Cancer Association of South Africa (CANSA)

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Fact Sheet on Breast Cancer, Pregnancy and Breastfeeding

Introduction

Having breast cancer during pregnancy is very rare. But more and more women are choosing to have children later in life, and the risk of breast cancer goes up as women get older. Because of this, doctors expect there will be more cases of breast cancer during pregnancy in the future.

[Picture Credit: Breastfeeding]

Breast cancer is currently diagnosed in about one in every 3 000 pregnant women. Breast cancer is, however, the most common type of cancer found during pregnancy or while breastfeeding, immediately or within the first year after delivery. This is often referred to as '*gestational breast cancer'* or '*pregnancy-associated breast cancer (PABC)'*.
(American Cancer Society).

'Pregnancy-associated breast cancer' means the cancer is diagnosed while a woman is pregnant or during the first year after pregnancy. A study shows that women younger than 35 diagnosed with pregnancy-associated breast cancer has the same long-term outcomes as women who were not pregnant when diagnosed, though the pregnant women are more likely to be diagnosed with later-stage cancer.

The levels of the hormones oestrogen and progesterone change during pregnancy and these hormones can help breast cancers develop and grow. This caused doctors to wonder whether breast cancers that developed during, or right after, pregnancy could have a worse prognosis.

The researchers looked at the records of 652 women, all younger than 35, treated for breast cancer. About 100 of the women were diagnosed with pregnancy-associated breast cancer - 51 (during pregnancy) and 53 in the year after delivery. The researchers compared the 10-year outcomes of the women diagnosed with pregnancy-associated breast cancer to the 10-year outcomes of the women who were not pregnant when diagnosed.

Breast cancer came back in the same area where it was first diagnosed (locoregional recurrence) in:

- 23.4% of the women diagnosed with pregnancy-associated breast cancer
- 19.2% of the women who weren't pregnant when diagnosed

This difference was not significant, which means it could have been due to chance.

Breast cancer came back in some other place in the body, not the breast area (distant metastasis), in:

- 45.1% of the women diagnosed with pregnancy-associated breast cancer
- 38.9% of the women who weren't pregnant when diagnosed

This difference also was not significant, which means that it also could have been due to chance.

There was no difference in the 10-year survival rates between the two groups of women:

- 64.6% of the women diagnosed with pregnancy-associated breast cancer were survivors
- 64.8% of the women who weren't pregnant when diagnosed were survivors

This difference also was not significant, which means that it could have been due to chance.

Women diagnosed with pregnancy-associated breast cancer were more likely to have later-stage breast cancer compared to the other women. This may be because pregnancy may make it harder to detect breast cancer symptoms. Pregnancy also may cause women to wait to get a mammogram.

Some of the women diagnosed with breast cancer while pregnant started treatment before the baby was born. Other women waited to start treatment until after the baby was born. In this study, 10-year survival rates were better among women who started treatment while pregnant (78.7%), compared to survival rates among women who waited until after they gave birth to start treatment (44.7%).

If someone has been diagnosed with breast cancer while pregnant or in the year after giving birth, the results of this study are reassuring. If the woman is diagnosed while pregnant, she might want to wait and start treatment after she had her baby. This is understandable. Still, this study suggests that starting treatment while being pregnant may make more sense.

In 2006, the National Comprehensive Cancer Network created Guidelines for Treating Early-Stage Breast Cancer During Pregnancy. Talk to a doctor about these guidelines and the treatment options that are best for each unique situation. Together a treatment option can be planned that is best for mother and baby.
(BreastCAncer.Org).

Most women are able to carry on with their pregnancy. Rarely, some may need to think about whether to end the pregnancy (termination). But usually this is only necessary if you

need chemotherapy and are less than 14 weeks pregnant. Usually it is possible to delay chemotherapy treatment until after you have reached the 14 weeks stage of pregnancy.

Some women feel that they want treatment straight away and decide to end the pregnancy. This is a very difficult, personal decision and one that only the patient herself can make. It can help to discuss this with family, a cancer specialist, and obstetrician (Cancer Research UK).

