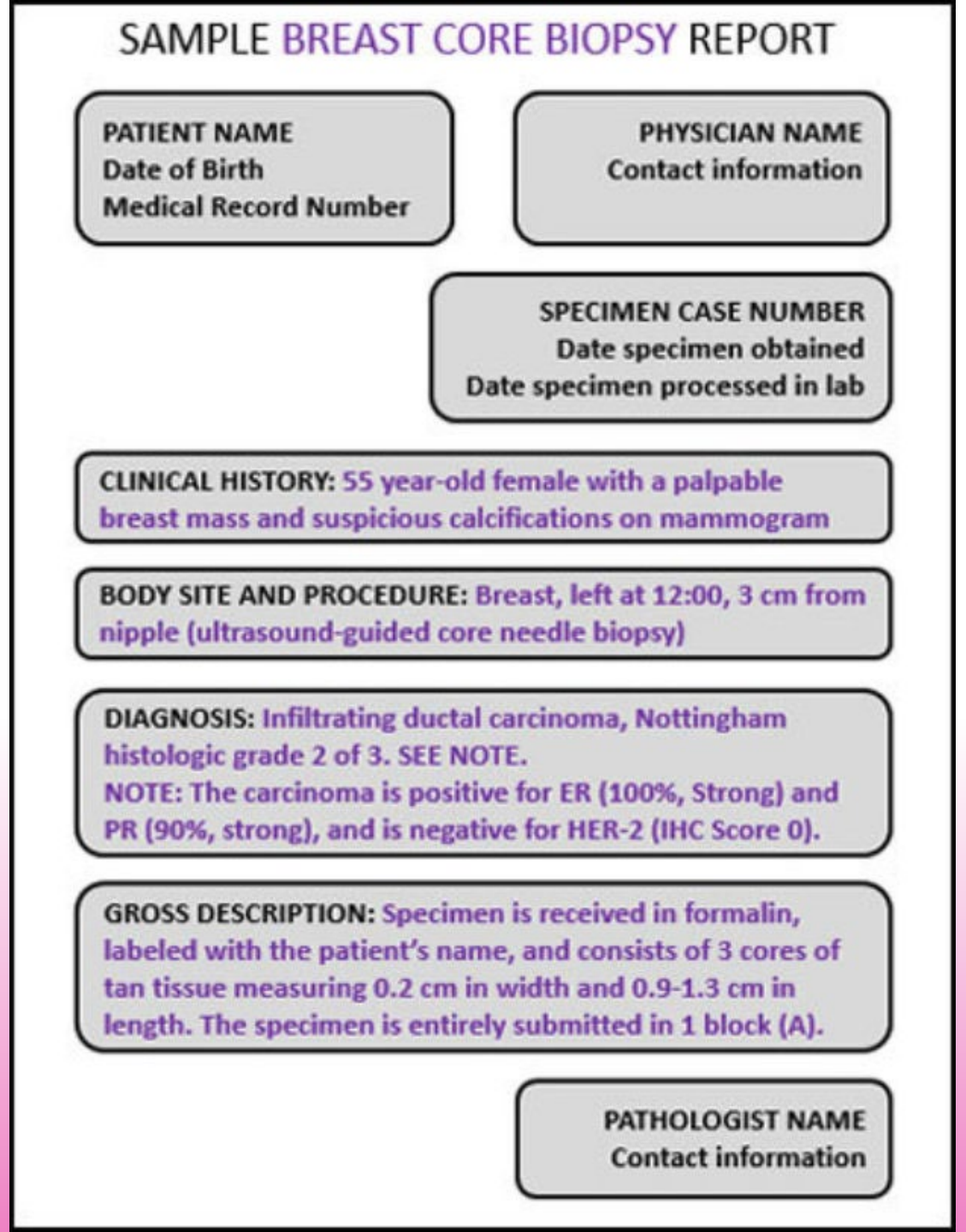
- MRI for multifocality
- CT CAP and Bone Scan for higher clinical stages





BIOPSY FINDINGS

- Confirm body site and procedure
- Diagnosis: histology, Nottingham grade, tumor markers (ER, PR, HER2)
- Any comments for gross descriptions



SAMPLE BREAST CORE BIOPSY REPORT

PATIENT NAME
Date of Birth
Medical Record Number

PHYSICIAN NAME
Contact information

SPECIMEN CASE NUMBER
Date specimen obtained
Date specimen processed in lab

CLINICAL HISTORY: 55 year-old female with a palpable breast mass and suspicious calcifications on mammogram

BODY SITE AND PROCEDURE: Breast, left at 12:00, 3 cm from nipple (ultrasound-guided core needle biopsy)

