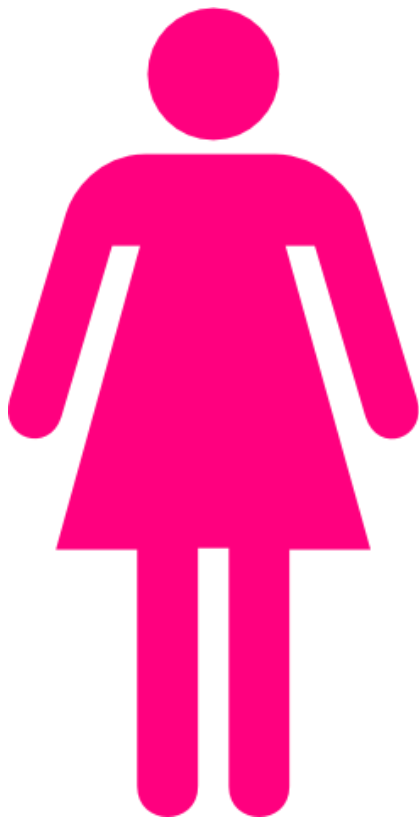


# BREAST CANCER



**Information  
for young  
women**

Breast cancer starts when cells in breast begin to grow out of control. It can spread (metastasize) into other parts of the body. It can be categorized by stages (and survival rate is during 5 years) :

**Stage 0:** also called ductal carcinoma in situ or lobular carcinoma in situ. Survival almost 100%

**Stage 1A and B:** Survival almost 100%

**Stage 2A and B:** survival is about 93%.

**Stage 3A, B and C:** survival is approximately 72%.

**Stage 4:** Survival: 22%

Instructions for self-examination of breast could be found from this link:  
<https://www.youtube.com/watch?v=cHJOFIZY10c>

## **Possible Signs & Symptoms:**

- Lumps or "hard masses"
- Inflammation (redness, swelling)
- Change of skin
- Prolonged pain
- Nipple retraction, redness, peeling
- Any discharge from a nipple
- Swollen lymph nodes (>2 weeks)

The main simple, affordable, safe and cheap cancer screening method is **Mammography**. It can detect cancer at early stages even when there are no symptoms. It is performed with the help of X-Ray machine. Screening program usually starts for women at the age of 50. Before this age women develop some changes in their breast which are difficult to distinguish from cancer. But if there is a need, it is always possible to do it before this age.

## **Causes and Risk factors.**

There are no known yet causes but there are some significant factors :

- ✓Age (95% of all cancers are in women >40y.o.)
- ✓Genetical predisposition (mutation of BRCA1 & BRCA2 gene increases risk by 6%)
- ✓Female sex hormones (oral contraceptives slightly increase the risk, but it gets back to normal when the usage is stopped)

## ER+ and PR+

Hystological test results for sensitivity of cancer cells to female sex hormones estrogen (ER+) and progesterone (PR+) help to determine further treatment. This kind of tumors are usually slowly growing and respond better to hormonal treatment.

## HER2 Analysis

This test helps to recognize specific proteins, which are responsible for cell growth and division. They are called HER2 proteins and are controlled by HER2/neu gene. With this gene cancer becomes more aggressive.

## PREVENTION

1. Change of lifestyle (exercising 2,5 h /week, decreasing body weight, no alcohol) could help
2. Maintain normal calcium and vitamin D level
3. Risk reducing mastectomy reduces risk by 90 %
4. Surgical removal of ovaries reduces risk 56 %

## TREATMENT SURGERY

There are two types of surgery:

- Mastectomy (whole breast removal)
- Lumpectomy (only tumor removal)

After the whole breast removal there is a possibility to place implants, even during the same one surgery.

## RADIOTHERAPY

It uses special radio waves (X-ray) to kill cancer cells. Nowadays technologies are so modern that they can be focused only on the tumor without damaging heart or lungs. There are different kinds of them: IMRT, TomoTherapy and Cyberknife. They all use 3D imaging tools like CT and MRI to find the tumor and precisely treat it.

## CHEMOTHERAPY

It is treatment with drugs that can stop cancer cells from growing and can kill them. There are two types of chemotherapy:

- Adjuvant - after operation
- Neoadjuvant – before the operation.

## TARGET THERAPY

This kind is like chemotherapy. It is a new method of using drugs for blocking protein HER 2. Essential drugs are: trastuzumab and pertuzumab. They reduce the growth of cancer cells. It is assumed that these drugs also help the immune system to destroy cancer cells.

## HORMONE THERAPY

If tumor is sex hormone sensitive then this therapy is used to block those hormones. It helps to reduce mortality and risk of recurrence. There are two types of hormone therapy:

- Estradiol –only (ET)
- Estrogen-progesterone (EPT)

Tamoxifen is the most famous drug used for hormone therapy. It blocks estrogen receptors in breast and reduces risk for 45% after 5 year use. It is used also for prevention.



