Young Women With Breast Cancer

Treatment, care, and nursing implications

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BACKGROUND: Young women with breast cancer (YWBC) are more likely to have aggressive disease, carry mutations for hereditary cancer genes, and experience higher mortality. They also may face reduced fertility because of the toxicity of chemotherapy.

OBJECTIVES: This article aims to present a review of YWBC treatments, sequelae of treatment, and psychosocial challenges.

METHODS: The authors performed a review of guideline-supported treatment options, patient resources, and nursing implications.

FINDINGS: Because of high-risk cancers and a lack of specific treatment guidelines, healthcare providers may consider aggressive treatments for younger patients. However, studies indicate that the foundation for treatment decisions for YWBC are best based on disease stage and National Comprehensive Cancer Network guidelines.

Keywords: young women; breast cancer; treatment; fertility; genetic testing

An estimated 7% of women newly diagnosed with breast cancer are aged younger than 40 years (North American Association of Central Cancer Registries, n.d.). In women aged 15–39 years, breast cancer is the leading cause of cancer death (Surveillance Epidemiology and End Results Program, 2019). Although the rate of breast cancer incidence in women older than age 50 years has remained stable, it is increasing in young women by 0.5% each year (Guo et al., 2018). In the past 40 years, survival rates from all stages of breast cancer have improved for young women by 60%–70% (Guo et al., 2018). However, because of later presentation and unfavorable tumor biology, young women with breast cancer (YWBC) continue to experience the highest mortality (Fredholm et al., 2016; Partridge et al., 2016). This is particularly evident in young African American women, who have the highest rates of aggressive disease and subsequent mortality (Chollet-Hinton et al., 2017; Kohler et al., 2015).

Women younger than age 40 years rarely undergo screening, so their cancers are primarily self-detected, larger, and more advanced than screen-detected tumors (Samphao et al., 2009). YWBC are more often carriers of hereditary cancer gene mutations and may face risk-reducing surgeries (Buys et al., 2017). They may experience infertility and early menopause from chemotherapy; for survivors, a long life expectancy portends a greater risk of recurrence and second cancers (Fredholm et al., 2016; He & Zou, 2017; Raymond & Hogue, 2006).

There are no treatment guidelines specific to YWBC. Studies and expert opinion indicate that treatment decisions for YWBC are best based on disease stage and National Comprehensive Cancer Network (NCCN) guidelines (Cardoso et al., 2019; NCCN, 2019a; Suter & Pagani, 2018). Based on guidelines, this article presents a review of YWBC treatments, the sequelae of treatment, psychosocial challenges, patient resources, and nursing implications. In addition, a patient case study (see Figure 1) provides an example of treatment options for YWBC.

Breast Cancer Staging

Clinical prognostic stage is computed for all patients with breast cancer at diagnosis using anatomic staging or the TNM (tumor, node, and metastases) based on history, physical examination, imaging studies (if performed), and relevant biopsies (Giuliano et al., 2017). Clinical prognostic stage
incorporates grade and size of tumor and the status of biomarkers (i.e., estrogen receptor [ER], progesterone receptor [PR], and human epidermal growth factor receptor 2 [HER2]). For those whose first phase of treatment is surgery, a pathologic prognostic table will assign stage based on clinical information and findings from resected tissue (e.g., tumor size, lymph node involvement, presence of histologically proven metastasis) (Hortobagyi et al., 2018). The treatment plan for YWBC is a collaboration including contributions from specialists: the oncology nurse, nurse navigator, advanced practice nurse, genetic specialist, surgeon, plastic surgeon, fertility expert, medical oncologist, radiation oncologist, and a social worker or psychologist (Cardoso et al., 2019; Cohen et al., 2016; Daem et al., 2019; Saini et al., 2011).

**Fertility Counseling**
The American Society for Clinical Oncology (ASCO) (Oktay et al., 2018) and the NCCN (2019a) mandate counseling for fertility preservation for patients of reproductive age who will receive gametotoxic treatment. Healthcare providers are advised to discuss reproductive risks and treatment options directly after diagnosis and refer concerned patients to the appropriate experts before treatment begins. Foreknowledge of risks has been shown to reduce stress and improve quality of life (Partridge et al., 2004; Quinn et al., 2009).

