Capecitabine-Based Combination Therapy for Breast Cancer: Implications for Nurses

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Purpose/Objectives: To review available data and implications for nurses of combination regimens containing capecitabine for metastatic breast cancer.

Data Sources: Peer-reviewed publications or abstracts from major oncology conferences and reviews of capecitabine focusing on nursing implications.

Data Synthesis: Capecitabine has proven efficacy in combination with docetaxel and is under evaluation in the neoadjuvant, adjuvant, and metastatic settings in combination with several oral and IV chemotherapeutic and biologic agents.

Conclusions: Capecitabine-containing regimens demonstrate high activity in a range of settings but typically have more complex safety profiles, dose-modification schemes, and scheduling requirements than monotherapy.

Implications for Nursing: Patients need to be aware of a wider range of likely side effects and should understand that they have been prescribed combination therapy rather than more simple, single-agent treatments because of its potential to improve outcome.

Most women diagnosed with breast cancer want up-to-date, high-quality information to help them better understand their likelihood of survival, available treatment options, and risk of recurrence (Gopal, Beaver, Barnett, & Ismail, 2005; Luker et al., 1995). Patients also need information about treatment side effects, self-care, and effects of the disease experience on family and social life (Luker et al.). Nurses should understand likely side effects fully to advise patients effectively and provide accurate and appropriate information, particularly concerning newly available treatment options (McGinn & Moore, 2001). Therefore, nurses should be aware of chemotherapy agents' side effects when used alone and in combination regimens. Nurses also should understand how administration routes may cause particular side effects. Oral administration avoids the complications and patient anxieties associated with IV administration (Cole, 2006; Cox & Fallowfield, 2007). In addition, many patients feel a sense of empowerment with oral chemotherapy because they are in control of their treatment; most patients with cancer prefer oral to IV therapy (Borner et al., 2002; Liu, Franssen, Fitch, & Warner, 1997; Paley et al., 2005).

Capecitabine (Xeloda®, Roche Laboratories, Inc.) is an oral drug designed to deliver cytotoxic 5-fluorouracil (5-FU) directly to the tumor site. Although capecitabine itself is inactive, the drug undergoes a three-stage conversion to cytotoxic 5-FU. The final stage requires the enzyme thymidine phosphorylase, which is present at significantly higher concentrations in tumor tissue than in normal tissue (Ishikawa et al., 1998; Miwa et al., 1998). The localization of thymidine phosphorylase means that 5-FU is generated preferentially in tumors; therefore, the risk of side effects resulting from cytotoxic activity in the gastrointestinal tract is reduced, increasing patient benefit.

The U.S. Food and Drug Administration (FDA) approved capecitabine in 1998 for the treatment of metastatic breast cancer resistant to paclitaxel and anthracycline-containing chemotherapy regimens or resistant to paclitaxel in patients for whom additional anthracycline therapy may be contraindicated. In 2001, capecitabine in combination with docetaxel (Taxotere®, sanofi-aventis U.S. LLC) was approved for patients with metastatic breast cancer that had progressed after treatment with an anthracycline-containing cancer therapy. The combination resulted in a significantly superior response rate, time to disease progression, and overall survival versus docetaxel alone in a randomized phase III trial (O'Shaughnessy et al., 2002).

Capecitabine has a unique safety profile. Alopecia and myelosuppression, common side effects of many chemotherapies used in breast cancer treatment, present infrequently with capecitabine. However, capecitabine is associated with some rare side effects, particularly palmar-plantar erythrodysesthesia, most often referred to as hand-foot syndrome by nurses (Mrozek-Orlowski, Frye, & Sanborn, 1999; Timmerman, 2001; Webster-Gandy, How, & Harrold, 2007; Wilkes & Doyle, 2005). Although the side effects present specific management challenge