



# **National Early Detection & Screening for Breast Cancer Guideline- Second Edition**

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# **NATIONAL EARLY DETECTION & SCREENING FOR BREAST CANCER GUIDELINE**

**Second Edition 2025**

**Department of Woman & Child Health  
Directorate General for Health Services and Programs  
Ministry of Health  
Sultanate of Oman**

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## Acronyms

<b>ABC</b>	Advanced breast cancer (stages III or IV disease)
<b>BIRADS</b>	Breast Imaging Reporting and Data System
<b>BMI</b>	body mass index
<b>BSE</b>	Breast self-examination
<b>CBE</b>	Clinical breast examination
<b>EBC</b>	Early breast cancer
<b>GBCI</b>	Global Breast Cancer Initiative
<b>MBC</b>	Metastatic breast cancer

## Definitions

<b><i>Breast self-examination (BSE)</i></b>	BSE is a visual and tactile examination of the breast performed by the woman to assess the presence of persistent changes or abnormalities, helping the woman learn over time what looks and feels normal for her. During a BSE, the woman inspects her breasts in the mirror, looking for asymmetries, puckering, dimpling, or localized skin changes, then feels the entire breast and armpits with the arm and shoulder extended to flatten the breast on the chest wall.
<b><i>Clinical breast examination (CBE)</i></b>	CBE is a systematic and specific clinical examination of the breast performed by a health-care provider. Abnormal findings on CBE generally warrant diagnostic imaging and may require tissue sampling to make a definitive diagnosis.
<b><i>Early detection</i></b>	Early detection is the overall process whereby breast cancer is detected at earlier stages (0, I or II) when treatment is on average more effective. The goal of an early detection breast-cancer program is to promote stage shifting so that >60% of women diagnosed with invasive breast cancer have stages I or II disease.
<b><i>Mammogram</i></b>	A mammogram is an X-ray examination (radiogram) of the breast, including multiple views of one or both breasts. It is used to detect and diagnose breast disease in women who have breast problems, such as a lump, pain, or nipple discharge (diagnostic mammogram), and in women with no breast complaints (screening mammogram).
<b><i>Metastatic breast cancer (MBC)</i></b>	MBC refers to the spread of the primary breast tumour from the breast through the circulation and lymphatics to distant sites and organs, most often bone, lung, liver and brain. Advanced breast cancers (ABCs) may initially present with distant metastases (MBC stage IV) or may recur with distant metastases following initial treatment (metastatic recurrence of stages I – III disease).
<b><i>Screening program</i></b>	A breast-cancer-screening program is a public health, early-detection approach whereby women without known signs or symptoms of breast cancer are invited, on a repetitive basis, to undergo testing for cancer before it causes recognizable signs or symptoms. To consistently find cancer at early stages of the disease, the screening test must be repeated in the same individuals at regular intervals (every 1–2 years).
<b><i>TNM System</i></b>	Is an international standard used to classify the malignancy based on the extent of the primary tumor (T), lymph node involvement (N) and distant metastasis (M).

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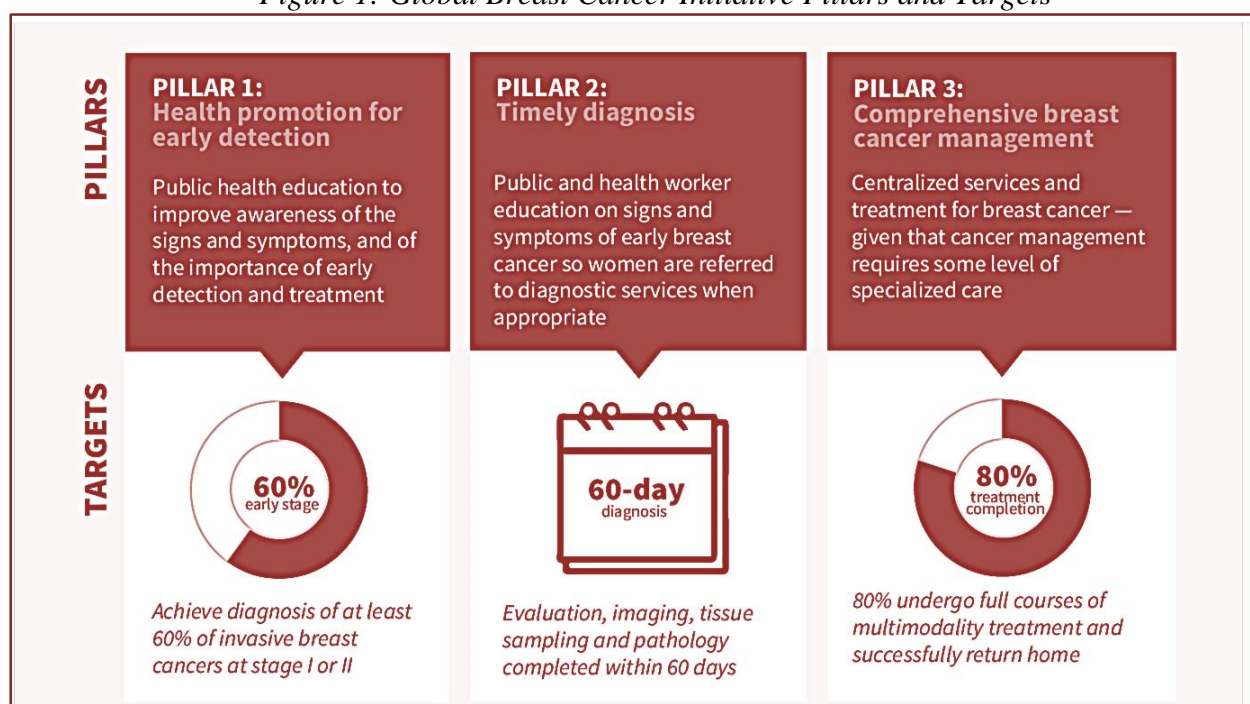
## **CHAPTER 1**

## INTRODUCTION

Breast Cancer is a major health problem in both developed and developing countries, and a leading cause of death among women. When detected at an early stage, it carries a better prognosis as it can be treated successfully.

WHO developed the global breast cancer initiative (GBCI) in 2023 to provide evidence-based recommendations for a phased approach to implement interventions focused on improving early detection, diagnosis, treatment, and supportive services. This is with the aim to reduce mortalities from breast cancer by 2.5% per year by 2040 and prevent 2.5 million global cancer deaths. The GBCI employees' three key pillars and their targets are shown in Figure 1.

*Figure 1: Global Breast Cancer Initiative Pillars and Targets*



**In Sultanate of Oman,** breast cancer is the most common cancer affecting Omani women with the median age at diagnosis is 47 years. As per National Cancer Registry, 266 new breast cancer patients diagnosed in 2020 which represents 25.7% of all cancers affecting Omani females. This number has been steadily increasing over the years from 108 diagnosed in 2007 to 338 diagnosed in 2019. Infiltrating duct carcinoma is the most commonly found morphology in keeping with international norms. Among the eleven governorates, the highest number of breast cancer cases was reported in the capital governorate Muscat, followed by North Al Batinah and Al Dakhliyah governorates.

Breast cancer affects younger women aged 20 years and the highest reported number of cases were between ages 35 and 40 years.

In 2009, the Department of Woman and Child Health initiated the screening services for breast cancer. The service started initially in two governorates and expanded gradually to include all governorates. It included providing clinical breast examination by the trained health providers and teaching women how to do breast self-examination. This is in addition to the awareness campaigns conducted for the community in collaboration with non-governmental organizations.

The result of all these efforts showed an increasing annual number of detected breast cancer cases and increase number of cases detected at earlier stages as reported in the retrospective study conducted by Bassem and colleagues in 2022. The aim of the study was to measure the impact of early detection and screening on breast cancer stage in Oman. It was conducted between two periods 2006-2010 and 2015-2017. The study findings showed that there was a 41% reduction in stage IV breast cancer from 23.01% to 13.58 %, and 86.15% increase in stage 0-1 from 6.86 % to 16.98%. There was also increase in node negative breast cancer. Moreover, 65% of breast cancer cases were diagnosed at early stages (0-2) in 2019. These findings prove that with screening for breast cancer, more cases of localized cancer were detected and lesser advanced disease.

The screening pathways for breast cancer contained in this document deal with risk assessment, investigations, and management plan (including referral and rescreening) at primary health care. This edition is an update of a previously published national guideline (*Operational guidelines on early detection & screening for breast cancer*) in 2010. A few changes will be evident in this version, such as the target group for screening with mammogram, and screening during pregnancy and lactation. A chapter on responsibilities of all health team involved in the implementation of the service is also included in this guideline.

- Raise awareness of women on breast cancer for early detection of cases.