A reproductive endocrinologist will evaluate a patient for reproductive potential based on the patient’s age and chemotherapy treatment. Women aged 20–29 years are most fertile; by age 35, fertility begins to decline rapidly (American Society for Reproductive Medicine, 2019). Chemotherapy can reduce ovary size and follicle count and hasten menopause by 10 years (Wenners et al., 2017). A woman who has completed treatment for breast cancer is 70% less likely to be able to conceive as compared to healthy women at the same age (Peccatori et al., 2013).

In the interval between surgery and chemotherapy, assisted reproductive technologies (ART), such as in vitro fertilization, can be used to produce embryos, and cryopreservation can be used to store embryos and/or eggs for the future. Although these technologies do not appear to increase risk of recurrence or birth defects (Maheshwari et al., 2012; Pelkonen et al., 2014), only a small percentage of patients choose to use ART (Ruddy et al., 2014). Reasons may include lack of information, fear of treatment delay or disease recurrence, lack of a stable partner, or cost (Lambertini et al., 2014; Waks & Partridge, 2016). Reproductive technologies are costly. Only five states in the United States cover standard fertility preservation services for patients who receive gametotoxic treatments, and only 17 states cover some form of fertility treatment (American Society for Reproductive Medicine, 2019). Figure 2 lists fertility resources for patients.

After completing chemotherapy, women are advised to wait 6–24 months before pursuing pregnancy because the risk of recurrence is highest within the first two years after treatment ends (Larson et al., 2018; Taylan & Oktay, 2017). Compared to cancer survivors who do not conceive, pregnancy does not appear to be hazardous to health and may even be beneficial (Azim et al., 2013).

In a survey of 319 young breast cancer survivors four years after diagnosis, 53% were satisfied with information provided about fertility and 43% were satisfied with information provided about sexuality (Ben Charif et al., 2015). Fertility and sexuality discussions are a crucial component of patient–provider communication (Quinn et al., 2010). Oncology nurses providing direct care can create a safe place for a patient to discuss her fears and concerns and ask practical questions regarding fertility and sexuality.

**Local Treatment Types**

**Surgery**

As with all patients diagnosed with breast cancer, treatment recommendations for breast-conserving surgery (lumpectomy) with whole-breast radiation versus mastectomy are based on tumor stage, tumor size and foci, recurrence risk, breast size and cosmesis, access to treatment, and patient preference (Bellavance & Kesmodel, 2016). Diagnosis at a young age does not automatically require mastectomy (Suter & Pagani, 2018), but if mastectomy is the treatment of choice, breast reconstruction is a standard option in the plan of care. Studies of more than 20,000 YWBC reveal that mastectomy versus lumpectomy with radiation have the same rates of survival (Smith et al., 2018).

For YWBC, as with all patients diagnosed with invasive breast cancer or high-grade ductal carcinoma in situ, patients undergo sentinel lymph node biopsy during lumpectomy or mastectomy. If sentinel node biopsy indicates spread of cancer to the lymph nodes, the standard of care is axillary node dissection (NCCN, 2019a).

For any patient after lymph node dissection, lymphedema can occur in the ipsilateral arm. Lymphedema management includes

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“YWBC may benefit from education about the importance of social support, how to garner that support, and how to be specific when requesting help.”
focused exercises, massage, compression bandages, and diet, but it has no cure. Other long-term side effects of surgery can include neuropathy, persistent pain, decreased range of motion in the arm and shoulder, and diminished sensation in the chest and arm. Oncology nurses can educate patients about the signs and symptoms of postsurgical sequelae, suggest methods to reduce symptoms and risk of recurrence and to protect and restore function, and refer to a lymphedema specialist when needed (Acebedo, 2015).

Breast reconstruction can include an implant (saline or silicone) or autologous reconstruction (using the patient’s own tissue), which may also require an implant. Other breast reconstruction options can include skin-sparing and/or nipple-sparing mastectomies, which have recurrence rates comparable to mastectomy, but with better cosmetic results (Frey et al., 2019; Headon et al., 2016; Smith et al., 2017). Immediate breast reconstruction is preferred by many patients and has the same survival rate as mastectomy without reconstruction (Siotos et al., 2017; Zhang et al., 2017).

