

Standard therapies for treating hormone-sensitive metastatic breast cancer (BC) include the blockage of estrogen pathways by using selective estrogen modulator receptors or selective estrogen receptor down-regulators and by using aromatase inhibitors to block estrogen production. The addition of nonhormonal targeted therapies, including therapies based on alternative molecular pathways, continues to expand rapidly for advanced or metastatic BC. This article reviews targeted therapy treatment options for patients with metastatic BC, including strategies for administration, side effects, and nursing considerations.

#### AT A GLANCE

- Targeted therapies for the treatment of metastatic BC are based on inhibition of different molecular pathways and mutations.
- The number of metastatic BC therapies, including oral anticancer agents, that can be self-administered by patients at home are increasing.
- Oncology nurses who are familiar with evolving metastatic BC therapies are best equipped to provide comprehensive patient care and support.

#### KEYWORDS

breast cancer; hormone epidermal growth factor; targeted therapy

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# Targeted Therapies

## Treatment options for patients with metastatic breast cancer

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**B**reast cancer (BC) remains the leading incidence and second-highest cause of cancer mortality in women in the United States, and people who are diagnosed with new or recurrent advanced-stage or metastatic BC have an increasing number of options for treatment (American Cancer Society [ACS], 2018). Metastatic BC treatments focus on systemic therapies that block estrogen and progesterone receptors for hormone receptor (HR)-positive disease and human epidermal growth factor receptor 2 (HER2/neu) receptor sites for HER2/neu-positive disease. Hormonal therapies for HR-positive disease include selective estrogen receptor modulators (e.g., tamoxifen or raloxifene, selective estrogen receptor downregulators (e.g., fulvestrant), or aromatase inhibitors that block estrogen productions (e.g., anastrozole, letrozole, exemestane). Because these hormonal therapies have been reported to have fewer side effects and are better tolerated compared to chemotherapy, they are considered to be a preferred treatment for patients with metastatic BC (Spring, Bardia, & Modi, 2016).

### Monoclonal Antibody Therapy

According to ACS (2018), one in five women with HER2/neu-positive metastatic BC will receive treatment that includes monoclonal antibody therapy. Monoclonal antibody therapies include trastuzumab via IV, trastuzumab with hyaluronidase-oysk injection via subcutaneous injection, and pertuzumab administered in conjunction

with trastuzumab and chemotherapy via IV (Wilcken et al., 2014). Ado-trastuzumab emtansine is a second-line monoclonal antibody therapy that is administered with another chemotherapy agent to treat HER2/neu-positive metastatic BC (Hamizi et al., 2013). One HER2/neu kinase inhibitor agent that is taken orally for the treatment of metastatic BC is lapatinib, which inhibits the epidermal growth factor pathway (Blackwell et al., 2009).

Side effects of monoclonal antibody targeted therapies can include cardiac dysfunction, diarrhea, fatigue, nausea and vomiting, and rash. Additional side effects specific to lapatinib may include hepatotoxicity, pneumonitis, and hand-foot syndrome (Blackwell et al., 2009). Cardiac dysfunction or heart failure are serious adverse events that are associated with this class of drugs, particularly when administered in combination with other cardiotoxic chemotherapy agents, such as anthracyclines, doxorubicin, or epirubicin chemotherapy. Patients receiving these agents require routine cardiac screening to monitor for symptoms (Fiúza, 2009; Valachis, Nearchou, Polyzos, & Lind, 2013). Patients aged 50 years or older with preexisting heart disease who are receiving potentially cardiotoxic therapies are at a greater risk for cardiac-related adverse events (Armenian et al., 2017). Guidelines recommend obtaining an echocardiogram as the preferred screening method for heart function; however, a multigated acquisition scan that uses a radioactive tracer can also be used to evaluate heart pumping function prior to