#### **PURPOSE**

- Reduce the morbidity and mortality due to late diagnosis of breast cancer in women.
- This guideline is to be used by the doctors and nurses at primary health care institutions.
- It describes modality of screening and management plan including referral and rescreening for women.

#### **SCOPE**

#### **STRUCTURE**

This is the second version of this guidelines, consisting of four chapters:

National Early Detection and Screening for Breast Cancer Guideline

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## **Chapter 1**

Outlines the goals & objectives of early detection, screening and management of breast cancer and current situation of breast cancer in Sultanate of Oman.

## **Chapter 2**

Describes types, pathology, and stages of breast cancer. It also describes screening services (clinical breast examination, breast self-examination, mammography) for target women aged 35-69years and those below 35years, screening for pregnancy women and screening during breastfeeding. This in addition to sections on health education and counselling.

## **Chapter 3**

Describes the responsibilities of healthcare team involved in the provision of the screening service, the team includes trained doctors/ nurses, surgeons, radiologist, radiographers, head of woman and child health sections in the governorates, head of Woman Health Section, director of Woman and Child Health Department and the director of Radiology Department.

## **Chapter 4**

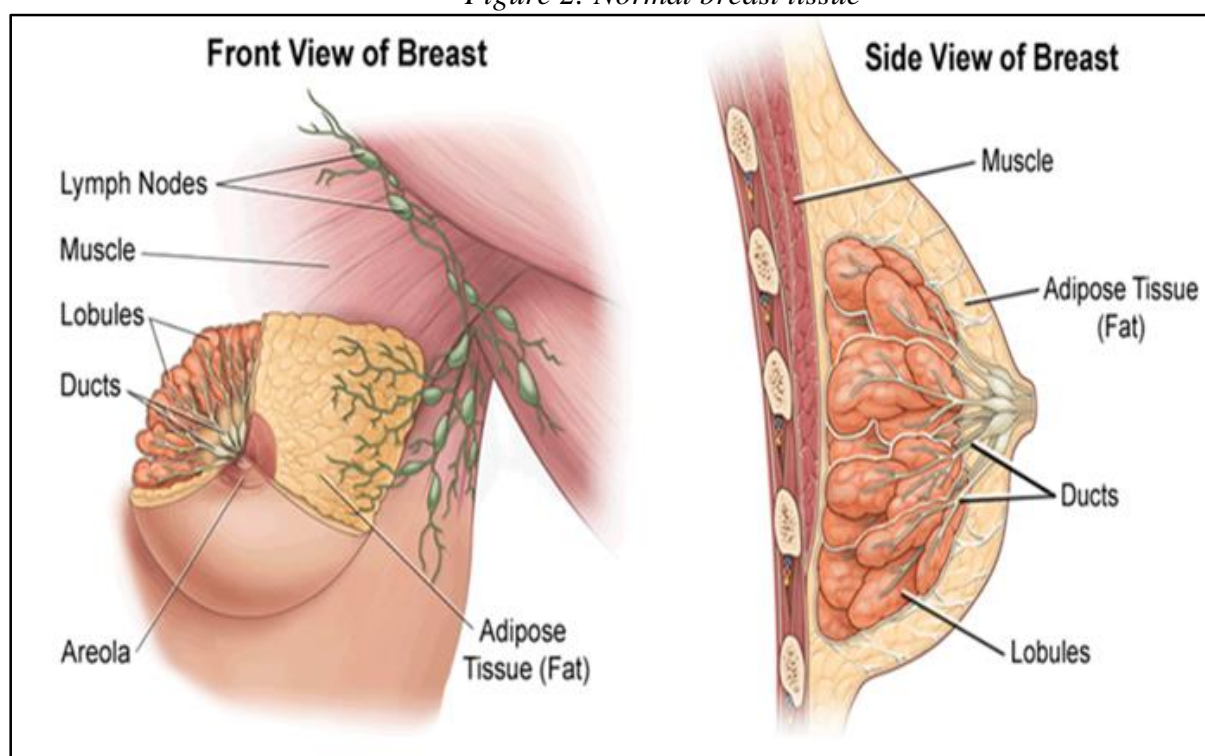
Contains the annexes and the resource references for the guideline.

## **CHAPTER 2**

## OVERVIEW ON BREAST CANCER

Breast tissue is a milk producing gland, the development and growth of which are under the effect of oestrogen and progesterone hormones during puppetry, while milk production is under effect of Follicle Stimulating Hormone (FSH), Luteinizing Hormone (LH) prolactin and oxytocin. It composes of 15-20 lobes which are divided into many lobules, ducts and fat tissue filling the spaces between ducts and lobes (see Figure 2)

*Figure 2: Normal breast tissue*



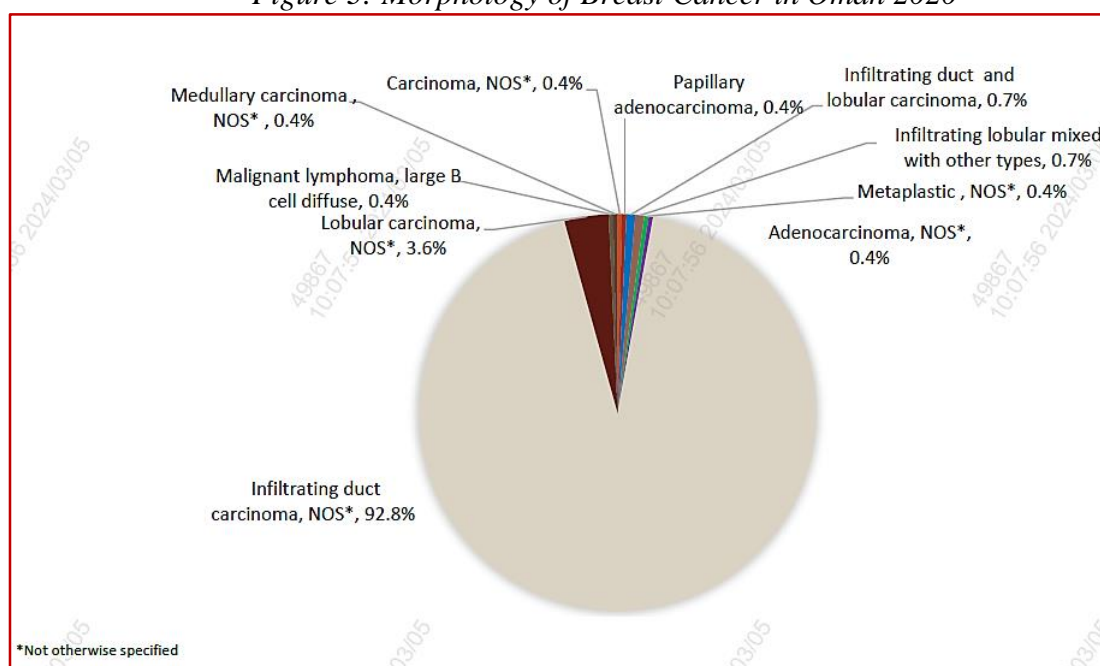
*Adapted from: American cancer society*

## Pathology and Types of breast cancer

The vast majority of breast lesions are benign lesions. Some types of benign breast disease can increase women's risk of breast cancer.

Breast cancer is a malignant growth that rises in the ducts (85%) or lobules (15%) of the breast gland. It is divided into two main groups: non-invasive (carcinoma in situ) and invasive carcinoma. Carcinoma in situ is where the cancer cells are confined to the breast ducts or lobules without breaking out and growing into surrounding tissue, while invasive or infiltrating carcinoma is defined when the cancer cells have grown beyond the ducts or lobules.

*Figure 3: Morphology of Breast Cancer in Oman 2020*



*Adapted from: Oman Cancer Incidence Report 2020*

### **Stages of Breast Cancer**

Staging of breast cancer helps to determine the severity of the cancer and the best treatment options. It is given when diagnosed and before any treatment. In some cases, it is given after treatment has started. There are two types of staging:

Clinical staging which is based on the findings of clinical examination, imaging (mammogram) and biopsy and Pathological staging which is based on the examination of the removed tissue.

The TNM system describes the tumor size (T), Node involvement (N) and whether the cancer has spread to other parts of the body.

There are other factors that are considered when determining the stage and these are: cancer grade, Estrogen Receptor (ER) status, Progesterone Receptor (PR) status and HER2 status (protein produced by the cancer).



