



# Breast Cancer Awareness

*Part III*

# Breast Cancer

## Advances in Diagnosis & Treatment

### Node preservation reduces lymphedema cases



- [Sentinel node mapping](#) lets surgeons identify which lymph nodes are most likely to be affected by a tumor
- This reduces chronic pain, numbness and [lymphedema](#)

### Genomic testing minimizes chemotherapy exposure



- A genomic assay (or OncotypeDX test) shows if it will be responsive to chemotherapy, or whether endocrine therapy alone (such as tamoxifen) would be a better choice

### Better identification of hereditary cancer syndromes



- BRCA1 and BRCA2 are known mutations which increase the risk of cancer. USFDA approved talazoparib (Talzenna)
- Next-generation gene sequencing techniques are helping in identify other [hereditary cancer syndromes](#)
- USFDA approved Alpelisib (Piqray) for *PIK3CA* mutations

### Oral option for targeted therapy



- PARP inhibitors being used to treat breast cancer successfully
- Two Phase III [clinical trials](#) are currently underway comparing PARP inhibitors to standard-of-care chemotherapy
- USFDA approved [talazoparib \(Talzenna\)](#) and [olaparib \(Lynparza\)](#)

### New drug combination makes estrogen-blocking agents more effective



- HR+ — or hormone receptor-positive — breast cancers respond better when hormone therapy is combined with CDK4/6 inhibitors
- 3 CDK4/6 inhibitors abemaciclib, palbociclib and ribociclib approved by USFDA
- This has become the standard of care in nearly all metastatic HR+ breast cancer patients for first-line treatment

### Screening



- NCI is funding a large-scale randomized breast screening trial, the [Tomosynthesis Mammographic Imaging Screening Trial \(TMIST\)](#) to evaluate its efficiency in detection
- To limit the possibility of overdiagnosis [Women Informed to Screen Depending on Measures of Risk \(WISDOM\)](#) study is being conducted

For more information check out <https://www.mdanderson.org/cancerwise/6-advances-in-breast-cancer-diagnosis-and-treatment.h00-159308568.html>  
<https://www.cancerresearch.org/immunotherapy/cancer-types/breast-cancer>  
<https://www.cancer.gov/types/breast/research>

# Breast Cancer

Advances in Diagnosis & Treatment

Therapies under development

Next generation of monoclonal antibodies approved by USFDA

## HER2-positive breast cancer



- New formulation of trastuzumab+Hyaluronidase (Herceptin Hylecta),
- Pertuzumab (Perjeta®) in combination with Chemo
- Ado-trastuzumab emtansine (Kadcyla)
- Trastuzumab deruxtecan (Enhertu™)

## Triple-negative breast cancer (TNBC)



- Sacituzumab govitecan-hziy (Trodelvy™): an antibody-drug conjugate for patients with refractory TNBC
- Atezolizumab (Tecentriq®): a checkpoint inhibitor that targets the PD-1/PD-L1 pathway; approved in combination with the chemotherapy

## Advanced cancer with high MSI-H, dMMR / high TMB-H



- Pembrolizumab (Keytruda®): a checkpoint inhibitor that targets the PD-1/PD-L1 pathway

Emerging Therapies

## Histone deacetylase (HDAC) inhibitors



- These block enzymes, called HDAC enzymes, in the cancer growth pathway
- Tucidinostat, currently in phase III testing for advanced hormone receptor-positive breast cancer is showing promising results thus far

## CAR-T cell therapies



- Chimeric antigen receptor T-cell therapy, uses T cells from taken from blood and genetically alters them to attack cancer
- They carry the risk of cytokine release syndrome, which is a systemic inflammatory response

## Cancer Vaccines



- A small Phase I study of a HER2-targeted therapeutic cancer vaccine shows promise in metastatic HER2-positive cancers
- Mayo Clinic is studying an anti-cancer vaccine that targets HER2-positive breast cancer. Intended to be used in combination with trastuzumab following surgery