Radiation Therapy
For young women with early-stage breast cancer who have undergone breast-conserving surgery, radiation therapy is recommended postsurgery to lower the risk of cancer recurrence. Traditional whole-breast radiation therapy is typically administered once per day, five days per week, for five to seven weeks, followed by a supplemental boost dose to the tumor bed, recommended for most women aged younger than 50 years (NCCN, 2019a). Alternatively, accelerated or hypofractionated whole-breast radiation gives the same total dose over three to five weeks via a larger, weekly dose (Kim et al., 2016), which may be preferred by YWBC because of career and family responsibilities.

Indications for radiation postmastectomy include 5 cm or larger tumor size, lymphatic or vascular tumor invasion, positive tumor margins postsurgery, one or more positive lymph nodes, and/or tumor invasion to skin (possible with locally advanced or inflammatory breast cancer) (NCCN, 2019a).

An acute radiation side effect is radiation dermatitis. On one end of the spectrum, it can appear as a mild, sunburn-like rash, causing itchy or flaky skin; on the other end of the spectrum, it can appear as blisters or wet, peeling skin (moist desquamation) (Suresh et al., 2019). Long-term radiation effects can include lymphedema; changes to skin color or breast texture; shrinkage of the skin or of the capsule around the implant; damage to heart muscle, lungs, or ribs; pneumonitis; and, rarely, a second malignancy. For YWBC, there is added concern about safeguarding organs against long-term damage and secondary comorbidities.

Systemic Treatment Types
Adjuvant Chemotherapy
About 80% of YWBC receive systemic chemotherapy to reduce the risk of recurrence (American College of Surgeons, 2020).

Adjuvant Chemotherapy
Systemic Treatment Types

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**CASE STUDY**

A 22-year-old nulliparous woman discovered a lump in her right breast and made an appointment with her primary care provider (PCP). Her family history was positive for cancer, including a paternal grandfather who died at age 59 years from pancreatic cancer, a paternal great uncle who died at a young age from pancreatic cancer, and a maternal great grandmother who died at age 40 years from breast cancer.

Her PCP ordered imaging studies. A bilateral mammogram showed a 1.7 cm mass at the 10 o’clock position in the right breast; no mass was found in the left breast. An ultrasound-guided biopsy was performed on the right breast mass. Clinical pathology reported grade 2 infiltrating ductal carcinoma (ER-positive [91%–100%], PR-positive [81%–90%], and HER2-negative). Genetic testing with a 34-gene panel reported that the patient carried a *BRCA2* mutation, which confers an increased lifetime risk of breast and ovarian cancers.

The patient’s interprofessional team recommended a right mastectomy with axillary node dissection. Postmastectomy pathology revealed multicentric disease throughout the breast, with the largest focus at 5 cm, and 2 of 12 lymph nodes positive for malignancy. Staging was pT2 N1 M0 with pathologic prognostic stage IB. The patient elected to have embryo and egg preservation after surgery.

The patient received adjuvant chemotherapy. The regimen was dose-dense doxorubicin/cyclophosphamide via IV every 2 weeks for 4 cycles, followed by paclitaxel via IV every 2 weeks for 4 cycles and granulocyte–colony-stimulating factor support to enhance white blood cell production. Because of the large tumor size, chest wall radiation followed chemotherapy according to National Comprehensive Cancer Network treatment guidelines. After chemotherapy, the patient also started a tamoxifen regimen; goserelin was added 3 months later.

After chemotherapy and radiation treatment were complete, the patient had a follow-up prophylactic left mastectomy and a right latissimus dorsi flap reconstruction, both with tissue expanders. Once expansion was complete, implants and fat grafting replaced the expanders. The patient later underwent nipple areola reconstruction.

The patient reported post-treatment hot flashes from tamoxifen but stated that they were improving. She reported lowered libido, bilateral great toe neuropathy, and difficulty losing weight despite eating well and working out.

She was engaged to her fiancé at the time of her diagnosis. They were married two years after diagnosis. She has no current plans to start a family but hopes to have children someday. She is using a copper IUD for contraception, with plans for a bilateral oophorectomy after she has children.