*Table 1: Stages of breast cancer in Oman for cases detected in 2019*

<b>Stages of breast cancer</b>	<b>% of cases from total cases detected</b>
<b>Stage 0: (Ductal carcinoma in situ or lobular carcinoma in situ, limited to the inside of the milk duct and are non-invasive (does not invade nearby tissues))</b>	3%
<b>Stage 1: (Invasive carcinoma 2 cm in size (including carcinoma in situ with micro invasion) without nodal involvement and no distance metastasis)</b>	11%
<b>Stage 2: (Invasive carcinoma &lt; 5 cm in size without nodal involvement but with movable axillary nodes and no distance metastasis)</b>	40%
<b>Stage 3: (Invasive carcinoma &lt; 5 cm in size with nodal involvement and fixed axillary nodes)</b>	22%
<b>Stage 4: Any form of breast cancer with distance metastasis</b>	13%
<b>Unknown</b>	11%

*Adapted from: Oman Cancer Incidence Report, 2020*

### **Breast cancer survival rate**

Survival rate is the percentage of people who live at certain period of time after being diagnosed with breast cancer. For example, 5 years or 10 years after being diagnosed.

Overall survival rates vary by breast cancer stage. Women diagnosed with breast cancer stage 0, I or II tend to have higher survival rates than women diagnosed with stage III or IV breast cancers. However, overall survival rates are averages and vary depending on a person's diagnosis and treatment.

A 5-year breast cancer specific survival rate shows the percentage of women who have not died from breast cancer 5 years after diagnosis, these rates vary by breast cancer stage.

*Table 2: 5-Year Survival Rate of Breast Cancer*

<b>Breast cancer stage*</b>	<b>5- year breast cancer-specific survival rate*</b>
<b>Stage I</b>	98-100%
<b>Stage II</b>	90-99%
<b>Stage III</b>	66-98%
<i>*breast cancer survival data in this table are from people who did not get neoadjuvant therapy.</i>	
<i>Adopted from Weiss et al.</i>	

## SCREENING SERVICES

The only approved method for screening is **mammography** which proved to reduce the mortality rate. Other methods are clinical Breast examination (CBE), ultrasonography, magnetic resonance imaging (MRI), scintimammography and position emission tomography (PET) are still under evaluation as screening methods. Diagnosis of breast cancer is done through triple assessment which include clinical assessment, radiological and histopathology.

### **Target**

All Omani women attending breast screening clinic either through self-referral or internal referral (antenatal, births pacing, well-being and chronic illnesses clinics) should be offered the service according to their age group and risk factors (Algorithm 1,2).

### **Who provide the screening service?**

Trained health care provider

### **Service components**

The screening service for breast cancer includes the following:

- A. History taken and risk assessment
- B. Clinical breast examination (CBE)
- C. Teaching breast self examination (BSE)
- D. Mammogram / ultrasound and MRI
- E. Counselling
- F. Health education

### **[A] History Taking**

- 1) Discrete lump in any woman that persists after their next period, or presents after the menopause.
- Ask for symptoms and risk factors for breast cancer.

### **Symptoms and signs**

- 2) Fixation At any age, with or without skin tethering.
- 3) A lump that enlarges.
- 4) Persistent focal area of lumpiness or change in breast texture.
- 5) Progressive change in breast size with oedema.
- 6) Skin distortion.
- 7) Unilateral eczematous skin or nipple change that does not respond to topical treatment.

- 8) Nipple retraction or distortion of recent onset.
- 9) Bilateral nipple discharge sufficient to stain clothes (not breastfeeding).
- 10) Blood-stained nipple discharge in patient of any age.
- 11) Asymmetrical nodularity that persists at review after menstruation.

**Note:** These signs and symptoms might be difficult to be recognized or felt in the early stages of breast cancer.

- 12) Persistently recurrent cyst or abscess.
- 13) Intractable pain which does not respond to simple measures.
- 14) Persistent unexplained axillary swelling.

### **[B] Risk factors Assessment**

Assessing risks for breast cancer should include the listed factors shown in Table 3.

It is important to note that:

- Women who have no risk factors still have the chance of getting the cancer at some time during their life with chance of one in 8.
- Having a risk factors doesn't mean that the woman will get the disease and not all the risk factors have the same effect.

Table 3: Selected Risk Factors for Breast Cancer

History	Risk factor
<b>Menstrual</b>	<ul style="list-style-type: none"> <li>• Early menarche (<math>\leq 12</math> years), late menopause (<math>\geq 55</math> years).</li> </ul>
<b>Obstetric</b>	<ul style="list-style-type: none"> <li>• Delivery of 1st child at age <math>\geq 30</math> years.</li> <li>• Never having a full-term pregnancy (Nulliparous).</li> </ul>
<b>Medical / Surgical</b>	<ul style="list-style-type: none"> <li>• History of breast disease: personal history of precancerous lesion (proliferative disease with atypia and without atypia), hyperplasia and atypical hyperplasia especially cystic disease and carcinoma in situ (written report available).</li> <li>• Diagnosed breast cancer.</li> <li>• History of previous mass and biopsy.</li> <li>• Dense breast (in previous mammogram report).</li> <li>• Exposure to therapeutic radiation to the chest to treat another cancer (not breast cancer), such as Hodgkin's disease or non-Hodgkin's lymphoma before age of 30 years.</li> <li>• Receiving Combined hormone replacement therapy (HRT) for 5 years and longer.</li> </ul>
<b>Family history of breast or ovarian cancer*</b>	<ul style="list-style-type: none"> <li>• One first degree relative (parents, sibling or child).</li> <li>• Two second degree relative.</li> </ul>
<b>Genetic mutation</b>	<ul style="list-style-type: none"> <li>• Genetic mutation: Inherited changes (mutations) to certain genes, such as BRCA1, BRCA2, PALB2 and other inherited genetic mutations.</li> </ul>
<b>Overweight /obese after menopause.</b>	<ul style="list-style-type: none"> <li>• Older women who are overweight or obese have a higher risk of getting breast cancer than those at a normal weight.</li> </ul>
<b>Others</b>	<ul style="list-style-type: none"> <li>• Smoking.</li> <li>• Alcohol drinking.</li> </ul>

*\*A single first degree relative, diagnosed with breast cancer, doubles the risk while 2 family members increase the risk 5 folds. These high risk individuals will necessitate a more comprehensive diagnostic /screening workup, more involved treatment, and referral for genetic counselling and testing, not only for the patient but for other family members. For management plan check annex 3.*

*Table 4: Women are categorized into High-risk woman and average-risk for breast cancer*

<b>High risk-women</b>	<ul style="list-style-type: none"> <li>• Personal history of precancerous lesions or / and breast cancer.</li> <li>• Strong Family history of breast cancer or ovarian cancer.</li> <li>• Known genetic predeisposition of breast cancer.</li> <li>• H/O chest radiation therapy before age of 30 years.</li> </ul>
<b>Average risk women</b>	<ul style="list-style-type: none"> <li>• Women with risk factors other than those for high risk women.</li> </ul>

**Candidate for BRCA gene testing who have:**

- A personal history of breast cancer diagnosed at a young age (premenopausal or young than age 50).
- A personal history of triple negative breast cancer diagnosed at age 60 or younger.
- A personal history of breast cancer affecting both breasts (bilateral breast cancer).
- A personal history of both breast and ovarian cancers.
- A personal history of ovarian cancer.
- A personal history of breast cancer and one or more relatives with breast cancer diagnosed at age 50 or younger, one relative with ovarian cancer, or two or more relatives with breast or pancreatic cancer.
- History of breast cancer at a young age in two or more close relatives, such as parents, siblings or children.
- A male relative with breast cancer.
- A family member who has both breast and ovarian cancers.
- A family member with bilateral breast cancer.
- A relative with ovarian cancer.
- A relative with a known BRCA1 or BRCA2 mutation.

**[C] Clinical Breast Examination (CBE)**

- Clinical breast examination (CBE) should be provided to women age 35 to 69 years attending the “Breast screening clinic” including pregnant and lactating mothers. Check (annex 2) for examination steps.
- Women age 35-69 years with average risk to be rescreened by CBE annually.
- Women age 35-69 years with high risk factors to be rescreened by CBE every 6-12 months.
- Women between age 25 to 34 years with no risk and attending the “Breast screening clinic” to be offered CBE and Breast self-examination (check algorithm 5).
- Women with detected breast abnormalities should be referred to surgeon within two weeks.

#### **[D] Breast- Self Examination (BSE)**

- Breast - Self Examination BSE, is a regular examination of the breast that should be done monthly by all women. Check (annex 2) for examination steps.
- BSE is preferred to be done in the first week after the menstrual cycle.
- Pregnant women are advised to choose a specific day in the month to do breast self-examination.
- Lactating mother with amenorrhea is advised to choose a specific day in the month to do breast self-examination. If her menstruation return she is advised to do BSE in the first week after the menstrual cycle.
- For menopause women they should choose a specific day in the month to do breast self-examination.
- If a woman detects any abnormality, is advised to consult her doctor.
- All women should be provided with health education material that illustrates steps of BSE.