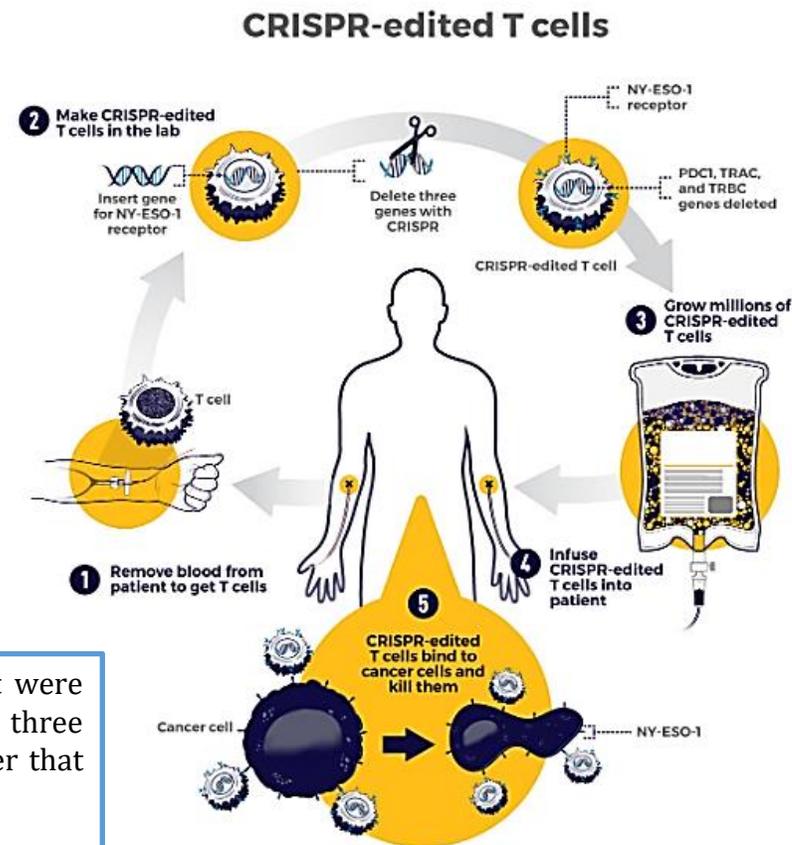
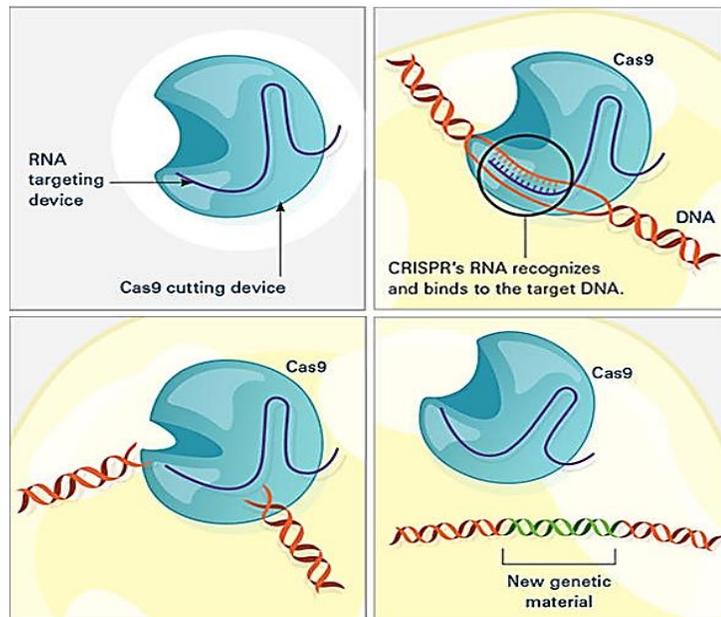
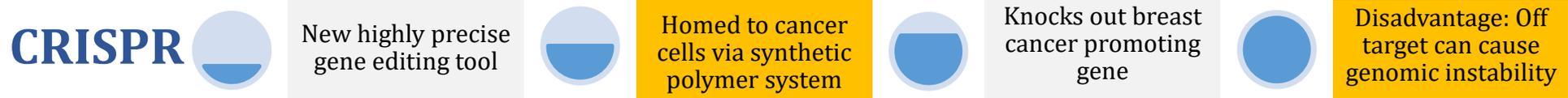
For more information check out <https://www.healthline.com/health/breast-cancer/treatment-breakthroughs-2019#takeaway>  
<https://www.cancer.gov/about-cancer/treatment/drugs/breast>  
<https://www.cancerresearch.org/immunotherapy/cancer-types/breast-cancer>

# Breast Cancer

## Therapies under development

Clinical Trial No.	Trial Phase & Status	Breast Cancer Type	Intervention
NCT02032823	Phase III Ongoing	HER2-ve Metastatic	Early treatment with PARP inhibitors
NCT02163694	Phase III Ongoing	HER2-ve Metastatic	Effect of chemo Carboplatin + Paclitaxel with/without PARP inhibitor
NCT01772472	Phase III Completed	HER2 +ve Invasive	Ab – drug conjugate Trastuzumab-Emtansine. FDA approved use in 2019
NCT02425891	Phase III Completed	Metastatic Breast Cancer	Atezolizumab targeted therapy with chemotherapy Paclitaxel. Progression free survival improved
NCT02278120 NCT02422615	Phase III Ongoing	HR+ve, HER2 -ve	CDK4/6 inhibitor ribociclib with endocrine therapy
NCT03696030	Phase I Enrolling	HER2+ve breast cancer with brain metastasis	(CAR) T cell trial: T cells genetically modified and directly injected into brain of patients
-	Pre-Clinical Ongoing	To prevent recurrence of HER 2 breast cancer	Cancer vaccine: To be used in combination with Trastuzumab
NCT02482753	Phase III Ongoing	HR +ve, HER 2 –ve advanced breast cancer	Tucidinostat Histone deacetylase inhibitor