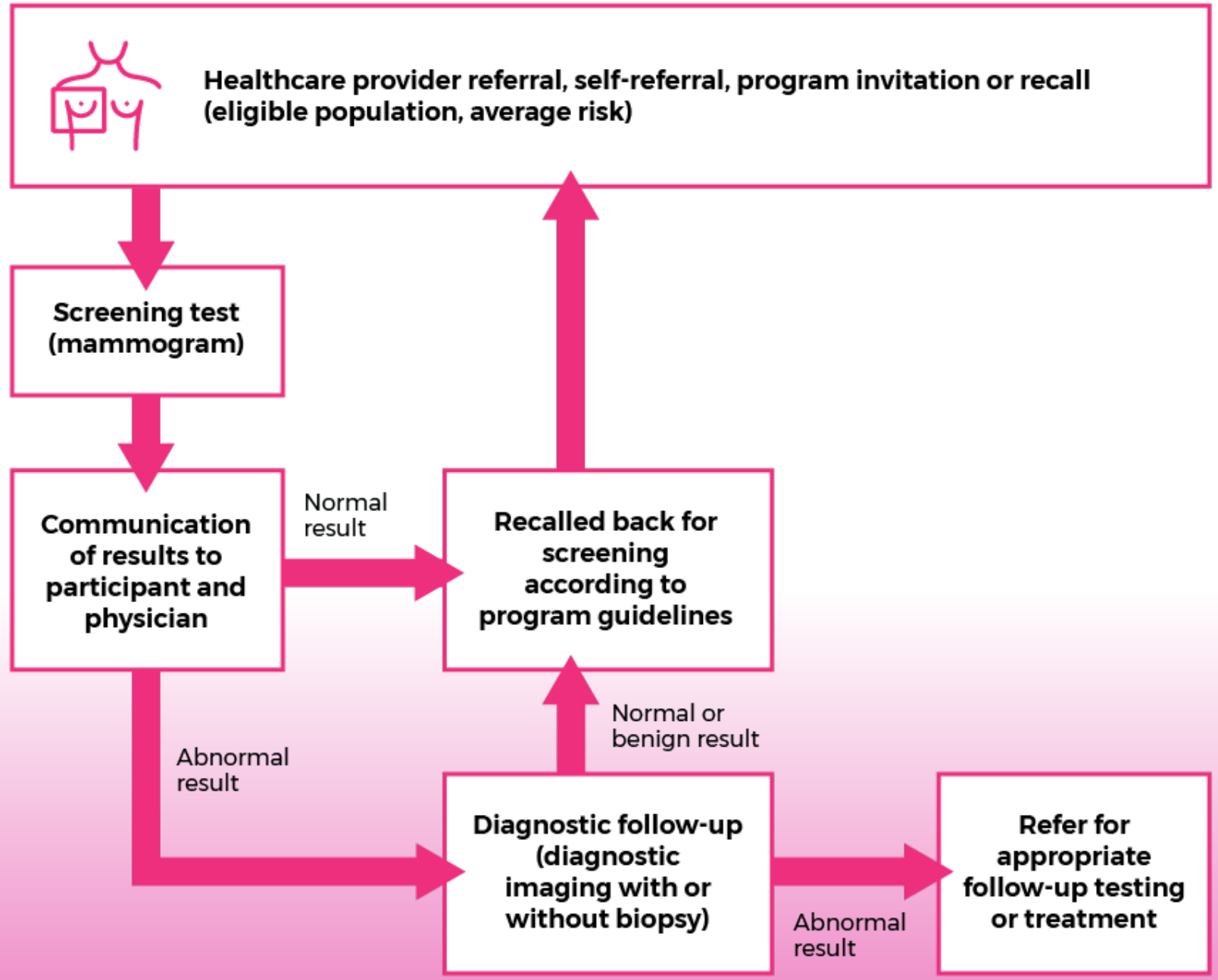
DIAGNOSIS: Infiltrating ductal carcinoma, Nottingham histologic grade 2 of 3. SEE NOTE.
NOTE: The carcinoma is positive for ER (100%, Strong) and PR (90%, strong), and is negative for HER-2 (IHC Score 0).

GROSS DESCRIPTION: Specimen is received in formalin, labeled with the patient's name, and consists of 3 cores of tan tissue measuring 0.2 cm in width and 0.9-1.3 cm in length. The specimen is entirely submitted in 1 block (A).

PATHOLOGIST NAME
Contact information

REFERRAL

- Local or academic cancer centre with breast surgical oncologist – usually step 1
- <1% have evidence of secondary spread at diagnosis
  - Beware recent onset of site specific pain



STAG ING

Tumours	T0/Tis	T1	T2	T3	T4
Tumour size	T0: No primary tumour Tis: tumour only in breast ducts or lobules	≤2 cm	>2 - ≤5 cm	>5 cm	Tumour of any size with extension to chest wall/skin (ulceration or skin nodules)
Nodes	N0	N1	N2	N3	
	N0 lymph node metastases	Metastases in 1-3 axillary lymph nodes	Metastases in 4-9 axillary lymph nodes	Metastases in infra- or supraclavicular lymph nodes or in ≥10 axillary lymph nodes	
Metastasis	M0	M1			
	No evidence of cancer metastasis	Cancer found in other areas of body			

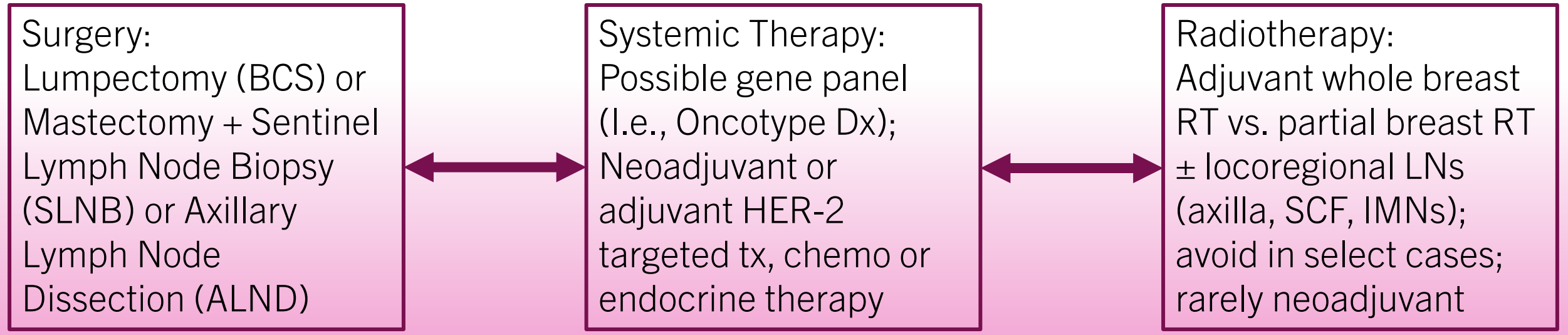
TRE ATM E NTS

WHO TREATS BREAST CANCER?