#### **[E] Mammogram**

- Perform screening mammogram for all asymptomatic women age 40-69 years.
- High risk woman to be re- screened with mammogram annually.
- Average risk woman aged (40-55) to be re-screened annually, and biennial (every 2 years) for those aged more than 55 years.
- The standard system to describe the Mammogram findings is called Breast Imaging Reporting and Data System (BIRADS). The BIRADS categories are as follows:

*Table 5: Breast Imaging Reporting and Data System (BIRADS)*

<b>BIRAD 0</b>	Incomplete - Additional imaging evaluation and/or comparison to prior mammograms (or other imaging tests) is needed.
<b>BIRAD1</b>	Negative.
<b>BIRAD 2</b>	Benign (non-cancerous finding).
<b>BIRAD 3</b>	Probably benign finding – Follow-up in a short time frame is suggested.
<b>BIRAD 4</b>	Suspicious abnormality – Biopsy should be considered.
<b>BIRAD 5</b>	Highly suggestive of malignancy – Appropriate action should be taken.
<b>BIRAD 6</b>	Known biopsy-proven malignancy – Appropriate action should be taken.

## **Breast ultrasound**

A breast ultrasound is most often done to find out if a clinical finding while doing (CBE).

Breast ultrasound isn't used to screen for breast cancer. This is because it may miss some early signs of cancer, example microcalcifications may not show up on ultrasound.

### **Ultrasound can be used:**

- The patient is pregnant as it is safe during pregnancy.
- In a woman who is allergic to contrast dye because it does not use dye.
- In a woman who have very dense breast tissue, a mammogram may not be able to see through the tissue.

### **Risks of using breast ultrasound**

- Breast ultrasound may miss small lumps or solid tumours that are commonly found with mammograms.
- Being overweight or having very large breasts may make the ultrasound less accurate.

If indicated, refer the woman to a polyclinic or secondary care.

## **Breast Magnetic Resonance Imaging (MRI)**

Since MRIs do not use radiation, they may be used to screen women younger than 40 and to increase the number of screenings per year for women at high risk for breast cancer.

The most recent guidelines from the American Cancer Society include screening MRI with mammography for certain high-risk women. This option should be considered for the following:

- Women with BRCA1 or BRCA2 mutation.
- Women with a first-degree relative (mother, sister, and/or daughter) with a BRCA1 or BRCA2 mutation, if they have not yet been tested for the mutation.
- Women with a 20% to 25% or greater lifetime risk of breast cancer, based on 1 of several accepted risk assessment tools that look at family history and other factors.
- Women who have had radiation treatment to the chest between the ages of 10 and 30, such as for treatment of Hodgkin disease.
- Women with the genetic disorders Li-Fraumeni syndrome, Cowden syndrome, or Bannayan-Riley-Ruvalcaba syndrome; or those who have a first degree relative with the syndrome.

### **Some common uses for breast MRI include:**

- Further evaluation of abnormalities detected by mammography
- Finding early breast cancers not detected by other tests, especially in women at high risk and women with dense breast tissue.
- Detecting small abnormalities not seen with mammography or ultrasound.
- Assess for leakage from a silicone gel implant.

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- Examination for cancer in women who have implants or scar tissue that might produce an inaccurate result from a mammogram. This test can also be helpful for women with lumpectomy scars to check for any changes.
- Evaluate the size and precise location of breast cancer lesions, including the possibility that more than one area of the breast may be involved.
- Determining whether lumpectomy or mastectomy would be more effective.
- Detecting changes in the other breast that has not been newly diagnosed with breast cancer.
- Detection of the spread of breast cancer into the chest wall.
- Detection of breast cancer recurrence or residual tumour after lumpectomy.
- Evaluation of a newly inverted nipple change.

If MRI is indicated, the woman can be referred to breast surgery at hospital for MRI approval and further plan.

#### **[F] Referral to Surgeon**

- Asymptomatic woman with a well-defined lump detected clinically should undergo radiological assessment prior referral unless clinical findings suggestive of breast cancer.
- Woman with breast signs or symptoms which are highly suggestive of cancer should have referral within two weeks to the surgeon.
- Asymptomatic woman with a reported benign radiological finding (BIRAD 1& 2) should get surgical referral in case of CBE recommendations or radiology report recommendation.
- Women with BIRAD 3 should get short term follow up and surgical referral in case of CBE recommendations or radiology report recommendation.
- Women with BIRAD 4 and 5 should get urgent surgical referral.
- Pregnant woman with lump for more than 2 weeks not reducing in size should have ultrasound and referral within two weeks to the surgeon.
- Breast feeding mothers with lump for more than 2 weeks not reducing in size should have ultrasound and referral within two weeks to the surgeon.

#### **[G] Counselling**

- All women should be counselled on their needs, especially those with probable breast cancer presentation like lumps and those with selected risk factors prior to their referral to hospital for mammogram examination. Counselling should be done by trained health care providers and the following should be covered during the counselling session:
- Encourage woman to ask if she has any queries.
- Reassure that 80% of breast lumps are benign.



- Reassure that breast cancer is treatable and the survival rate is close to 100 % if disease discovered at early stages.
- The importance of tests/ examination asked for at secondary health care such as mammogram, biopsy etc.
- The importance of follow up with the surgeon when needed.
- Encourage the woman to report to health care facility if she has any query or if she develops any new breast symptoms.
- Encourage the woman to perform BSE on a monthly basis.

The following steps may be followed (Five A's construct /an evidence-based approach), to assist in delivering the counselling service in a systematic way.

*Table 6: The Five (A) Roles When Counselling Patients*

<b>Assess:</b>	take history and assess the risk factor of developing Breast cancer. Listening to women's concern and build confidence in her (e.g. give information about the percentage of cure from cancer if detected at early stages).
<b>Advice:</b>	give information about the available facilities for diagnosis and treatment at the hospital.
<b>Agree:</b>	with patient on the next step, which include the management plan (e.g. referral to hospital for mammogram section or the surgeon).
<b>Assist:</b>	in management plan such as explaining to the woman the mammography preparation.
<b>Arrange:</b>	for appointments at radiological or surgical section at the hospital.