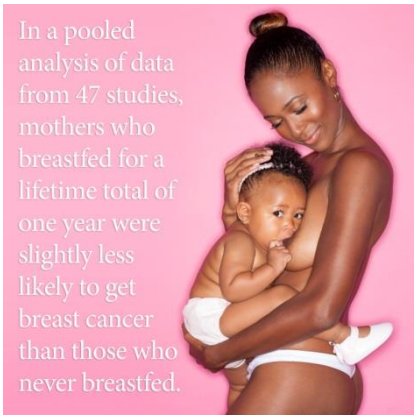
Pregnancy Does not Cause Breast Cancer

Breast Cancer is the most common cancer in pregnant women and tends to affect women in their mid-30s. Although pregnancy does not cause breast cancer - the hormonal changes in the body during pregnancy can, however, accelerate its growth. The disease can be devastating to both the mother and child, so it is essential that pregnant women and their health care providers continue to perform routine breast examinations throughout pregnancy. Any suspicious lumps and symptoms should be evaluated.

Because many changes take place in a woman's breasts during pregnancy, it can be more difficult to identify small masses, or lumps, during pregnancy. Breast masses can be mistaken for a normal change due to pregnancy. In addition, breast cancer tumours in pregnant women are often larger and more advanced by the time they are detected than lumps in women of the same age who are not pregnant (WebMD).

Breastfeeding and Breast Cancer Risk

Breastfeeding protects against breast cancer, especially premenopausal breast cancer.



[Picture Credit: Benefits of Breastfeeding]

In a pooled analysis of data from 47 studies, mothers who breastfed for a lifetime total (combined duration of breastfeeding for all children) of one year were slightly less likely to get breast cancer than those who never breastfed. Mothers who breastfed for a lifetime total of two years got about twice the benefit of those who breastfed for a total of one year. Women who breastfed for a lifetime total of more than two years got even more benefit. Although data are limited, breastfeeding for less than one year may also modestly lower breast cancer risk.

Breastfeeding has other benefits for the mother, including lowering the risk of:

- Type 2 diabetes
- Ovarian cancer
- Postpartum depression

(Susan G Komen).

Breast Cancer Diagnosis During Pregnancy

Pregnancy causes one's breasts to swell and become tender as milk ducts grow and stretch to prepare for breastfeeding. Because of the swelling, it may be more difficult to detect small lumps. For this reason, women diagnosed with breast cancer during pregnancy tend to have more advanced cancers at diagnosis than other women with breast cancer. Still, most studies show that pregnant women respond to treatment as well as other women of the same age and with the same stage and type of breast cancer.

In women who are pregnant or who have just given birth, breast cancer occurs most often between the ages of 32 and 38. Breast cancer occurs about once in every 3 000 pregnancies.

Women who are pregnant, nursing, or have just given birth usually have tender, swollen breasts. This can make small lumps difficult to detect and may lead to delays in diagnosing breast cancer. Because of these delays, cancers are often found at a later stage in these women.

To detect breast cancer, pregnant and nursing women should examine their breasts themselves. Women should also receive clinical breast examinations during their routine prenatal and postnatal examinations.

These and other signs may be caused by breast cancer or by other conditions. Check with a doctor if any of the following are detected:

- A lump or thickening in or near the breast or in the underarm area
- A change in the size or shape of the breast
- A dimple or puckering in the skin of the breast
- A nipple turned inward into the breast
- Fluid, other than breast milk, from the nipple, especially if it is bloody
- Scaly, red, or swollen skin on the breast, nipple, or areola (the dark area of skin that is around the nipple)
- Dimples in the breast that look like the skin of an orange, called *peau d'orange*.

A doctor should be seen if changes in the breast are noticed. The following tests and procedures may be used:

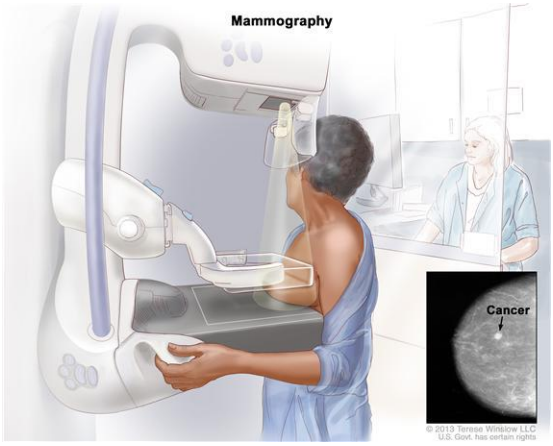
- Physical examination and history : An examination of the body to check general signs of health, including checking for signs of disease, such as lumps or anything else that seems unusual. A history of the patient's health habits and past illnesses and treatments will also be taken.

