

## Questions for my doctor.

- What are my treatment options?
- Is targeted therapy right for me?
- Is there a biosimilar available for my treatment?
- What are the side effects and risks of the therapy you recommend for me?
- Is there a clinical trial I could join?
- What can I do if my skin becomes more sensitive? If I develop breakouts, how should I treat them?



## What are targeted therapies?

Targeted therapies attack specific proteins or pathways involved in the growth of a cancer cell.

Targeted therapies only work on cancers with the specific markers, so not everyone can use these drugs.

Researchers are working to find more targets and develop new targeted therapies. Most new targeted therapies are first studied in clinical trials for metastatic breast cancer (MBC).

## HER2-positive breast cancer

HER2-positive breast cancers have high amounts of a protein called HER2 on the surface of the cancer cells. The HER2 protein is important for cancer cell growth.

All breast cancers are tested for [HER2 status](#). This information is part of breast cancer staging and helps guide treatment.

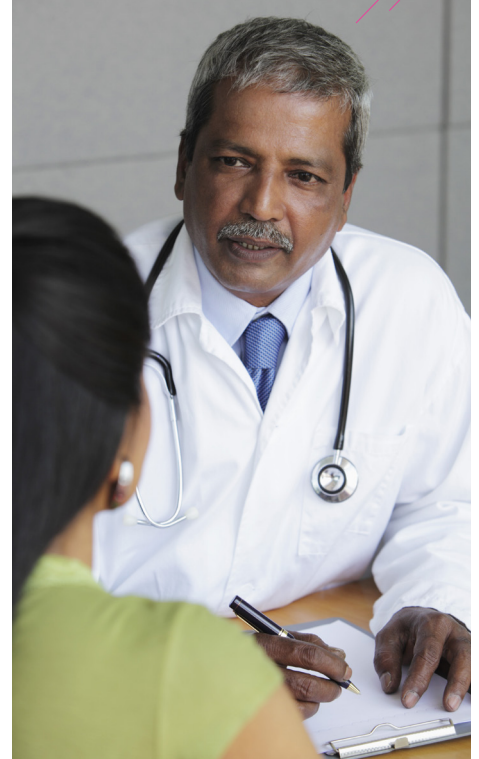
About 10-20 percent of newly diagnosed breast cancers are HER2-positive.

HER2-negative breast cancers have little or no HER2 protein.

## How do HER2 targeted therapies work?

HER2 targeted therapy drugs (anti-HER2 drugs) target HER2-positive breast cancers.

- Trastuzumab (Herceptin) and pertuzumab (Perjeta) are specially made antibodies that target HER2-positive cancer cells. When attached to the HER2 protein, these drugs can slow or stop the growth of these cancer cells.
- Tyrosine-kinase inhibitors (such as neratinib and lapatinib) target enzymes important for cell functions (called tyrosine-kinase enzymes). They can block these enzymes at many points along the HER2 cancer growth pathway.
- Antibody-drug conjugates combine an antibody targeted therapy drug (such as trastuzumab) and a chemotherapy drug. This combination allows the targeted delivery of chemotherapy to HER2-positive cancer cells.



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For more information, visit [komen.org](http://komen.org) or call Susan G. Komen's breast care helpline at 1-877 GO KOMEN (1-877-465-6636) Monday through Friday, 9 AM to 10 PM ET.

## Resources

**Susan G. Komen®**  
1-877 GO KOMEN  
(1-877-465-6636)  
[komen.org](http://komen.org)

**BreastCancerTrials.org**  
415-476-5777  
[breastcancertrials.org](http://breastcancertrials.org)

**National Cancer Institute**  
1-800-4-CANCER  
[cancer.gov](http://cancer.gov)

## Related educational resources:

- [Biosimilars](#)
- [Clinical Trials](#)
- [Making Breast Cancer Treatment Decisions](#)
- [Types of Breast Cancer Tumors](#)
- [Questions to Ask Your Doctor – Biosimilars](#)
- [Breast Cancer 101 – videos](#)

## HER2 targeted therapy drugs

Drug name	Brand name	Breast cancer stage	Pill or given by vein (through an IV)
Trastuzumab	Herceptin	Early and metastatic breast cancer	IV drug
Pertuzumab	Perjeta	Early and metastatic breast cancer	IV drug
Neratinib	Nerlynx	Early breast cancer	Pill
Trastuzumab emtansine (T-DM1)	Kadcyla	Metastatic breast cancer	IV drug
Lapatinib	Tykerb	Metastatic breast cancer	Pill

Studies show that for women with HER2-positive early breast cancer, chemotherapy plus trastuzumab cuts the risk of recurrence in half compared to chemotherapy alone.

Other HER2 targeted therapy drugs are under study.

## Side effects of targeted therapies

Unlike chemotherapy, targeted therapies only kill cancer cells, with little harm to healthy cells. However, some possible side effects are:

- Diarrhea
- Fatigue
- Nausea/vomiting
- Abdominal pain
- Heart problems (your heart will be checked before and during treatment to help ensure there are no problems)

## Biosimilar forms of trastuzumab

Biosimilars are “generic-like” versions of drugs that are already approved by the Federal Drug Administration (FDA). They are made in or from living things like yeast, bacteria, plant or animal cells – not chemicals.

A biosimilar works the same way as the original drug and is just as safe and effective. Its side effects are similar to those of the original drug.

There are several FDA-approved biosimilars for trastuzumab. They will come to market to treat HER2-positive breast cancer once the patent for the original drug Herceptin expires sometime in 2019.

Other biosimilars for breast cancer treatment are under study.

The list of resources is only a suggested resource and is not a complete listing of breast health and breast cancer materials or information. The information contained herein is not meant to be used for self-diagnosis or to replace the services of a medical professional. Komen does not endorse, recommend or make any warranties or representations regarding the accuracy, completeness, timeliness, quality or non-infringement of any of the materials, products or information provided by the organizations referenced herein.