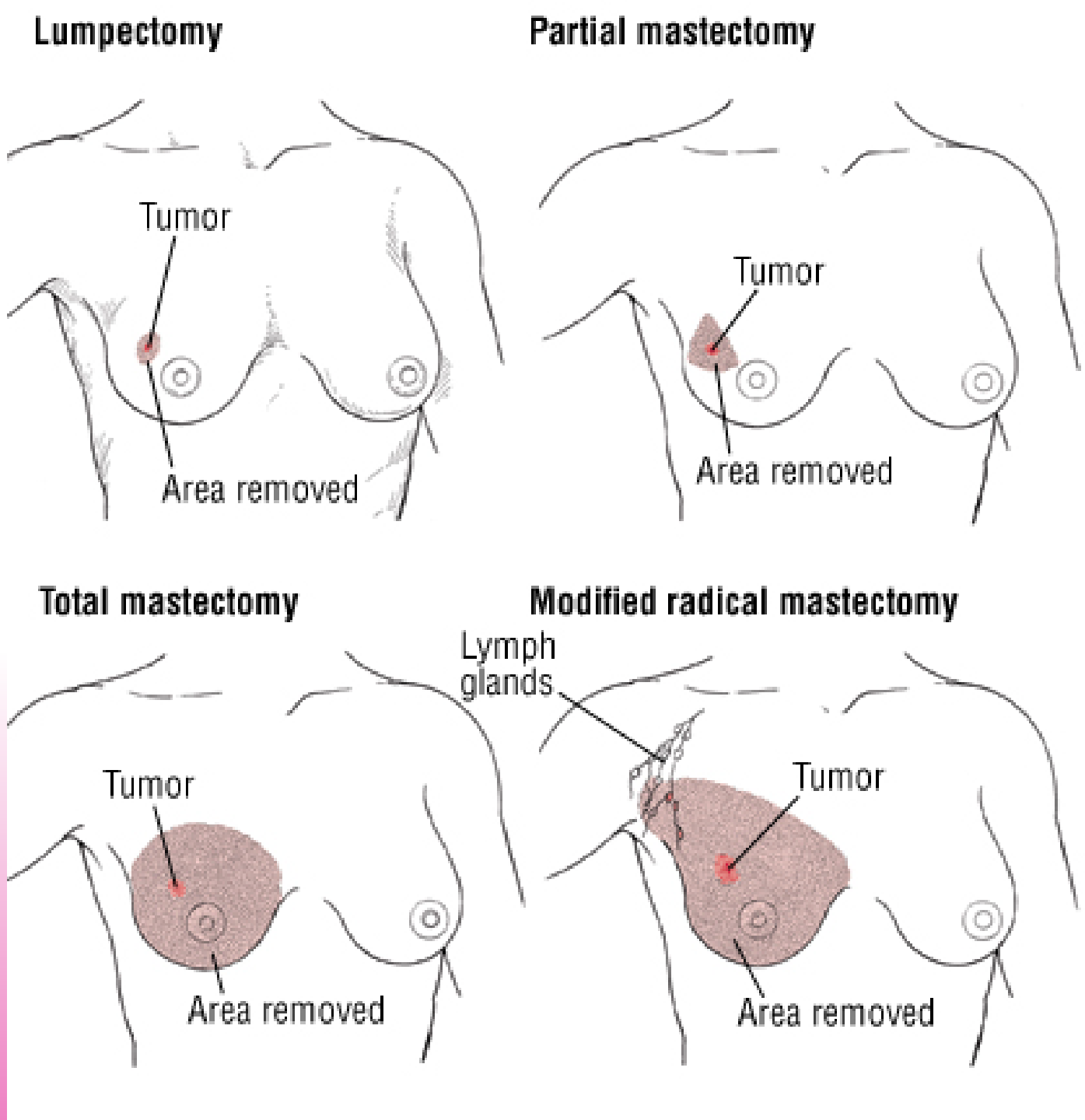
- Multidisciplinary team approach at majority cancer centres
- Surgical Oncology team – surgeon, RNs, APPs
- Radiation Oncology team – oncologist, RTs, PAs, NPs,
- Medical Oncology team – oncologist, trial coordinators, APPs
- Plastics team – may include oncoplastic surgeon
- Psychosocial team – SW, psychologist, fertility specialist, geneticist, OT/PT, prosthesis fitter, dietician
- Specialized oncology nurses – research, chemotherapy, radiotherapy, wound care

STAGE-DEPENDENT

- Stage 0: DCIS/LCIS: Breast Conserving Surgery (BCS) → adjuvant radiotherapy (RT)