- Clinical breast examination (CBE): An examination of the breast by a doctor or professional nurse. The doctor will carefully feel the breasts and under the arms for lumps or anything else that seems unusual.

- MRI (magnetic resonance imaging): A procedure that uses a magnet, radio waves, and a computer to make a series of detailed pictures of areas inside the body. This procedure is also called nuclear magnetic resonance imaging (NMRI).

- Ultrasound examination: A procedure in which high-energy sound waves (ultrasound) are bounced off internal tissues or organs and make echoes. The echoes form a picture of body tissues called a sonogram.

- Mammogram: An x-ray of the breast. A mammogram can be performed with little risk to the foetus. Mammograms in pregnant women may appear negative even though cancer is present.



Mammography. The breast is pressed between two plates. X-rays are used to take pictures of breast tissue.

- Blood chemistry studies : A procedure in which a blood sample is checked to measure the amounts of certain substances released into the blood by organs and tissues in the body. An unusual (higher or lower than normal) amount of a substance can be a sign of disease in the organ or tissue that makes it.
- Biopsy: The removal of cells or tissues so they can be viewed under a microscope by a pathologist to check for signs of cancer. If a lump in the breast is found, the doctor may need to remove a small piece of the lump. Four types of biopsies are as follows:

    - Excisional biopsy: The removal of an entire lump of tissue
    - Incisional biopsy: The removal of part of a lump or a sample of tissue
    - Core biopsy: The removal of tissue using a wide needle
    - Fine-needle aspiration (FNA) biopsy: The removal of tissue or fluid, using a thin needle.

(National Cancer Institute; BreastCancer.Org).

Methods Used to Stage Breast Cancer are Changed to Make Them Safer for the Foetus

Standard methods for giving imaging scans can be adjusted so that the foetus is exposed to less radiation. The following tests and procedures may be used in the staging process:

Sentinel lymph node biopsy: The removal of the sentinel lymph node during surgery. The sentinel lymph node is the first lymph node to receive lymphatic drainage from a tumour. It is the first lymph node the cancer is likely to spread to from the tumour. A radioactive substance and/or blue dye is injected near the tumour. The substance or dye flows through the lymph ducts to the lymph nodes. The first lymph node to receive the substance or dye is removed. A pathologist views the tissue under a microscope to look for cancer cells. If cancer cells are not found, it may not be necessary to remove more lymph nodes.

CT Scan (CAT Scan): A procedure that makes a series of detailed pictures of areas inside the body, taken from different angles. The pictures are made by a computer linked to an X-ray machine. A dye may be injected into a vein or swallowed to help the organs or tissues show up more clearly. This procedure is also called computed tomography, computerised tomography, or computerised axial tomography.

Bone Scan: A procedure to check if there are rapidly dividing cells, such as cancer cells, in the bone. A very small amount of radioactive material is injected into a vein and travels

through the bloodstream. The radioactive material collects in the bones and is detected by a scanner.

PET Scan (Positron Emission Tomography Scan): A procedure to find malignant tumour cells in the body. A small amount of radioactive glucose (sugar) is injected into a vein. The PET scanner rotates around the body and makes a picture of where glucose is being used in the body. Malignant tumour cells show up brighter in the picture because they are more active and take up more glucose than normal cells do.

MRI (magnetic resonance imaging): A procedure that uses a magnet, radio waves, and a computer to make a series of detailed pictures of areas inside the body. This procedure is also called nuclear magnetic resonance imaging (NMRI).

Ultrasound examination: A procedure in which high-energy sound waves (ultrasound) are bounced off internal tissues or organs and make echoes. The echoes form a picture of body tissues called a sonogram. The picture can be printed to be looked at later.

Chest X-ray: An X-ray of the organs and bones inside the chest. An X-ray is a type of energy beam that can go through the body and onto film, making a picture of areas inside the body. (*ibid*).

Caring for Women with Breast Cancer During Pregnancy

Women with breast cancer during pregnancy are more likely than nonpregnant women to have grade 3, lymph node positive, oestrogen and/or progesterone receptor triple-negative tumours. Incidence of breast cancer during pregnancy or lactation is increasing, in part due to older ages of childbearing women.

Survival outcomes are not improved if pregnancy is terminated after a diagnosis of breast cancer, except for women who need immediate treatment for advanced disease who have a poor prognosis early in the first trimester. For these reasons, to deliver the safest and best treatment plan to both the mother and developing foetus, all aspects of care must be individualised.

