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Year in Review: How Targeted Drug Therapies Have Expanded Breast Cancer Treatment Options in 2022

Breast cancer (BC) is the most diagnosed cancer and the second leading cause of cancer deaths in women. In 2022, more than 275,000 women were diagnosed with BC, and at least 43,000 of these cases resulted in death. With targeted drug therapy for treating BC now approved by the US Food and Drug Administration (FDA) and available (or in the late phases of clinical trials and pending availability and FDA approval), clinicians are beginning to be able to move away from a “one-size-fits-all” treatment approach that has been used in the past, enhancing prognosis and survival rates in their patients living with BC.

The new targeted drug therapies available are more precise and individualized. They treat patients more effectively because they are based on the patient’s own biology. These therapies open the possibility of having more valuable treatment options, which can be beneficial for the outcome of many patients diagnosed with BC—especially the highly aggressive forms that were previously difficult to treat.

In March 2022, the FDA approved the drug **olaparib** to treat HER2-, high-risk, early breast cancer (EBC). The approval was made after the conclusion of the phase 3 OlympiA trial. The clinical trial results showed a statistically significant improvement in overall survival rates (by 32%) with adjuvant olaparib compared with placebo for germline *BRCA1/2*-mutated EBC.

In August 2022, the FDA approved the antibody drug conjugate fam-trastuzumab deruxtecan-nxki (or **T-DXd**), which is the first FDA-approved therapy targeted to treat patients who have the HER2-low BC subtype. It is also approved for patients with unresectable or metastatic HER2+ breast cancer who have already been treated with 2 or more prior anti-HER2-based therapies in the metastatic setting. The approval of T-DXd was given on the basis of DESTINY-Breast04, a randomized, multicenter, open-label clinical trial that was published in June 2022. T-DXd had been previously approved in HER2+ metastatic breast cancer.

The results from the phase 3 CAPItello-291 clinical trial of **capivasertib** in combination with **fulvestrant** suggests the combination could become a new treatment option for patients with hormone receptor-positive, HER2-low, locally advanced or metastatic BC

following recurrence or progression after treatment with endocrine therapy and a CDK4/6 inhibitor. Capivasertib is a novel, selective, ATP-competitive, pan-AKT kinase inhibitor. In clinical trials, the drug was shown to successfully block activity of the cancer-driving protein molecule AKT. This research was presented at the 2022 San Antonio Breast Cancer Symposium, and the findings demonstrated a significant improvement in the overall population, as well as the subgroup of patients with PI3K pathway–altered tumors.

The year 2022 was full of exciting discoveries in the field of targeted drug therapies for treating BC, expanding patients' treatment options and giving hope to people who have been diagnosed with breast cancer and their loved ones. In addition, emerging technologies such as immunotherapy and new antibody-drug conjugates continue to be evaluated as potential treatment options for treating breast cancer in the near future.