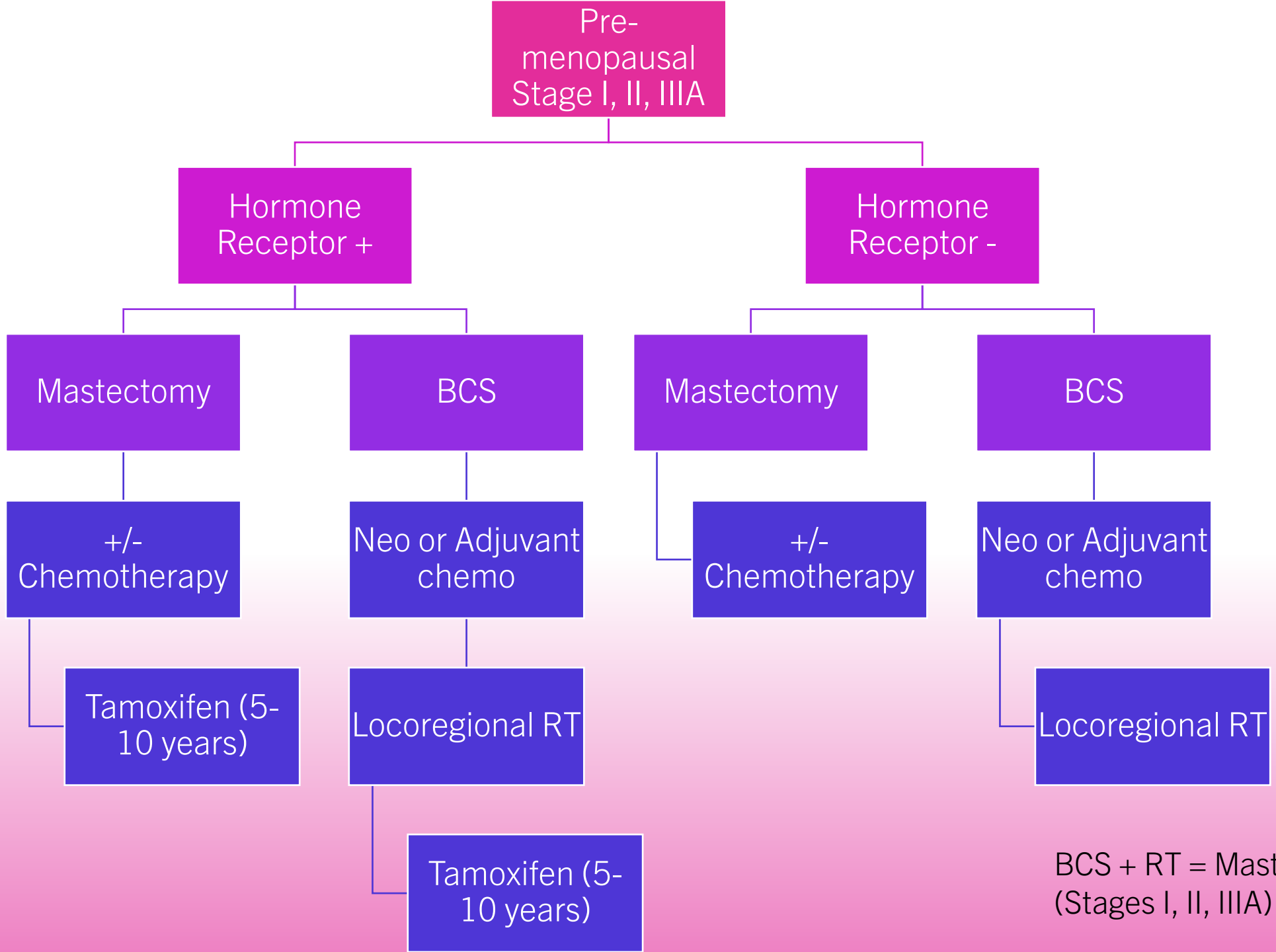
LUMPECTOMY VS. MASTECTOMY



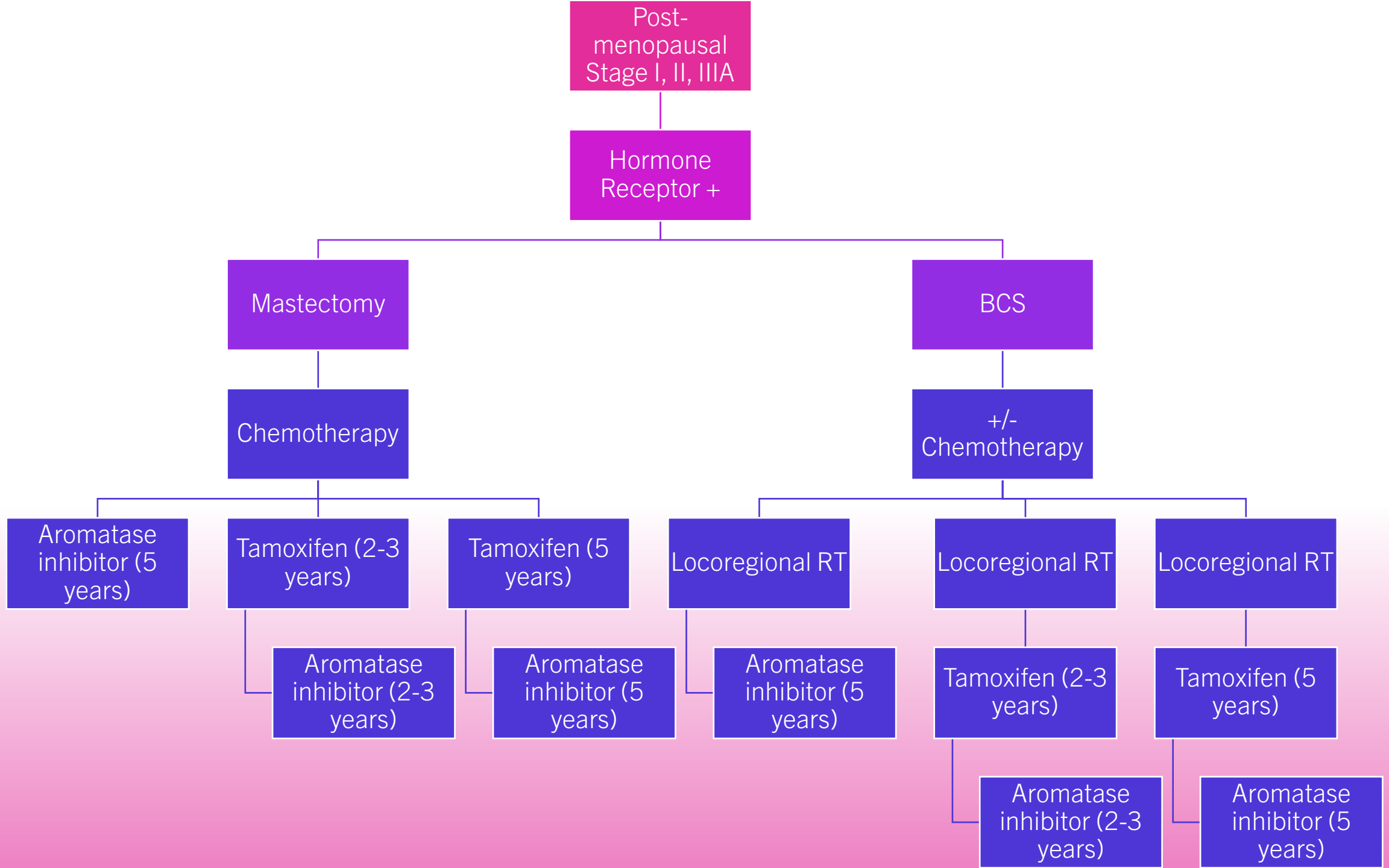
Comparing Lumpectomy and Mastectomy

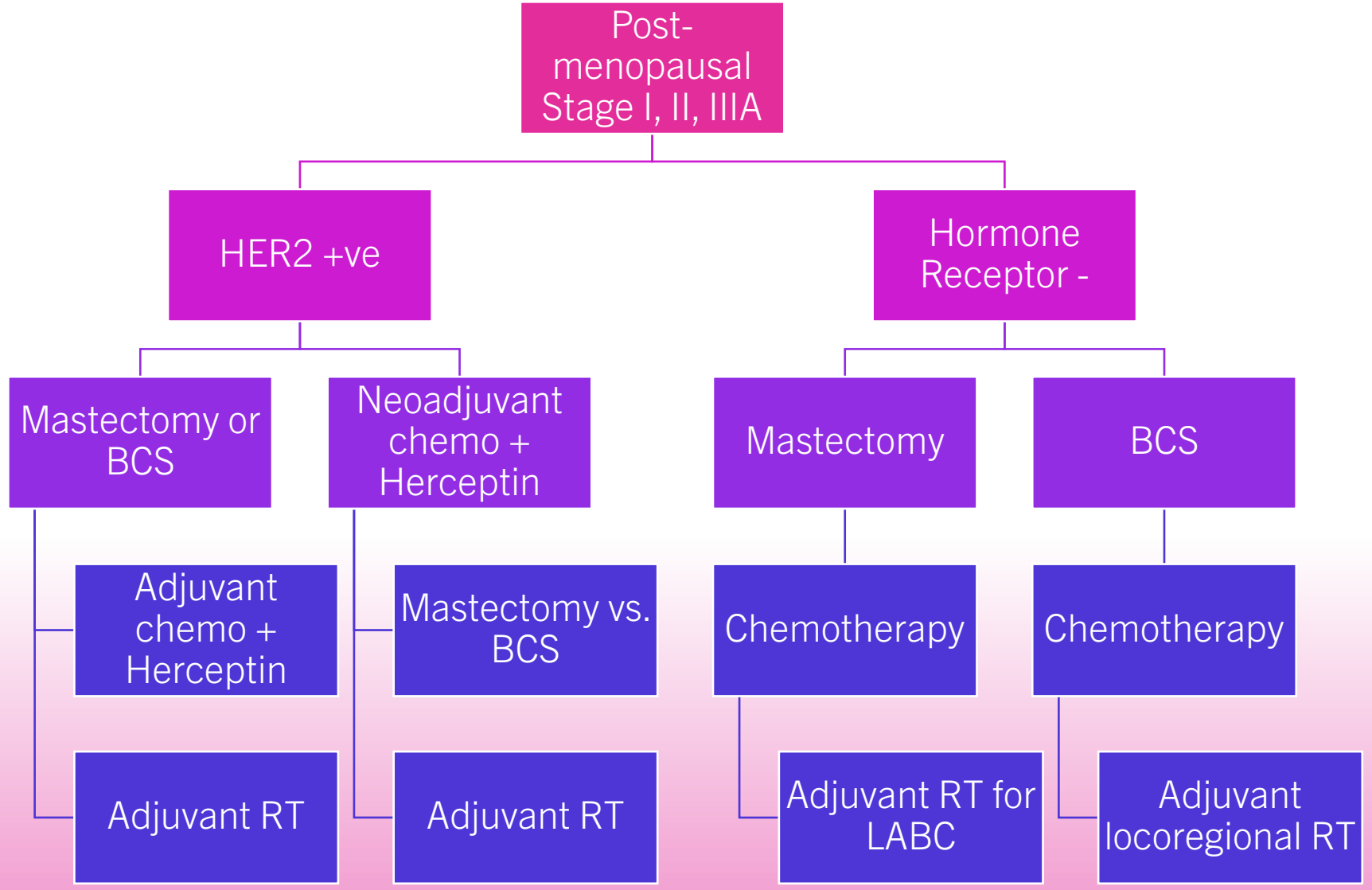
	Lumpectomy	Mastectomy
Pros	• ***You get to keep your breast*** • Easier recovery period (2-4 wks) • Lowest risk of surgical complications • Outpatient surgery	• Get all the disease with only one surgery • No more routine mammograms/US/MRI • Usually no radiation (unless tumor >5cm, axillary lymph nodes positive or positive margins) • Lower risk for development of a new cancer (risk is not 0%)
Cons	• May have positive margins requiring a 2nd or 3rd surgery to remove all disease • Nearly always requires radiation • Need annual mammogram • May require surgery on the opposite breast for symmetry • Risk of a new cancer developing in healthy breast tissue is 0.5%/year	• Higher surgical complication rate with reconstruction (particularly implant-based) • Longer recovery period (4-6 wks, longer with autologous reconstruction) • Loss of chest wall sensation, including nipple • Usually requires surgery on the opposite breast for symmetry • May require an overnight stay in hospital (can be done outpatient) • Will still need annual imaging of your healthy breast