## REFERENCES

- American Cancer Society. (2016). What is breast Cancer? Available at: <http://www.cancer.org/acs/groups/cid/documents/webcontent/003090-pdf.pdf>
- Breastcancer.org. (2016). What is Breast Cancer, Stages of breast Cancer. Available at: [http://www.breastcancer.org/symptoms/understand\\_bc/what\\_is\\_bc](http://www.breastcancer.org/symptoms/understand_bc/what_is_bc)
- Breastcancer.org. (2016). Breast Cancer Risk and Risk Factors, Risk of Developing Breast Cancer. Available at: [http://www.breastcancer.org/symptoms/understand\\_bc/risk/understanding](http://www.breastcancer.org/symptoms/understand_bc/risk/understanding)
- Burstein, H. J., Temin, S., Anderson, H., Buchholz, T. A., Davidson, N. E., Gelmon, K. E., [Giordano](#), S. H., [Hudis](#), C. A., [Rowden](#), D., [Solky](#), A. J., [Stearns](#), V., [Winer](#), E. P. and Griggs, J. J. (2014). Adjuvant Endocrine Therapy for Women With Hormone Receptor–Positive Breast Cancer: American Society of Clinical Oncology Clinical Practice Guideline Focused Update. *Journal of Clinical Oncology*, 32(21), 2255–2269. <http://doi.org/10.1200/JCO.2013.54.2258>
- Cancer Research UK. (2014). About Breast Cancer, Breast Cancer Symptoms. Available at: <http://www.cancerresearchuk.org/about-cancer/type/breast-cancer/about/breast-cancer-symptoms>
- Cancer Research UK. (2014). [Breast cancer](#), [Breast cancer treatment](#), [Surgery](#), Types of breast cancer surgery. Available at: <http://www.cancerresearchuk.org/about-cancer/type/breast-cancer/treatment/surgery/types-of-breast-cancer-surgery>
- Cancer.net. (2016). Personalized and Targeted Therapies, Understanding Targeted Therapy. Available at: <http://www.cancer.net/navigating-cancer-care/how-cancer-treated/personalized-and-targeted-therapies/understanding-targeted-therapy>
- Cancer.net. (2013). [ASCO Care and Treatment Recommendations for Patients](#). Available at: <http://www.cancer.net/research-and-advocacy/asco-care-and-treatment-recommendations-patients/her2-testing-breast-cancer>
- Gardner A. (2010). Study: Breast, ovary removal cuts cancer risk in high-risk women. *Health Magazine* 2011. From Health.com, CNN news. Available at: <http://edition.cnn.com/2010/HEALTH/08/31/health.breast.ovary.removal/>
- Hankey B.F., Miller B., Curtis R., Kosary C. (1994). Trends in Breast Cancer in Younger Women in Contrast to Older Women. *Journal of the National Cancer Institute Monographs* No. 16:7-14. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.468.9181&rep=rep1&type=pdf>
- Hashemi, S. H. B., Karimi, S., & Mahboobi, H. (2014). Lifestyle changes for prevention of breast cancer. *Electronic Physician*, 6(3), 894–905. Available at: <http://doi.org/10.14661/2014.894-905>
- Jacob J, Campana F, Chira C, Peurien D, Daveau C, et al. (2012) Can Helical Tomotherapy be used as a Safe Treatment Alternative for Breast Cancer Patients? *J Nucl Med Radiat Ther* S6:002. doi:10.4172/2155-9619.S6-002 Available at: <http://www.omicsonline.org/can-helical-tomotherapy-be-used-as-a-safe-treatment-alternative-for-breast-cancer-patients-2155-9619.S6-002.pdf>
- [Mintzer](#) D., [Glassburn](#) J., Mason B.A. and Sataloff D. (2002). Breast Cancer in the Very Young Patient: A Multidisciplinary Case Presentation. doi:10.1634/theoncologist.7-6-547 *The Oncologist* December 2002 vol. 7 no.6 547-554 Available at: <http://theoncologist.alphamedpress.org/content/7/6/547.full.pdf+html>
- National Cancer Institute.(2016). Breast Cancer Treatment (PDQ®)—Patient Version. General Information About Breast Cancer. Available at: <https://www.cancer.gov/types/breast/patient/breast-treatment-pdq>
- National Cancer Institute. (2013). Cancer types, Breast Cancer, Surgery to Reduce the Risk of Breast Cancer. Available at: <https://www.cancer.gov/types/breast/risk-reducing-surgery-fact-sheet>
- Widschwendter P., Friedl T.WP., Schwentner L., DeGregorio N., Jaeger B., Schramm A., Bekes I., Deniz M., Lato K., Weissenbacher T., Kost B., Andergassen U., Jueckstock J., Neugebauer J., Trapp E., Fasching P.A., Beckmann W.W., Schneeweiss A., Schrader I., Rack B., Janni W. and Scholz C. (2015). The influence of obesity on survival in early, high-risk breast cancer: results from the randomized SUCCESS A trial. *Breast Cancer Research* 2015 17:129. DOI: 10.1186/s13058-015-0639-3 Available at: <https://breast-cancer-research.biomedcentral.com/articles/10.1186/s13058-015-0639-3>
- World Health Organization. (2016). Cancer, Breast Cancer: Prevention and Control. Available at: <http://www.who.int/cancer/detection/breastcancer/en/>