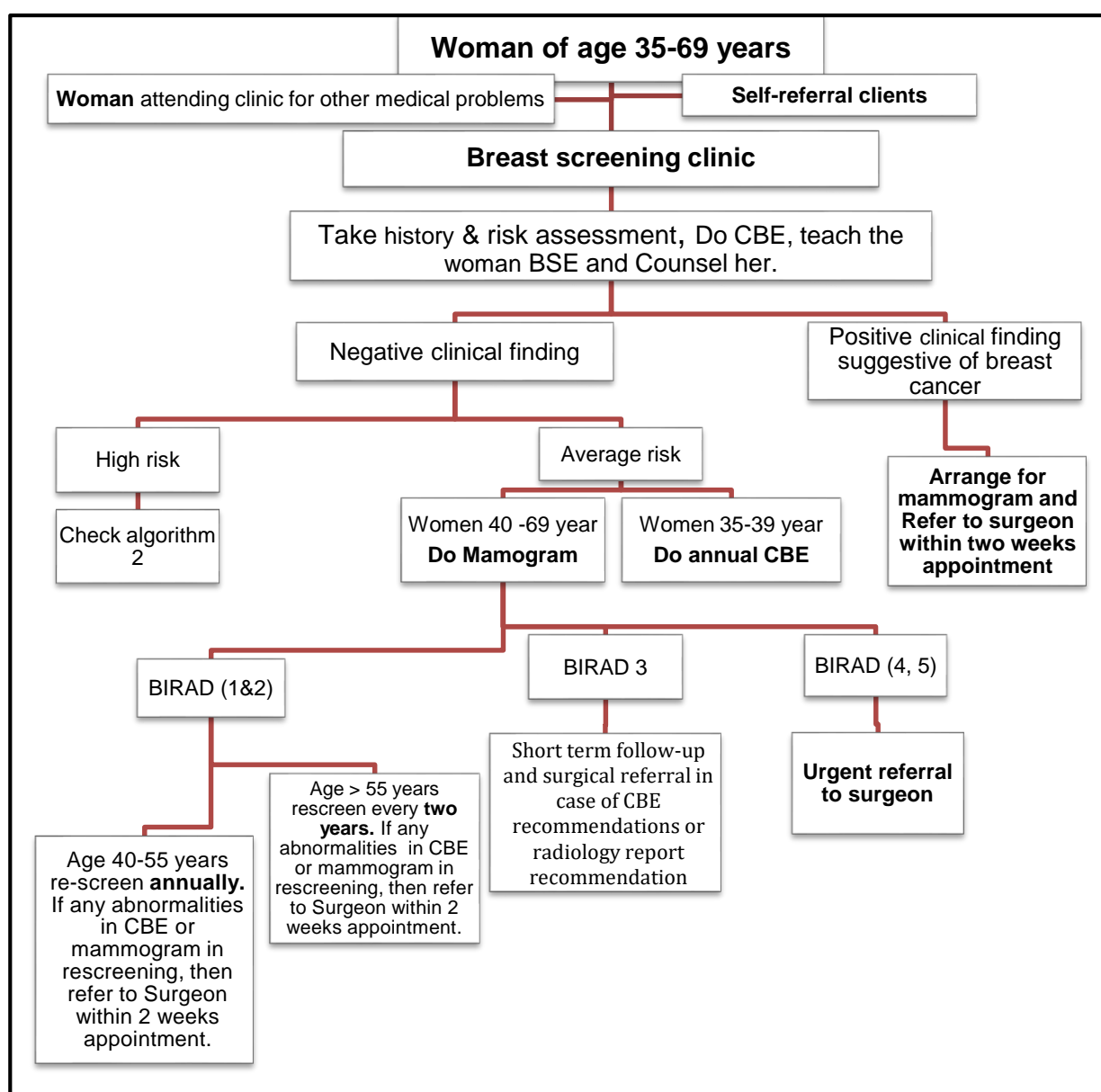
### **[H] Health Education**

- Health education to be provided by trained doctors, nurses, and health educators and community support group. It can be through awareness campaigns in the community and healthcare facilities. The education awareness should cover the following topics:
- Definition of breast cancer and its impact.
- Risk factors for developing breast cancer.
- Protection from breast cancer.
- Importance of clinical breast examination and breast-self-examination.
- Importance of reporting to healthcare facility on any new breast symptoms/signs or change in the breast.
- Health education should target girls and women in schools, colleges, universities and community. It should also include men to explain their role in early detection and support required to the affected women in their family.

**[A] Screening of breast cancer for women aged 35-69 years**

Women at average risk at age (35-69 years) should undergo assessment of risk factors and clinical Breast Examination (CBE) and teaching them Breast Self-examination (BSE) (see algorithm 1). Screening by mammogram is not recommended to be initiated earlier, less than age of 40 years. However, screening with mammogram can be done for high risk women but not less than age of 30 years (see algorithm2).

*Algorithm 1: Screening of breast cancer in women at age group (35-69 years):*

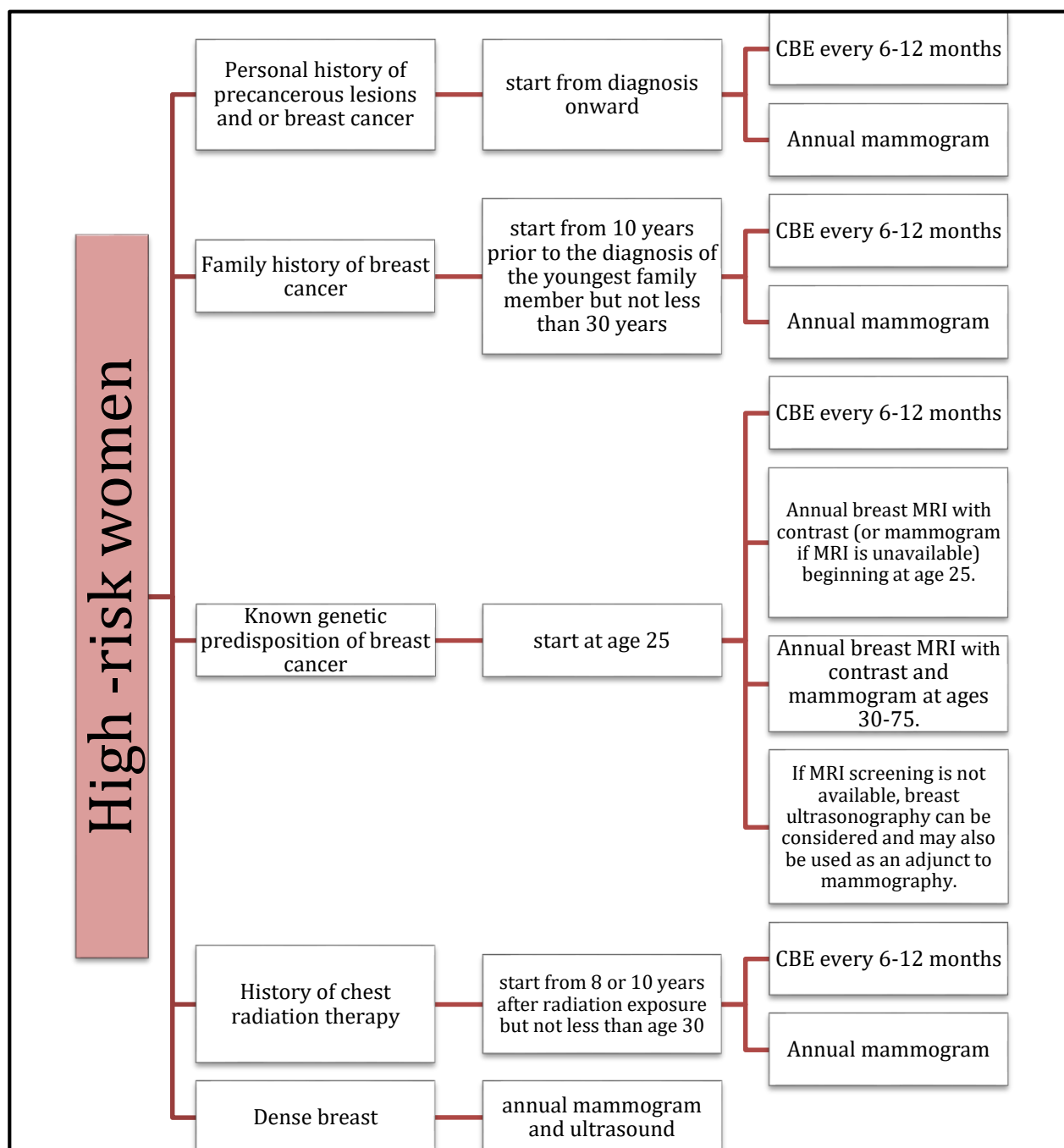


## **[B] Screening of breast cancer for High-Risk Women at age group (35-69 years)**

Women at high risk at age (35-69 years) should undergo assessment of risk factors, teaching them BSE. CBE should be conducted every 6-12 months.

Mammogram to be conducted annually for women aged 40 years or more, if aged less than 40 years consider MRI or ultrasound (see algorithm 2).

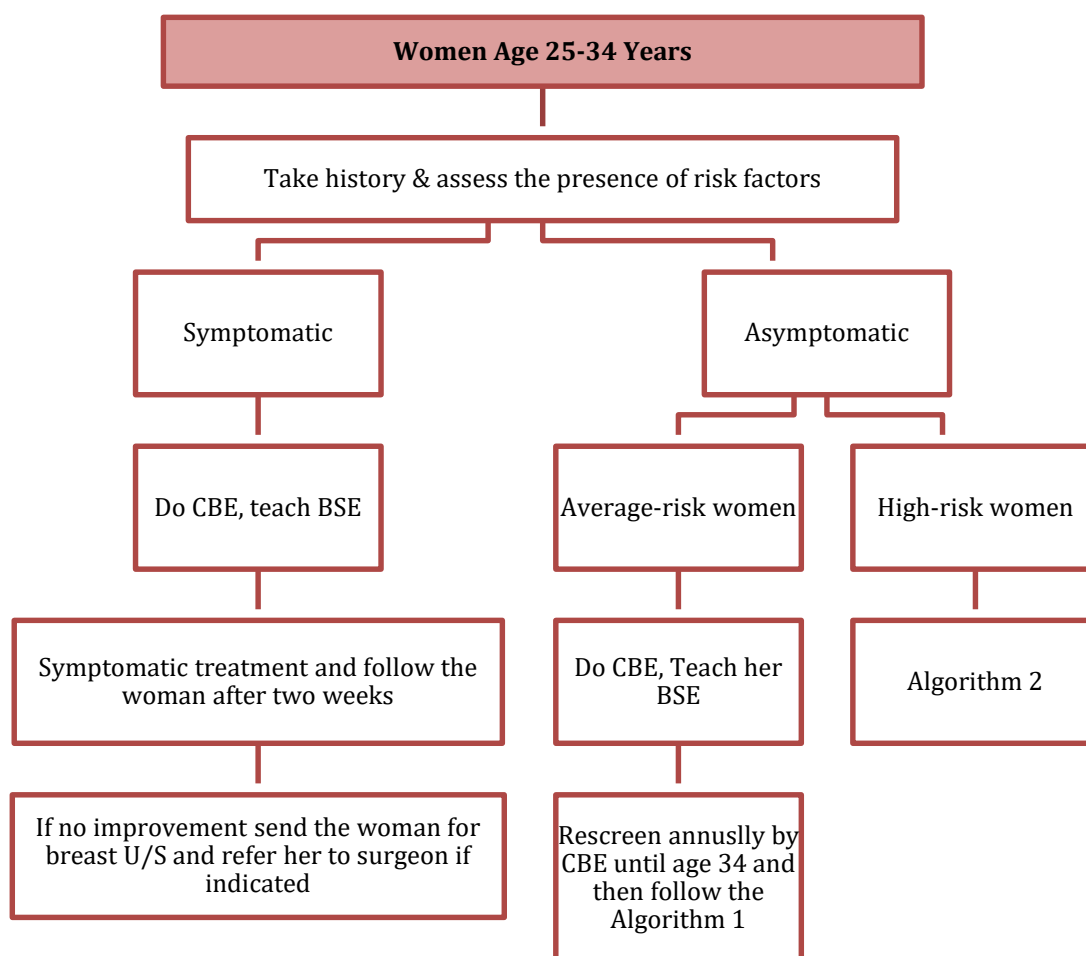
*Algorithm 2: Screening for Breast Cancer in High-Risk Women at age group (25-69 years)*