The need for chemotherapy is based on tumor size, lymph node involvement and tumor biology (tumor DNA). The surgery you chose does not change the recommendation for/against chemotherapy. Said another way – **Choosing a mastectomy (when not recommended by your surgeon) does not decrease the risk of dying from breast cancer. It does not decrease the risk of recurrence of your breast cancer, and it does not decrease the chance you will need chemotherapy.**



BCS + RT = Mastectomy (Stages I, II, IIIA)


Post-menopausal Stage I, II, IIIA
Hormone Receptor +
Mastectomy
BCS
Chemotherapy
+/- Chemotherapy
Aromatase inhibitor (5 years)
Tamoxifen (2-3 years)
Tamoxifen (5 years)
Locoregional RT
Locoregional RT
Locoregional RT
Aromatase inhibitor (2-3 years)
Aromatase inhibitor (5 years)
Aromatase inhibitor (5 years)
Tamoxifen (2-3 years)
Tamoxifen (5 years)
Aromatase inhibitor (2-3 years)
Aromatase inhibitor (5 years)

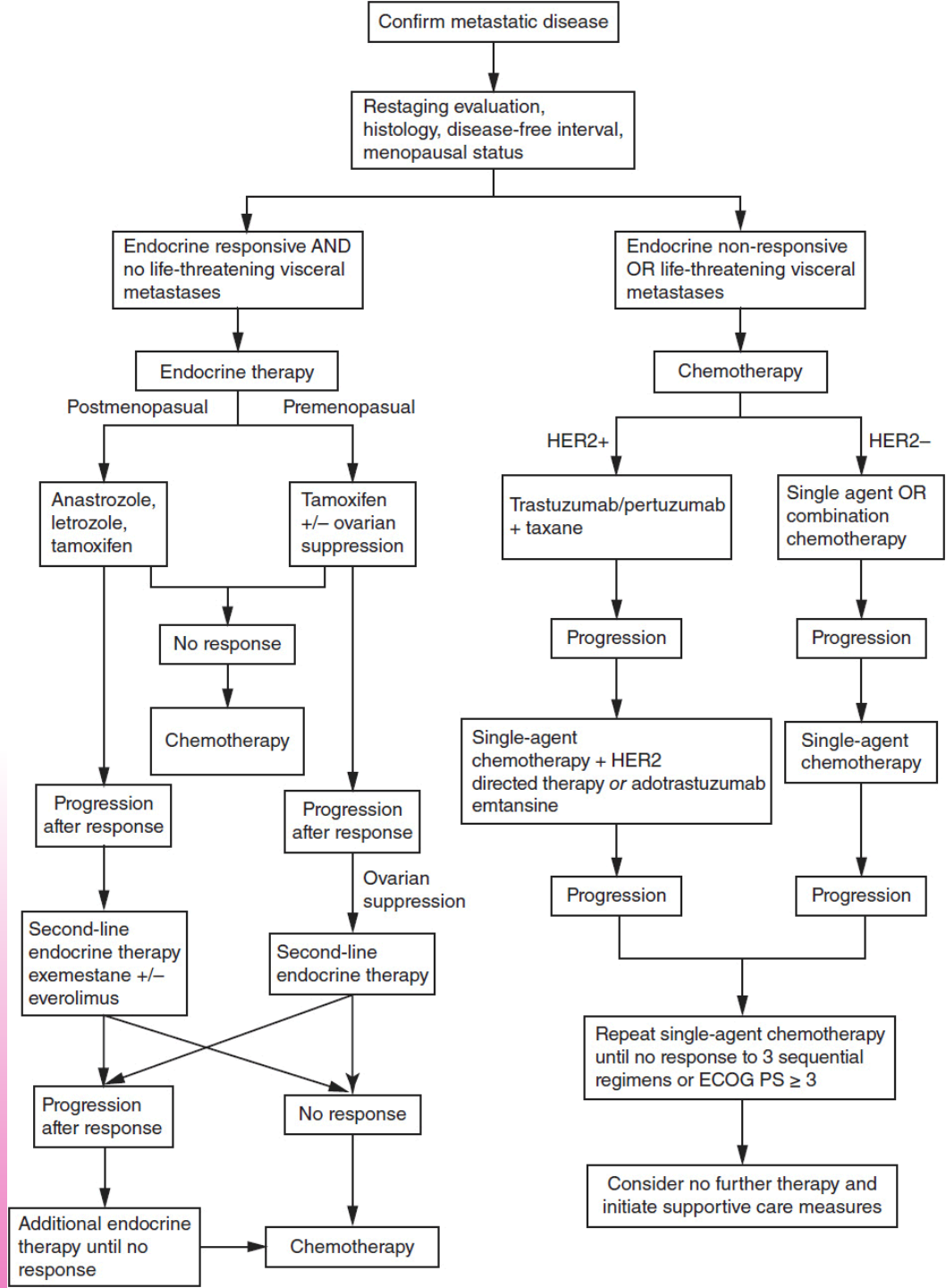

Post-menopausal Stage I, II, IIIA
HER2 +ve
Hormone Receptor -
Mastectomy or BCS
Neoadjuvant chemo + Herceptin
Mastectomy
BCS
Adjuvant chemo + Herceptin
Mastectomy vs. BCS
Chemotherapy
Chemotherapy
Adjuvant RT
Adjuvant RT
Adjuvant RT for LABC
Adjuvant locoregional RT