Because of the patient’s *BRCA2* status, post-treatment surveillance is under the supervision of a gynecologic oncologist. Every 6 months, the patient undergoes a pelvic ultrasound and a blood test to monitor CA125 because of risk for ovarian cancer. In addition, she is following up with her medical oncologist, surgical oncologist, and plastic surgeon.
Chemotherapy agents include traditional broad-spectrum cytotoxic agents, as well as newer targeted biologics. Although few chemotherapy clinical trials target YWBC, subgroup analyses indicate that the same treatments are equally efficacious at all ages.

Young women with triple-negative breast cancer have neither hormone nor HER2 receptors and can only be treated with conventional chemotherapy. For patients with ER-positive early-stage breast cancer, multigene tests can detect somatic changes in select tumor genes. Results from these tests help identify patients with an elevated risk of recurrence who may benefit from chemotherapy and patients at low risk who may safely forego chemotherapy. In addition, there are computer-based tools that provide algorithms to predict treatment effectiveness from adjuvant therapy.

For each patient with breast cancer, chemotherapy regimens are chosen based on tumor pathology, stage, comorbidities, toxicity, and patient preference. The most frequently administered agents are cyclophosphamide, anthracyclines (e.g., doxorubicin, epirubicin), taxanes (e.g., paclitaxel, docetaxel), platinum (e.g., carboplatin), and 5-fluorouracil. Regimens with cyclophosphamide are most likely to cause infertility or amenorrhea, platinum and anthracyclines are associated with intermediate risk, and the remaining therapies are low risk (Taylan & Oktay, 2017).

Systemic regimens are administered in cycles of three to four weeks for three to six months. In contrast, a dose-dense schedule delivers the same dose over one to two weeks. Dose-dense regimens may be associated with increased side effects. For premenopausal women with high-risk tumors, dose-dense regimen studies report moderately decreased risk of recurrence and increased survival without increasing ovarian toxicity (Early Breast Cancer Trialists’ Collaborative Group, 2019; Goldvaser et al., 2018).

Depending on specific chemotherapies administered and the patient’s response to the regimen, the patient may experience nausea, vomiting, diarrhea, neutropenia, and other short- and long-term side effects, such as cognitive impairment, fatigue, changes in libido, weight gain, hair loss, and osteopenia/osteoporosis (Ljungman et al., 2018; Runowicz et al., 2016). Anthracyclines are associated with cardiotoxicity, which may lead to congestive heart failure. Taxanes are associated with peripheral neuropathy, which may resolve gradually or persist. Nurses can educate YWBC about healthy lifestyle alterations and when to report symptoms (e.g., shortness of breath, fatigue), and advise patients about safety concerns, such as risks for burns and falls because of diminished sensation.

HER2-positive tumors are more aggressive, have a poorer prognosis, and are more common in YWBC (as much as 34% versus 12% in the population aged older than 45 years) (Howlader et al., 2014). The anti-HER2 agents trastuzumab and pertuzumab are targeted biologics that can be administered as neoadjuvant, or adjuvant, or for one year following treatment; as one study reports, they can reduce mortality by more than 30% in YWBC (Perez et al., 2014). However, these agents, particularly given in combination with anthracyclines, may compromise heart function.

A development beneficial to YWBC is the use of gonadotropin-releasing hormone (GnRH) agonists. Agonists, like goserelin, block pituitary secretion of the hormones that stimulate ovulation. Without these hormones, the ovary goes into a resting state, possibly insulating the ovary from some of the harmful effects of chemotherapy that lead to amenorrhea and early menopause. GnRH agonists are administered with chemotherapy or post-treatment, whether the tumor is hormone receptor-negative or –positive (Lambertini et al., 2018; NCCN, 2019a).
Neoadjuvant Chemotherapy

Neoadjuvant chemotherapy is administered before surgery as a single agent or as combination therapy for three to six months (NCCN, 2019a). Neoadjuvant chemotherapy is standard of care for inflammatory breast cancer (Ueno et al., 2018).