### [C] Screening for breast cancer in women less than 35years

Although the target age group for screening for breast cancer is defined between the age 35-69 years, it is important to remember that breast cancer is also affecting younger females <35years. There are no global recommendations to provide screening for women less than 25years of age including those with high risk. However, breast self-examination is encouraged to be done by women in monthly basis. The algorithm below illustrates the service provided to this group of women when they attend the breast clinic.

*Algorithm 3: Screening for Breast Cancer in Women Age 25-34 Years*

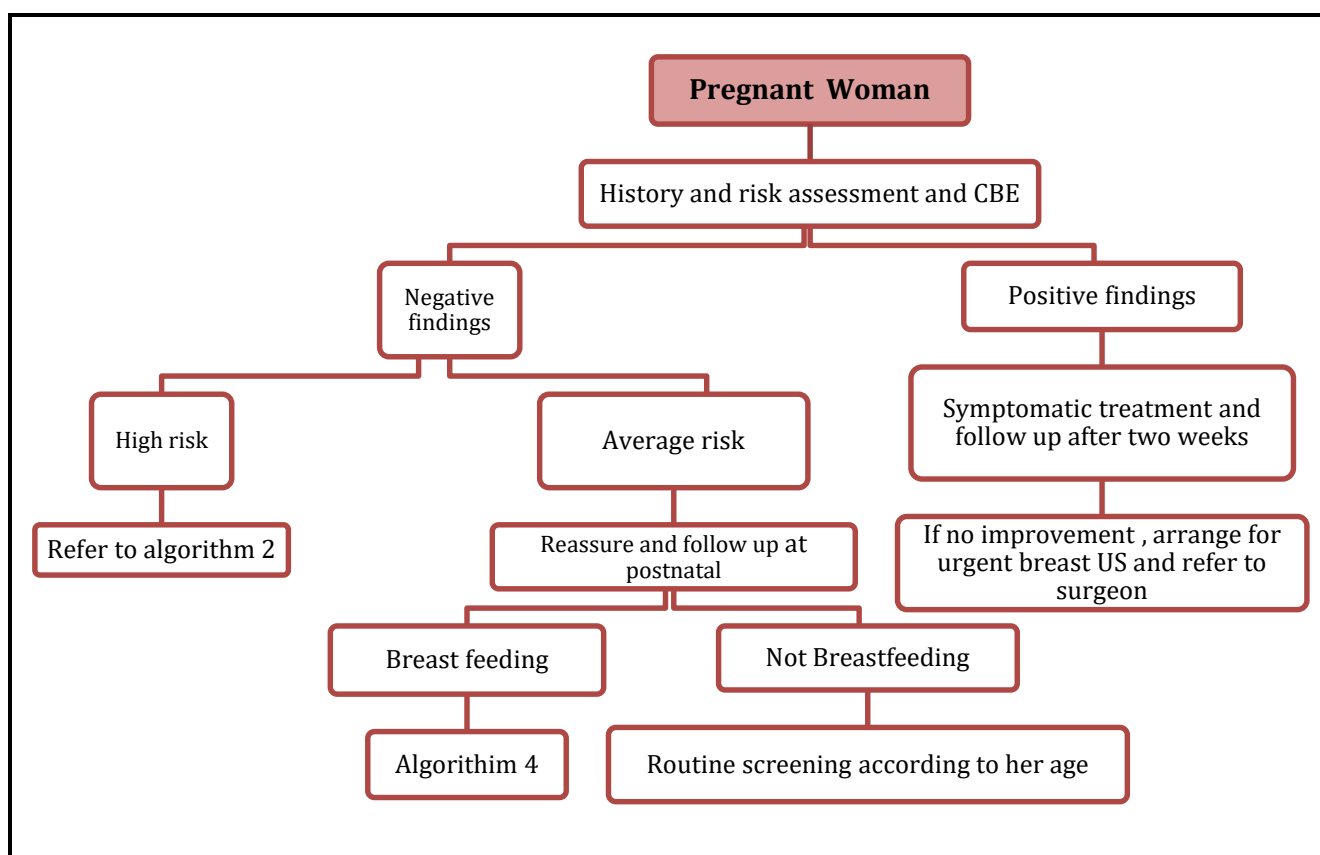


#### [D] Screening for breast cancer during pregnancy and lactation

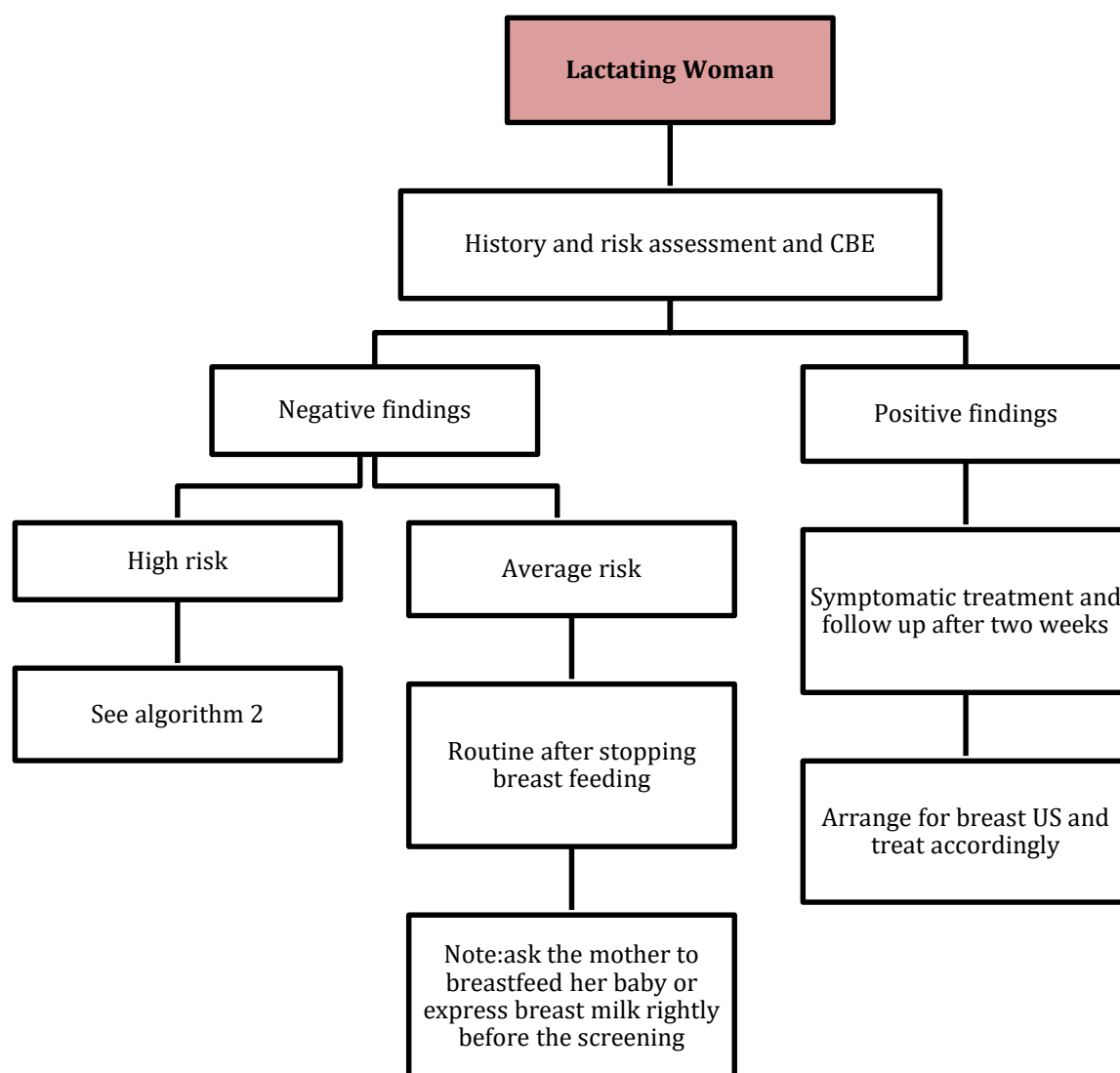
During pregnancy and lactation, the breast undergoes some hormonal –related physiological changes such as increased breast volume and density that can mimic pathologic lesions and affect the mammographic findings which can be considered a diagnostic challenge. The estimated number of diagnosed breast cancer during pregnancy is 1 in 3000 women.