RECONSTRUCTION OPTIONS

- Key considerations: immediate reconstruction versus tissue expander during skin-sparing mastectomy followed by assessment of permanent options
- Post-operation RT consideration:
- No RT → Definitive reconstruction with TRAM flap, LD flap, permanent implants
- Post-op RT indicated: Deflate tissue expander → Re-inflate expander after RT → Delayed reconstruction → TRAM or LD flap + implant

METASTATIC BREAST CANCER TREATMENT

- Local RT (breast, metastasis)
- Endocrine Therapy
- ± Chemotherapy – multiple lines
- Supportive Care (symptom management)



LATE EFFECTS

FOLLOW-UP

- q 4 months for 5 years: once with each specialist – surgical, medical and radiation oncologist with physical exam
- Yearly mammograms (for patients who underwent BCS)
- Routine bone density tests (for patients on aromatase inhibitors)
- Diet, physical activity, and other lifestyle modification suggestions (smoking cessation, lowering EtOH intake, exercise)
- Return to primary care team for resuming routine health checks – patients tend to ignore baseline concerns or other screening during cancer tx

LYMPHEDEMA

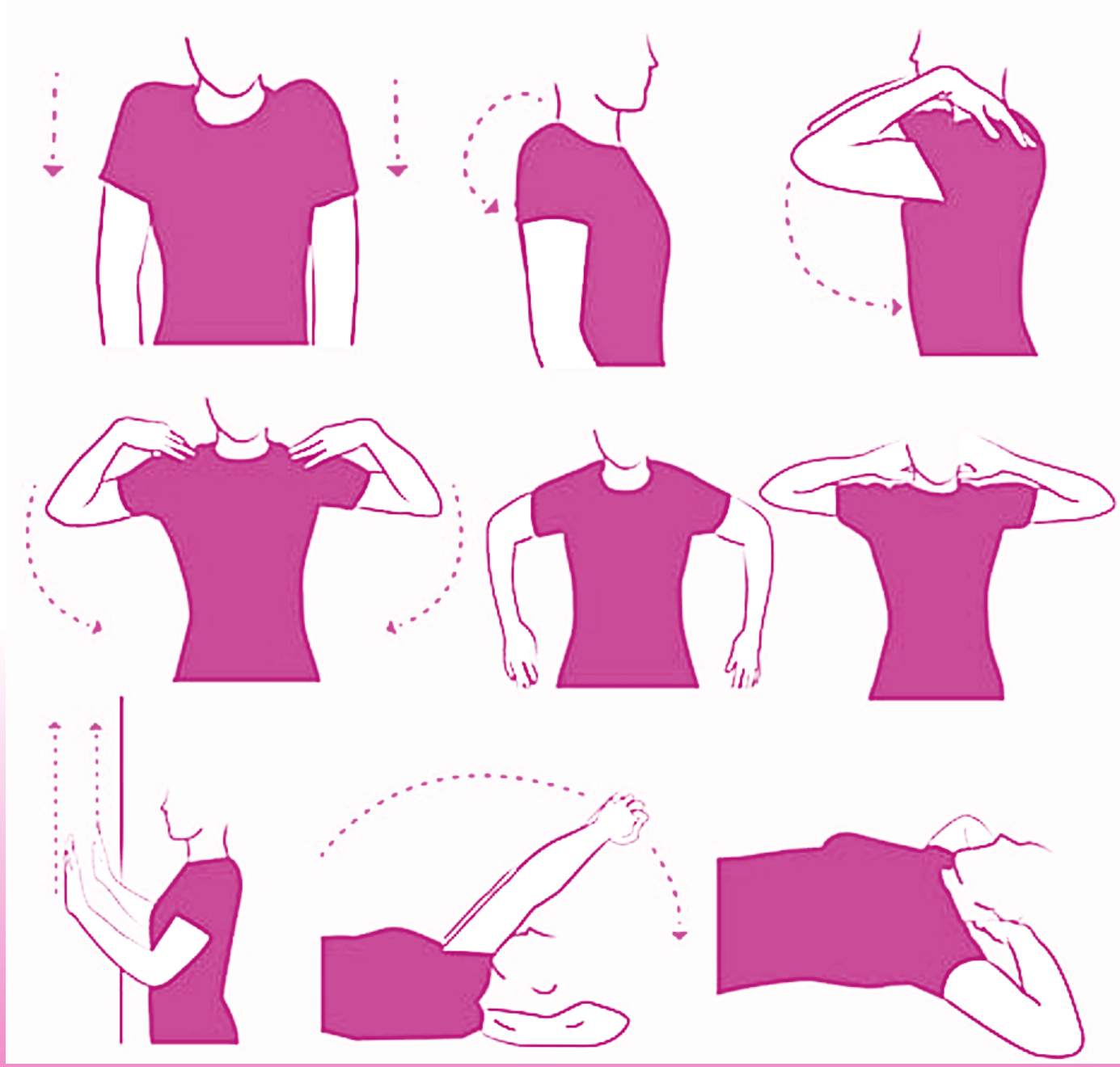
- Swelling caused by an accumulation of protein-rich fluid that's usually drained through the body's lymphatic system
- Lowest risk if no lymph nodes removed
- High risk following ALND and adjuvant axillary RT
- Mild: occurs within a few days after surgery and usually lasts a short time
- Intermediate: occurs 4 to 6 weeks after surgery or RT and then goes away over time (~ 1 year)
- Long-term: painless and may slowly develop 18 to 24 months or more after surgery ± RT; does not resolve/worsens without intervention