Neoadjuvant chemotherapy can shrink tumors (enabling conservative surgery), downstage axillary lymph nodes, reveal the effect of chemotherapy on the tumor, and is effective against HER2-positive and triple-negative tumors. It also affords time for genetic testing and consideration of surgical options. Disadvantages of neoadjuvant chemotherapy include staging inaccuracy (i.e., tumor size is accurately measured only after surgery). For patients who do not respond to neoadjuvant chemotherapy, surgical treatment is still the standard of care. Staging after neoadjuvant chemotherapy has not been validated; therefore, prognosis is based on pretreatment clinical factors (Santa-Maria et al., 2015).

Endocrine Therapy

Young women with ER-positive cancers may receive endocrine therapy (i.e., tamoxifen) post-treatment for five years or more to reduce the risk of recurrence (Burstein et al., 2014). However, with prolonged therapy, reproductive capacity declines. In addition, tamoxifen can stimulate ovulation and harm the fetus in an unintended pregnancy, so barrier methods of birth control are advised (barrier methods are recommended during all phases of treatment). Side effects, such as decreased libido, vaginal dryness, hot flashes, and an increased risk of uterine cancer, are troubling to patients. Therefore, more than 20% of YWBC are nonadherent, increasing their risk of recurrence (Huiart et al., 2012; Saha et al., 2017). Women who become postmenopausal may receive an aromatase inhibitor instead (Dowsett et al., 2010). Patient education about endocrine therapy covers symptoms to report, which includes unusual vaginal bleeding.

Genetic Testing

The NCCN (2019b) establishes yearly practice guidelines for hereditary cancer gene testing. As of 2019, any woman aged 50 years or younger with breast cancer, regardless of family history, is a candidate for testing, as is any woman with triple-negative cancer aged 60 years or younger. Using a panel of 25 hereditary cancer genes, a study by Buys et al. (2017) tested more than 35,000 women with breast cancer. Overall, 9% tested positive for a gene mutation, but the positive rate for women aged younger than 40 years was 14%, and was 14% for women with triple-negative breast cancer (Buys et al., 2017). BRCA1 and BRCA2 gene mutations were detected in 49% of women who had mutations, followed by mutations in numerous moderate-risk genes—most commonly CHEK2 (12%), ATM (10%), and PALB2 (9%) (Economopoulou et al., 2015). A study by Couch et al. (2017) used a 21-gene panel and tested 41,000 women with breast cancer. Ten percent tested positive for a mutation, two-thirds of whom had BRCA1 or BRCA2 mutations. The other most common gene mutations were CHEK2, ATM, and PALB2 (Couch et al., 2017). Genetic testing results can inform

**FIGURE 3.** RESOURCES FOR YOUNG WOMEN WITH BREAST CANCER

**AMERICAN CANCER SOCIETY**
Information on ways to avoid or manage hair loss related to chemotherapy treatment
Information for patients and their partners about cancer, sex, and sexuality

**CANCER AND CAREERS**
Resources and support for cancer survivors returning to the workplace
- [www.cancerandcareers.org](http://www.cancerandcareers.org)

**CANCERCARE.ORG**
Resources for counseling, support groups, financial assistance, and education about cancer; includes a specific section for helping with children when a family member has cancer
- [www.cancercare.org](http://www.cancercare.org)

**CANCER.NET**
Information on all aspects of cancer, including being a young woman, issues with children, and sexuality
- [https://www.cancer.net](https://www.cancer.net)

**FACING OUR RISK OF CANCER EMPOWERED (FORCE)**
Information for patients with BRCA mutations and the services they may require
- [www.facingourrisk.org](http://www.facingourrisk.org)

**METASTATIC BREAST CANCER NETWORK**
Dedicated to educating and empowering women with metastatic breast cancer; offers telephone and in-person support groups
- [www.mbcn.org](http://www.mbcn.org)

**SISTERS NETWORK INC.**
A national African American breast cancer survivorship organization that provides support on a variety of topics specifically aimed at African American women
- [www.sistersnetworkinc.org](http://www.sistersnetworkinc.org)

**SUSAN G. KOMEN**
Information and resources for patients with breast cancer
- [www.komen.org](http://www.komen.org)

**TRIAGE CANCER**
Information on survivorship for patients, healthcare providers, and caregivers
- [www.triagecancer.org](http://www.triagecancer.org)

**YOUNG SURVIVAL COALITION**
Resources related to critical issues unique to young women with breast cancer
- [www.youngsurvival.org](http://www.youngsurvival.org)
patient treatment, post-treatment surveillance, and further genetic testing of family members.