Following are the top 6 key points to consider in caring for women with breast cancer during pregnancy.

1.
Ultrasonography is the first-line imaging modality. If concerning mass identified, bilateral mammography with appropriate shielding is recommended.

- Ultrasonography
    - Can differentiate between solid and cystic lesions
    - Lacks ionizing radiation, which is associated with birth defects
    - High sensitivity to detect benign and malignant lesions
    - Guided core biopsy can be used to perform tissue diagnosis
- Mammography can help determine “extent of disease, visualize suspicious microcalcifications, and evaluate the contralateral breast”
- Not recommended: MRI with contrast or contract-enhanced CT

2.
Surgery can be safely performed at any time during pregnancy, but second trimester is preferred. Lumpectomy and mastectomy are both reasonable surgical approaches.

- While awaiting results of genetic testing to guide surgical planning, neoadjuvant chemotherapy can be administered
- Surgical planning should include gestational age at breast cancer diagnosis
- Breast-conservation surgery is safe in patients who are pregnant
- When administering anaesthesia during surgery, consider the safety of both the mother and the foetus
- Premature labour and delivery can be initiated by the stress of surgery during the third trimester
- Dose and duration of any narcotics used for pain control "should be closely monitored to minimize infant dependency"

3.
The recommended method of lymphoscintigraphy is with 99m-Tc sulfur colloid alone.

4.
Chemotherapy should not be administered in the first trimester of pregnancy; anthracycline-based chemotherapy can be safely initiated in the second and third trimesters of pregnancy.

- Perhaps one of the most important consideration in the selection and timing of systemic therapy is the effect of chemotherapy on foetal development
- Timing of chemotherapy should take into consideration stage at diagnosis, grade and lymph node and receptor status; "gestational age at breast cancer diagnosis, and the likelihood of promoting a full-term delivery in an effort to maximize both maternal and foetal outcomes"
- The largest experience with chemotherapy in the second and third trimesters of pregnancy for maternal and foetal outcomes is with anthracycline-containing regimens; taxanes and platinum agents should be used only if anthracyclines are not feasible
- Congenital abnormalities in children exposed to chemotherapy in utero is approximately 3%, similar to the national average

5.
Chemotherapy should be stopped approximately 3–4 weeks before delivery to avoid haematologic nadir during delivery that may result in infectious or bleeding complications.

6.
Dosing of chemotherapy in pregnant patient should be similar to that in nonpregnant patient (i.e., based on actual body surface area).
(Shackar, *et al*., 2017).

Contraindications for Breast Cancer Treatment During Pregnancy

- Gadolinium-based contrast for MRI is not recommended

- Isosulfan blue dye is contraindicated for lymphoscintigraphy as dual tracer for sentinel lymph node biopsy"

- Chemotherapy is contraindicated in first trimester of pregnancy and during lactation

- Endocrine treatment is contraindicated during pregnancy and lactation
    - Tamoxifen is U.S. Food and Drug Administration (FDA) pregnancy risk Category D

- Anti-HER2 therapy is contraindicated in pregnancy and lactation
    - This includes trastuzumab (FDA pregnancy risk Category D), pertuzumab, and lapatinib

- Radiation therapy is contraindicated during pregnancy and cautioned during lactation.

- Exposing a foetus to radiation therapy in utero "is postulated to increase the foetus's risk for cancer, notably leukaemia

(Shachar, *et al*., 2017)

Breastfeeding During Cancer Treatment

Most doctors recommend that women who have just had babies and are about to be treated for breast cancer should stop (or not start) breastfeeding.

If surgery is planned, stopping breastfeeding will help reduce blood flow to the breasts and make them smaller. This can help with any possible surgery. It also helps to reduce the risk of infection in the breast(s) and can help avoid having breast milk collect in biopsy or surgery areas.

Many chemotherapy, hormone therapy, and targeted therapy drugs can enter breast milk and be passed on to the baby. Breastfeeding is, therefore, not recommended if the mother is getting chemotherapy, hormone therapy, or targeted therapy.
(American Cancer Society).

If one undergoes radioactive isotope therapy or chemotherapy, however, one must stop breastfeeding until the radioactive elements or medications are completely gone from the body. One can still nurse if one is having radiation therapy, but having had radiation therapy, will usually limit milk production in the affected breast.

It is important to know that cancerous cells cannot be passed to one's baby through breast milk.
(Babycenter.com).