PREVENTION

- Good skin care – especially post-operatively, during and after RT
- Routine physical activities and stretching exercises

SYMPTOMS

- Fullness, heaviness, tightness – arm, chest, axilla
- Non-fitted clothing, jewelery



BODY IMAGE AND SEXUALITY

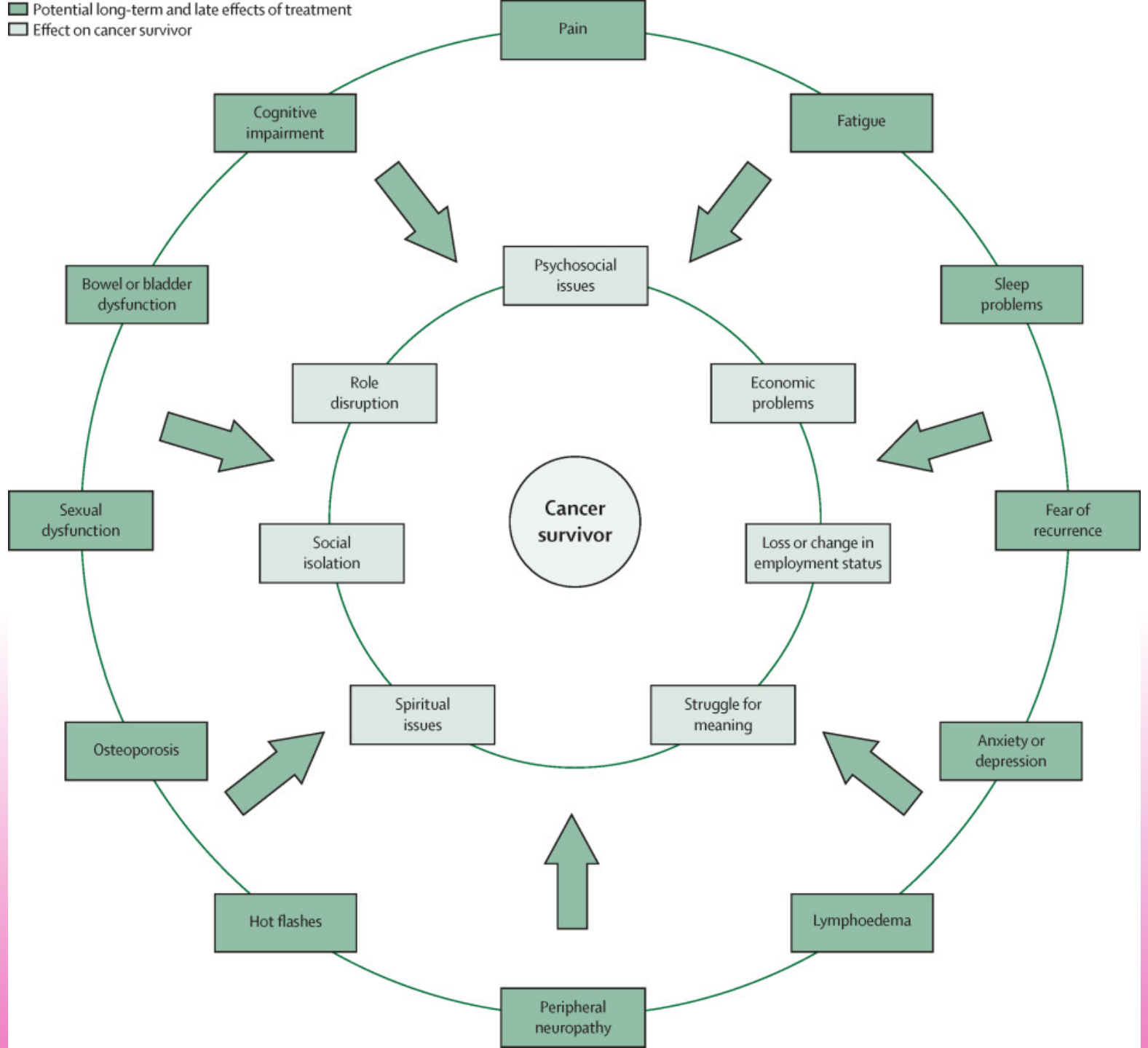
- Learning to be comfortable with oneself after breast cancer is a highly personal journey
- Physical changes, especially after breast surgery, can make some women less comfortable with their bodies
- Loss of sensation in the affected breast
- Chemotherapy and hormone therapy can change hormone levels and may affect sexual interest and/or response
- Relationship changes

FERTILITY AND PREGNANCY

- Cryopreservation (embryos or oocytes) prior to chemotherapy
- Advice to wait 2 years post-treatment before trying for natural conception: sufficient to detect early cancer recurrence and efficacy of endocrine therapy before pausing during pregnancy/childbirth
- Discussion and consideration for in vitro fertilization, donor embryos, surrogacy, adoption
- Inability to breastfeed after surgery +/- RT – emotional distress

SECONDARY MALIGNANCIES

- Recurrence vs. new breast malignancy
- BRCA associated ovarian ca
- RT to chest leads to higher-than-average-risk for lung ca, local sarcomas, heme malignancies
- Chemo-induced leukemia and MDS
- Tamoxifen-induced uterine cancer


Potential long-term and late effects of treatment
Effect on cancer survivor
Pain
Fatigue
Sleep problems
Fear of recurrence
Anxiety or depression
Lymphoedema
Peripheral neuropathy
Hot flashes
Osteoporosis
Sexual dysfunction
Bowel or bladder dysfunction
Cognitive impairment
Psychosocial issues
Economic problems
Loss or change in employment status
Struggle for meaning
Spiritual issues
Social isolation
Role disruption
Cancer survivor


THANK YOU