### Psychosocial Concerns

YWBC experience multiple psychosocial concerns. Among those concerns are family life, work life, sexuality, body image, fertility, recurrence fears, financial toxicity, and patient–provider communication. Resources for these concerns can be found in Figure 3.

In clinical practice, one of the first questions typically posed by newly diagnosed YWBC is, “How do I talk to my children?” A qualitative study by Ashbury et al. (2014) showed the process of decision making that women go through in telling their children about their diagnosis. Two themes emerged: the importance of maintaining normality and minimizing one’s own feelings. Compared to young survivors without children, young mothers reported greater fear of recurrence and illness intrusiveness in life domains (Arès et al., 2014).

In multiple qualitative studies, younger women reported greater likelihood of depression, heightened levels of stress, greater distress because of changes in body image, and reduced quality of life as compared to older women (Ahmad et al., 2015; Champion et al., 2014; Howard-Anderson et al., 2012; Rosenberg et al., 2012). YWBC may benefit from education about the importance of social support, how to garner that support, and how to be specific when requesting help (Hauken & Larsen, 2019). Oncology nurses aware of these specific concerns are well equipped and in an ideal position to support YWBC throughout their cancer trajectory.

Financial toxicity is a broad term that describes the financial impact of a health problem on the patient and healthcare system. Cancer is one of the most costly medical conditions to treat in the United States (Soni, 2015), but this reflects only a portion of the problem specific to healthcare dollars spent. YWBC cope with layers of financial distress, including missed time from work (reduced income), large deductibles, added prescriptions with co-payments, additional childcare needs, and transportation costs (Mujahid et al., 2010).

### Implications for Nursing

YWBC can experience anxiety and emotional distress from their diagnosis. In addition, they may have concerns about fertility, future pregnancies, child-rearing responsibilities, and sexuality, in addition to side effects of treatment. These issues can affect their quality of life.

Genetic testing is frequently indicated for YWBC. Nurses can provide education to help them understand testing and its implications and resources for education of other family members who may also be candidates for testing.

Nurses can also educate patients about common side effects before they occur. Postmenopausal symptoms can result from the estrogen deprivation caused by ovarian suppression from cancer treatment and can disrupt quality of life. This may be exacerbated in YWBC because they may not anticipate these changes at this point in their lives. The most common symptoms include hot flashes, night sweats, moodiness, anxiety, fatigue, depression, difficulty sleeping, and weight gain.

Additional changes may affect sexual health. Sexual desire may be affected by medications used for treatment, and vaginal dryness may lead to dyspareunia. Discussions of sexual concerns are often difficult. Therefore, nurses may ask concerns related to sexual function, sexual activity, or sexual relationships and whether those concerns are causing distress. If so, a referral should be made to a social worker, sexual couples counselor, gynecologist, urologist, or sexual health specialist. In addition, YWBC may have concerns about fertility. Nurses can provide resources and/or referrals to fertility specialists before beginning systemic treatment.

Body image can be affected by lumpectomy or mastectomy, treatment-induced alopecia, hot flashes, and post-treatment weight gain. Nurses can support YWBC through screening for anxiety, depression, and distress, and referring to the psychosocial team.

One common comment among YWBC survivors is that everything happened so quickly after diagnosis that they did not always receive the information or encouragement they wanted and needed to make informed decisions about treatment and about their fertility (Gorman et al., 2011). Nurses can help fill this gap. With their knowledge and teaching skills, they can inform and support YWBC and smooth the path to treatment and survivorship.

### Conclusion

Young women diagnosed with breast cancer range from very young women to women who are firmly planted in adulthood. Compared to older women, YWBC are more likely to have aggressive cancers with less favorable biologies. In addition, they face many challenges (e.g., emotional, familial, professional, logistical, reproductive, financial, psychological, physical, existential) related to their stage in life that contribute to and complicate cancer treatment decision making. Their treatment should be guided by NCCN guidelines based on staging. The goals for these patients must also take into consideration their potentially long lifetime and the effects of treatment on quality of life.

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