



2022 Highlights

Breast Cancer Care and Research

HER2-Positive Breast Cancer Treatment | Expanding Immunotherapy | Refining Lymph Node Surgery

Breast cancer is the most common cancer in women in the United States, with more than 287,000 new diagnoses projected for 2022. Memorial Sloan Kettering Cancer Center (MSK) is an internationally renowned leader in patient care and research efforts to better understand the disease and treat it more effectively, with experts from every area collaborating to advance patient care and improve outcomes. To personalize care, MSK has created specialty programs for young women, older patients, and those with inflammatory breast cancer and rare cancer types. Clinical and laboratory researchers are unearthing the details of every aspect of breast cancer, deciphering the roots of treatment resistance, identifying new therapeutic targets, and looking for ways to harness the power of the immune system to fight breast cancer. We are excited to tell you about three of our most provocative areas of inquiry.

Advancing Treatment for HER2-Positive Breast Cancer

This year, MSK physician-scientists presented groundbreaking results at the annual meeting of the American Society of Clinical Oncology, reporting that an anti-cancer drug was useful in people with breast cancers making low levels of a protein called HER2 (which drives cancer growth). The drug has been given to patients with metastatic breast tumors that make high levels of HER2, and these recent findings expand its use to more people with breast cancer. Other investigators are evaluating the addition of other medications to HER2-targeting treatments and searching for ways to overcome the resistance that HER2-positive breast cancer metastases in the brain develop to therapy.

Expanding the Use of Immunotherapy Against Breast Cancer

Immunotherapy boosts the power of the immune system to detect and destroy cancer cells. It is a pillar of treatment for some cancers but has not been as effective against breast cancer. Just one immunotherapy is approved for breast cancer, and it is used only for people with triple-negative disease (which lacks receptors for estrogen, progesterone, and HER2, and is challenging to treat). MSK investigators are researching drug combinations that may prime the tumor microenvironment (the area around a tumor) to induce immune changes that make it more vulnerable to the effects of immunotherapy. We are also engineering immune cells called T cells to recognize mutated proteins that are unique to cancer cells, as well as exploring the influence of other immune cells on a tumor's response to immunotherapy.

Refining Lymph Node Surgery and Improving Patient Comfort

Breast cancer can spread to lymph nodes under the arm (axillary nodes). Sometimes all the axillary lymph nodes need to be removed. That can cause a problem called lymphedema, which is when fluid collects in

the affected arm. This uncomfortable condition also raises the risk of infection. Early results from MSK investigators suggest that reconstructing lymphatic drainage in the arm immediately after axillary lymph node removal can reduce the chance of lymphedema developing and improve patients' quality of life. Breast surgeons are also creating an algorithm to estimate each person's individual risk of lymphedema, which would help doctors decide who is most suitable for these specialized preventive techniques. Other studies are exploring the effectiveness of a new medication as well as a technique called vascular lymph node transplantation to treat people who already have lymphedema. These investigations could reduce the risk of infection and improve quality of life for the thousands of people who experience lymphedema after breast cancer surgery.

A Philanthropic Opportunity

While much progress has been made in improving outcomes for people with breast cancer, more than 43,000 people still die of the disease each year, and many others live with the aftereffects of treatment. Philanthropy is essential to support the work of scientists and physicians seeking to better understand and treat breast cancer and to ensure that survivors live the healthiest, most comfortable lives possible.