Breast examination is one of the essential clinical assessment at antenatal booking visit. If positive breast findings during CBE, or women reported changes in her breast or felt a lump, ultrasound is considered the first imaging test as does not contain radiation that might affect the foetus. The risk of radiation from mammogram to the foetus cannot be excluded.

*Algorithm 4: Screening for Breast Cancer During Pregnancy*



*Algorithm 5: Screening for Breast Cancer During Lactation*



### **CHAPTER 3**

## HUMAN RESOURCES

Human resources needed in early detection of breast cancer clinic:

1. Trained Nurses at primary and secondary health care
2. Trained doctors
3. Surgeons
4. Radiographers (monographers)

## RESPONSIBILITIES IN BREAST CLINIC

Health Educator  
Radiologists specialized in mammogram and woman imaging

### **Trained Nurses/ Midwife at primary health care**

- Assess eligibility of woman for screening for breast cancer.
- Assess the woman risk factors.
- Check vitals weight, height, BMI, Blood pressure (BP), pulse and conduct clinical breast examination.
- Document the woman history, risk factor and breast examination findings in the breast examination register and in “breast clinic” Al-Shifa system.
- Provide information about the breast cancer (causes, risk factors, prevention and treatment options) .
- Teach the woman on how to do self-breast examination (see annex -2).
- Refer the woman with abnormal breast findings on CBE and those with no abnormal findings but eligible for mammogram screening to the doctor.

- Manage in a comprehensive approach.

### **Breast cancer nurse specialist**

- Bridge communication between the hospital and patients.
- Provide awareness on up to date on current recommendations of screening programmes.
- Encourage women on breast self examination.
- Actively involve in breast cancer awareness programmes through workshops ( Pink October, World Cancer Day).
- Involve in National clinical breast examination courses for nurses' training.
- liaise with community sectors in supporting, educating of people with breast cancer.

### **Trained doctors at primary health care**

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- Review the detailed history of the woman and the risk assessment.
- Conducts rapid risk assessment for breast cancer.
- Perform a physical examination for the woman including: - systemic examination, breast, thyroid, cardiovascular, chest, abdominal examination and repeat as needed.
- Request mammogram for eligible woman and those with clinical findings on CBE.
- Refer woman with abnormal breast findings to the surgeon in the secondary care for further evaluation and management.
- Document the woman history, risk factor and breast examination findings in the breast examination register and in “breast clinic” in Al-Shifa system.
- Inform woman with normal CBE and mammogram (BIRAD 1) about the rescreening date.
- Provide counselling to woman with abnormal breast findings.
- Participate in awareness activities.
- Provide health education and support to all women.

### **Surgeon at secondary care hospital**

- Assessment of the referred woman from breast clinic in the primary health care
- Take breast biopsy (FNA, true cut biopsy).
- Excision of benign breast lumps (on histopathology examination).
- Refer woman with mammogram or histopathology findings suggestive of breast cancer to surgeon at tertiary hospital.
- Document findings and management plan in the patient health records.
- Send feedback to the referred institution with the assessment findings and management plan.

- Assess and manage the referred cases from the secondary health care.

### **Surgeon at tertiary hospital**

- Document findings and management plan in the patient health records.
- Send feedback to the referred institution with the assessment findings and management plan.

- Explain to the women the mamogram examination.
- Conduct mamogram examination.
- Follow quality check measures when performing mamogram.

### **Mammographers**

- Report mamogram findings.

### **Radiologist**

### **Health educators**

- Perform ultrasound if needed for women with suspicious findings in mamogram.
- Take biopsy under ultrasound/mammogram guidance if indicated.
- Perform hock wire localization if indicated.

### **Sections of Women & Child health in the Governorates**

- Provide proper health education and support.
- Conduct health education sessions about early detection of breast cancer.
- Disseminate the guideline to all Primary health care institutions in governorates.
- Conduct training workshops for the health care workers.
- Monitor the implementation of the guidelines in all health institutions in the governorate.

### **Department of Woman and child health**

- Update guideline in coordination with national experts (surgeons, oncologists, radiologists).
- Conduct national training workshops to train doctors and nurses on how to use the guidelines.
- Monitor implementation of screening services in the governorates.
- Organize and participate in national campaigns.
- Maintain data base of the program.

### **Directorate General of specialized clinics**

- Quality check of the mammogram machines.
- Initiate request for new mammogram services and replacement if indicated.
- Disseminate the guideline to all private clinics.

- Quality control check of screening services in private institutions.

### **Directorate General of Private Establishment**

## **DOCUMENT HISTORY AND VERSION CONTROL**

<b>Document History and Version Control</b>			
<b>Version</b>	<b>Description of Amendment</b>	<b>Author</b>	<b>Review Date</b>
01	Initial Release	Early Detection and Screening for Breast Cancer Guideline	2010
02	Updating of Guidelines	Early Detection and Screening for Breast Cancer Guideline	2025
<b>Written by</b>		<b>Reviewed by</b>	<b>Approved by</b>
Department of Women and Child Health		<p>Dr. Jamila Al Abri – Director, Department of Women and Child Health</p> <p>Dr. Salem Khalfan Mohammed Al-Rahbi, Breast Oncology Consultant, Royal Hospital</p> <p>Dr. Suad Sulaiman Al Kharousiyeh, Senior Consultant Oncology, Director of the National Oncology Center, Royal Hospital</p> <p>Dr. Samya Saleh al Salhi, Senior Consultant - Breast Imaging Radiologist, Royal Hospital</p>	Dr. Badriya Al Rashdi Director General of Primary Health Care

## **CHAPTER 4**

## ANNEXURES

### Annexure 1: Technique of Clinical Breast Examination

Inform the women in advance about these steps and what is being assessed during each step.

Examination of breast including an area beyond the mammary prominences.

The surface anatomy is from the second to the sixth ribs and from lateral border of the sternum to the maxillary line in addition the supraclavicular fossae and axillae are examined for evidence of abnormal lymph nodes.

There are two steps of Clinical examination of the breasts CBE; inception and palpation.

#### **Inspection:**

- With the patient in a sitting position, inspect the breasts visually (Illustration 1) While generally symmetrical, most breasts are slightly asymmetrical in respect to size, shape, orientation, and position on the chest wall. Inspect for:

- Visible masses (change in contour)
- Skin dimpling
- Nipple retraction
- Redness



*Illustration 1*

- Ask the woman to raise her arms straight up (Illustration 2) this will exaggerate any previous noted or suspected skin dimpling. An underlying malignancy can fix the skin in place. Raising the arms will accentuate these changes.
- Elevate the breast so that the inferior surface can be visualized. If this is not done a large portion of the breast will be unobserved, particularly in women with large or pendulous breast.



*Illustration 2*

- Ask the woman to place her hands over the iliac crest (Illustration 3) and presses firmly inward causing the pectoralis muscles to contract. This will accentuate what may have been hidden skin dimpling or detected skin dimpling not previously noted.



*Illustration 3*

### **Palpation: Palpation in upright position:**

- Palpate the supraclavicular fossa for any enlarged lymph nodes (Illustration 4)



*Illustration 4*

- Ask the woman to partially abduct her arm, support the arm on the side and examine the axilla. Palpate the right axilla with left hand and vice versa (**Error! Reference source not found.**)



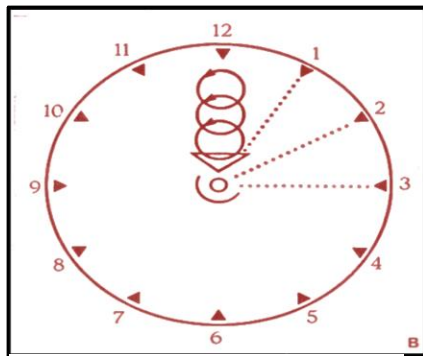
*Illustration 5*

**Note:** Palpation the axilla is done with fingertips and pads, aiming towards apex pressing against the chest wall and gradually sweeping inferiorly with small rotatory motions. The lymph nodes are best felt in the upright position probably because of the effect of the gravity.