In the event of any questions, such as when it might be safe to start breastfeeding, be sure to talk with a health care professional.

Breast cancer, Pregnancy, and Breastfeeding

According to Helewa, *et al.* (2002), women should be counselled regarding their risk for breast cancer and be informed that:

- There is good evidence that there is a transient increase in risk of breast cancer in the first three to four years after delivery of a singleton baby (II-2B). Subsequently, their lifetime risk seems lower than that of women who remain nulliparous (II-2B).

- There is good evidence that the risk for premenopausal breast cancer is reduced with lactation (II-2A). This protective effect seems to be best for women who had extended periods of breastfeeding during their lifetime (ll-2B). Women with familial risks could potentially benefit most from breastfeeding (II-2C). Since breast milk is the ideal nutrient for the new born, and since breastfeeding is a modifiable risk factor, all women should be encouraged to breastfeed their children (II-2A).

- All women should be encouraged to practice breast self-examination in pregnancy and during lactation (II-2B). Clinicians should screen all pregnant patients for breast cancer with thorough breast examination early in pregnancy (III-B). The clinician is advised to examine the breast in the postpartum period if the woman is not breastfeeding. The obstetrician is advised to examine the breast at any time in the postpartum period if the woman presents with breast symptoms (III-B).

- Physicians should be encouraged to use ultrasonography, mammography, needle aspiration, or breast biopsies to assess suspicious breast masses in pregnancy and during lactation, in the same timely fashion as for non-pregnant or non-lactating women (II-2A). Interruption of lactation during investigation is not necessary, nor is it recommended unless nuclear studies are entertained (III-B).

- Once breast cancer is diagnosed, a multidisciplinary approach should be taken. This includes the obstetrician, surgeons, medical and radiation oncologists, and breast cancer counsellors (II-2A).

- In early pregnancy, the patient should be counselled regarding the effect of proposed therapy on the foetus and on overall maternal prognosis. Termination of pregnancy should be discussed, but the patient should be counselled that prognosis is not altered by termination of pregnancy. Women should be advised that premature menopause may result from breast cancer treatments, especially if chemotherapy is given to patients who are past the age of 30. (II-2C)

- Up until now, modified radical mastectomy was the cornerstone of surgical treatment of breast cancer during pregnancy. Adjuvant chemotherapy should be entertained and, if required, administered without delay. The patient should be counselled regarding the effect of chemotherapy on the foetus and/or the future reproductive potential of the patient (II-2B). In the third trimester, the risks and benefits of early delivery versus continuation of pregnancy, and the effect of chemotherapy on the foetus, should be addressed (II-2B). Women undergoing chemotherapy or tamoxifen treatment should not breastfeed (III-B).

- Women treated for breast cancer and who wish to become pregnant should be counselled that pregnancy is possible and does not seem to be associated with a worse prognosis for their breast cancer (II-3C). However, they should be made aware that the evidence to support such advice is relatively poor.

- Since most breast cancer recurrences appear within two to three years after initial diagnosis, patients should be advised to postpone pregnancy for three years (III-C). If a patient has axillary node involvement, the recommendation to defer pregnancy should be extended to five years, but this recommendation is based on opinion only

(III-C). Prior to attempting pregnancy, a breast cancer survivor should be referred for a full oncologic evaluation.

- There is no evidence that breastfeeding increases the risk of breast cancer recurring or of a second breast cancer developing, nor that it carries any health risk to the child. Women previously treated for breast cancer, who do not show any evidence of residual tumour, should be encouraged to breastfeed their children (III-B).

Breastfeeding After Breast Cancer Treatment

There is no evidence that breastfeeding is dangerous for mother or child after breast cancer treatment, yet many women are advised by their doctors not to breastfeed after completing treatment for breast cancer.

In their study, Dr Azim and colleagues (Department of Medical Oncology at Jules Bordet Institute in Brussels) conducted a questionnaire on 20 women who were known to have delivered a baby following completion of breast cancer therapy. Of those women, 10 attempted breastfeeding and 10 did not. The patients were followed up for a median period of 4 years following delivery, during which time 2 relapses were encountered; one in the group which did not breastfeed, and another in the group which breastfed.

Decisions about fertility and future pregnancies are important for an increasing number of patients. The research conducted by Dr. Azim and colleagues have shown that, especially for patients undergoing breast-conserving surgery, breast feeding from the contralateral breast can be successful and should be encouraged.
(Science Daily).

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