Gene Editing wherein new gene is introduced to cancer cells which causes them to die off or stop growing. E.g. CRISPR research is still in early stages



The first trial of CRISPR for patients with cancer tested T cells that were modified to better "see" and kill cancer. CRISPR was used to remove three genes: two that can interfere with the NY-ESO-1 receptor and another that limits the cells' cancer-killing abilities.  
Credit: National Cancer Institute

Source: <https://www.cancer.gov/news-events/cancer-currents-blog/2020/crispr-cancer-research-treatment>

# Breast Cancer

Promising Potential Therapy

A clinical trial is a research study that involves people. These studies help doctors find better ways to treat and prevent cancer and other diseases. Clinical trials are usually approved by the regulatory body and Ethics Committees of the country/region.

### Points to Consider



Understand **Types of Trials** and **Phases of Trials** which are different from Stages of Cancer. Check your **eligibility** for trial



To read and discuss complete **Informed Consent Document** with the doctor in detail. Understand your **responsibilities and rights**

**Placebo Trials** involves an **inactive drug** or treatment arm. Use of placebo is rare in cancer trials.



Ask about **what part of your collected trial data will be shared and with whom**. Also check confidentiality terms of trial



Check **coverage provided by medical insurer** especially on procedures and medicines. **Clinical trial costs are covered by sponsor** (Pharmaceutical companies)



Carefully weigh the **Risks (short term and long term side effects of treatment)** and benefits

# Breast Cancer

## Clinical Trials (Brief for patients)

For more information check out <https://www.cancer.net/research-and-advocacy/clinical-trials>

Clinical trials are usually listed on clinical trial registries as listed below

### Cancer Specific Trial Listings

**BreastCancerTrials.org**. This service helps users find breast cancer-specific clinical trials. It includes a **separate search engine for metastatic breast cancer trials**. And its alert service notifies users of recently added clinical trials.

#### **Metastatic Breast Cancer Project (MBCproject)**

The MBCproject gathers information on metastatic breast cancer. The findings will help researchers explore new treatment approaches.

**ClinicalTrials.gov**. National Institutes of Health (NIH) maintains the website. Includes trials for various diseases including cancer

**Emerging Med Clinical Trial Navigator Service**. This online service identifies clinical trial options.

**Lazarex Cancer Foundation**. This foundation helps people find clinical trials and financial assistance.

**National Cancer Institute (NCI) Clinical Trials**. This federal agency provides funding for most U.S. cancer clinical trials

**Targeted Agent and Profiling Utilization Registry (TAPUR) Study**. The TAPUR Study is a clinical trial conducted by ASCO.

**World Health Organization (WHO) International Clinical Trials Registry Platform**

**The Clinical Trials Registry- India (CTRI)**, hosted at the ICMR's National Institute of Medical Statistics

# Breast Cancer

## Finding a Trial

# Breast Cancer

## Considerations during COVID

### ASCO

Has provided responses to specific queries on therapy continuation and other concerns for patients. Major areas covered are as below

- **Surgery**
- **Radiation therapy**
- **Immunosuppressive therapy**
- **Stem Cell transplantation**
- **Immune checkpoint inhibitors**
- **Antiviral therapy considerations**
- **Dealing with neutropenia/ neutropenic fever**

Refer below for further details:

<https://www.asco.org/asco-coronavirus-resources/care-individuals-cancer-during-covid-19/cancer-treatment-supportive-care>

### ESMO

Has divided patients into High, medium and Low priority for the below and provided specific recommendations for each of them

- **Outpatient visit**
- **Diagnostics and imaging**
- **Surgical Oncology**
- **Radiation Oncology**
- **Medical Oncology - Early Breast Cancer**
- **Medical Oncology - Metastatic Breast Cancer**

Refer below for further details:

<https://www.esmo.org/guidelines/cancer-patient-management-during-the-covid-19-pandemic/breast-cancer-in-the-covid-19-era>



*October*

*Brest cancer awareness*

**Thank You**