- Ask the woman to place her hands behind her head elbow out and palpate the axilla. Most of the lesions can be palpated in supine position, small percentages are best felt in the upright position and some are missed entirely if palpation in upright position is omitted.
- Palpate the breast in segments manner, from the periphery to the nipple (Illustration 6). Use your flat surface of the middle & distal phalanges of the middle three fingers (the finger

**Note:** palpation (Illustration 7). The fingers are kept extended, but slight flexing occurs at the middle interphalangeal joints as pressure is applied firmly but gently against the underlying chest wall.

If palpation is done by sliding over the skin, underlying masses are easily missed  
If palpation is done by picking up breast tissue in between the thumb and fingers false masses are felt and true tumors may be missed.



*Illustration 6*



*Illustration 7*

- Move your hand in a circular motion while pressing into the breast substance (**Error! Reference source not found.**)
- Making these small circles will help you identify mass occupying lesions.
- Cover the entire breast in a systematic fashion, including the tail of the breast that extends up into the axilla.



*Illustration 8*

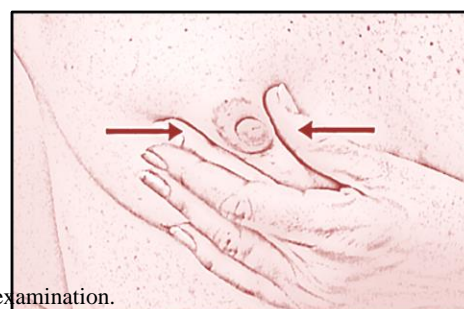
- Start palpation at periphery in the 12 o'clock position (Illustration 10), below the clavicle, examine the medial half first and then the lateral half until the starting point is reached (Error! Reference source not found.9),
- Then retract the interior portion of the breast upward and the lateral portion medially so that the breast can be palpated firmly against the chest wall (Error! Reference source not found.9).
- When breasts are larger or pendulous, it may be useful to use two hands, compressing the breast tissue between them (Error! Reference source not found.0).
- Stripping the ducts toward the nipple will cause any secretions to be expressed. This should be done firmly, but not so hard as to cause discomfort or pinching (Error! Reference source not found.1).



*Illustration 9*



*Illustration 10*



*Illustration 11*

After completing the examination on one side, move to the other breast and repeat the examination.

In a patient with very large pendulous breasts palpation in the upright position is not satisfactory and is omitted



## Palpation in the supine position:

- Each breast should be palpated from the corresponding side of the examining table (if possible).
- The woman lies on a pillow that extends to just below the shoulders.
- Examine the right breast, by asking the woman to put her right hand under her neck, this flattens the medial half of the breast against the chest wall (**Error! Reference source not found.**).
- Start to palpate the medial half of the breast at the 12 o'clock position, at 6 o'clock position, ask the woman to place her arm down partly to the side, and retract the breast upwards(**Error! Reference source not found.**).
- Retract the breast medially to examine the lateral half, so the breast can be more readily compresses against the chest wall

- A or mass.



*Illustration 12*



*Illustration 13*

- Go through the same systematic examination described in upright position.
- Palpation in the oblique position:
  - Request to the woman to rotate 10-15 degrees away, with her forearm resting on the forehead.
  - Reexamine the lateral half of the breast with particular attention to the axillary tail. This is the best position to examine the tail of the breast.

## **Annexure 2: Technique of Breast Self-Examination (BSE)**

BSE is the systematic search for a lump or other change in the breast in a woman with no symptoms. Steps:

First you look: A mirror on the wall (not a hand mirror) is essential for inspection of the breasts.

Then you feel: BSE uses the same techniques as CBE performed by professional.

### **First steps: you look**

- Undress to the waist in a well –lit room and sit or stand in front of a mirror (don't use a hand mirror), with your arms resting relaxed on your thigh if sitting (**Error! Reference source not found.**) and on your side if standing. Look in the mirror and observe you breast carefully; one breast may be bit larger than the other, but this is not abnormal. Look for any other skin changes such as redness or a change in texture such as orange-peel appearance.
- Raise the arm over the head (**Error! Reference source not found.**) and look for the same things as the Illustration (**Error! Reference source not found.**), also observe carefully for any subtotal dimpling of the skin. Turn over your body slightly from side to side.
- Elevate each breast so you can see the interior part of the breast. This particularly if your breasts are large or drooping.
- With your hands on your hips press firmly inward so as to tense the chest muscles (Illustration 16). This will exaggerate any subtle skin dimpling and any abnormal nipple deviation.



*Illustration 14*



*Illustration 15*



*Illustration 16*

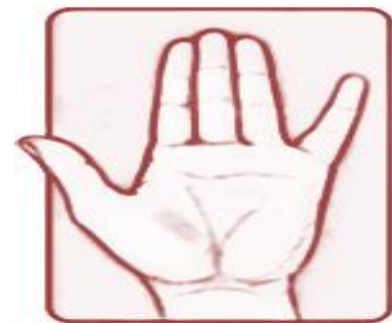
- Lean forward by bending at the waist with your arms out straight in front. A healthy breast should fall away from the chest wall (Illustration 17).



*Illustration 17*

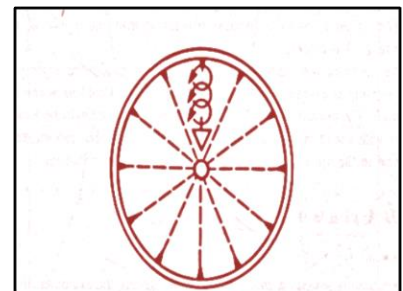
## **Second Step: you feel**

- Use the finger pads of your three middle fingers on each hand to feel for lumps. The fingers are kept straight and there is a slight flexion at the knuckle joints in the hands (**Error! Reference source not found.**8). It is helpful to have your hands slippery with soap and water/ lotion.



*Illustration 18*

- Examine by using small overlapping circular movements from periphery to the Nipple-the radial method (Illustration 19).



*Illustration 19*

- While sitting/standing examine your armpit area for lumps (Illustration 20). Check for any lumps or thickening in your underarm area. Place your left hand on your hip and reach with your right hand to feel in the left armpit. Repeat on the other side.



*Illustration 20*

- Examine your right breast, lift your right arm and place your right hand behind your neck, start the examination from the upper most part of the breast directly under the clavicle bound towards the nipple in a straight line.



*Illustration 21*



*Illustration 22*

- Follow examination for all the other parts of the breast in the same direction (from periphery of breast and onwards to the nipple) and vice versa for left breast.

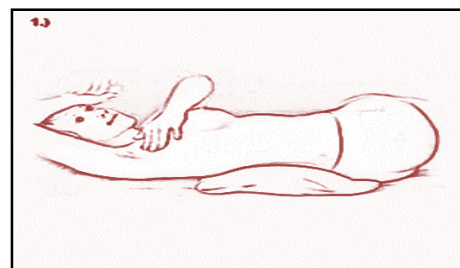
Note: Do not forget to examine the nipple from time to time (Illustration 22).

- Then lie on your bed or on a carpeted floor with a pillow or place a folded bath towel under the side to be examined.
- Examine the right breast with your left hand, and vice versa, press the breast firmly but gently against the ribs. Examine by using small overlapping circular movements from periphery to the Nipple-the radial method.
- The area to examine is from just below the collar bone to about 3 cm below the breast margin and from the breastbone to the outside of the rib cage. Ensure that no part is missed
- Place the hand of the side being examined under the head and examine the upper mid-portion followed by the inner half (**Error! Reference source not found.**).
- To examine the other half, bring the arm down partly at the side.



*Illustration 23*

- Now raise the arm over the head, so that forearm rests on the forehead (Illustration 24) rotate the body slightly and re-examine the outer part, especially that portion of the breast that extend up to the armpit area. This part of the breast is called tail and is best examined in this slightly turned position.



*Illustration 24*

- Now examine your breast again manually while standing in the shower or sitting in the bathtub. The soaped, wet skin enhances the sensitivity of examination.

#### **After examining both breasts:**

- If there is a change in your breasts e.g. dimpling of the skin, nipple retraction, a lump – diffuse or discrete (not necessarily hard) in one breast spontaneous nipple discharge regard these signs as abnormal and report your doctor.
- It is very common to have cysts and fibrous tissue in the breast. These are typically tender to touch and often larger and more tender before a period. Most cysts have smooth, round edges and are harmless.
- However, some changes that seem like cysts or fibrous tissue can be cancer therefore all changes in the breast should lead to a consultation with a specialist.

**Become aware at the first examination what your breast looks and feel like normally, so that you know if a change occurs**

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