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Research Article

Early Breast Cancer Fast Facts: Results, Recurrence, Resources

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Abstract

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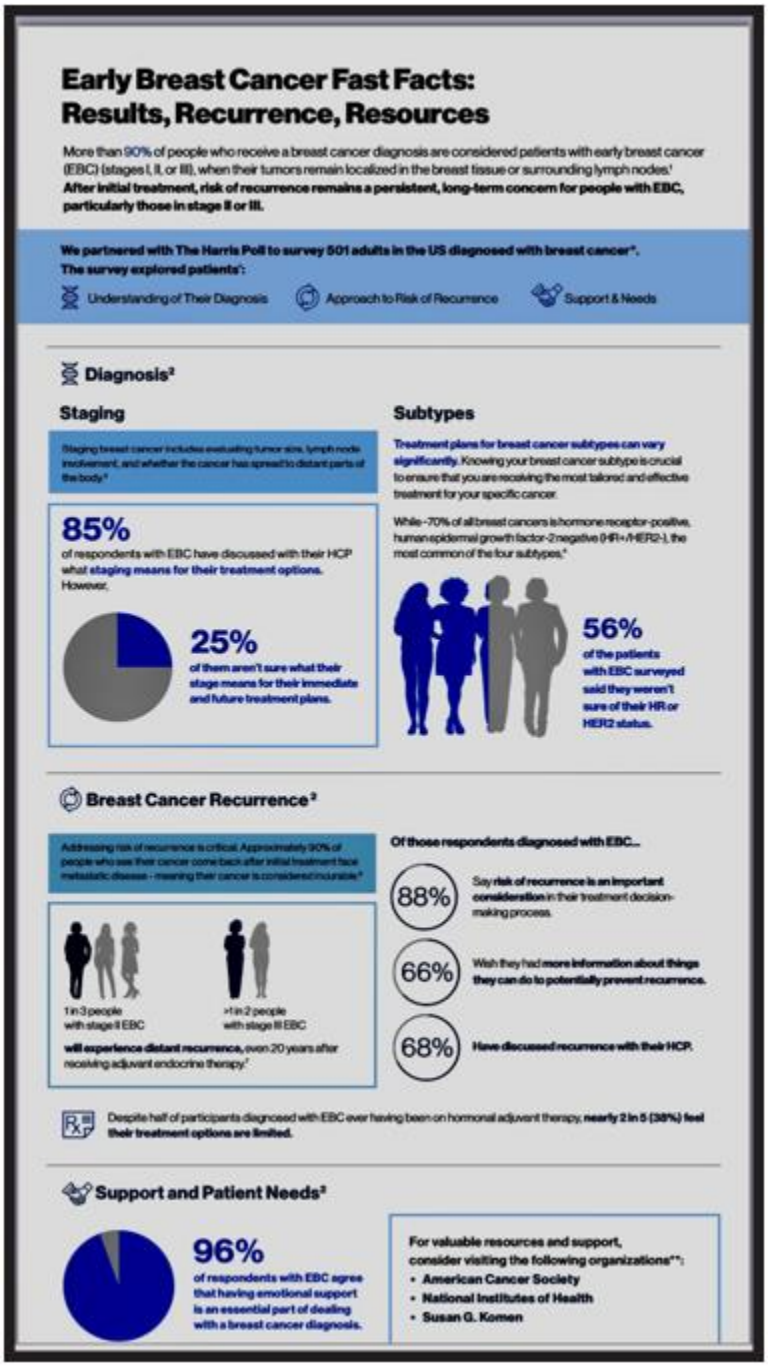
The risk of recurrence varies depending on various factors such as the size of the tumor, lymph node involvement, hormone receptor status, and other individual characteristics.

Keywords: endometrial cancer; epidemiology; breast cancer

Introduction

- Early breast cancer refers to cancer that is in its early stages and has not spread to nearby lymph nodes or other parts of the body.
- Treatment for early breast cancer often includes surgery to remove the tumor, followed by radiation therapy, chemotherapy, hormone therapy, or targeted therapy, depending on the individual case.
- The prognosis for early breast cancer is generally good, with a high chance of survival if detected and treated early. (Figure 1)



Recurrence:

Despite successful treatment, there is always a risk of recurrence in early breast cancer.

The risk of recurrence varies depending on various factors such as the size of the tumor, lymph node involvement, hormone receptor status, and other individual characteristics.

Regular follow-up appointments, mammograms, and other imaging tests are essential to detect any signs of recurrence early.

Resources:

- There are numerous resources available for individuals diagnosed with early breast cancer. Breast cancer support groups provide emotional support, information, and guidance for patients and their families.'
- National and international organizations, such as the American Cancer Society, Susan G. Komen, and Breastcancer.org, offer comprehensive information, resources, and helplines for individuals affected by breast cancer.
- Treatment centers and hospitals often have dedicated breast cancer clinics or departments that provide specialized care and support for patients.
- Healthcare professionals, including oncologists, surgeons, nurses, and social workers, are valuable resources for information and support throughout the treatment journey.

Detection:

- Early breast cancer is often detected through routine screening mammograms or by self-examination, where individuals check their breasts for any lumps or changes.

- Other diagnostic tests, such as ultrasound, MRI, or biopsy, may be used to confirm the diagnosis and gather more information about the tumor.

Treatment Options:

- Surgery is the primary treatment for early breast cancer. The two main surgical options are breast-conserving surgery (lumpectomy) or mastectomy. The choice depends on the size and location of the tumor, as well as personal preferences.
- Radiation therapy is commonly recommended after breast-conserving surgery to target any remaining cancer cells and reduce the risk of recurrence.
- Chemotherapy may be recommended for some cases, particularly when there is a higher risk of the cancer spreading to other parts of the body.
- Hormone therapy may be prescribed for individuals with hormone receptor-positive breast cancer, which helps to block the effects of hormones on cancer cells.
- Targeted therapy drugs may be used for specific types of breast cancer, such as HER2-positive breast cancer.

Long-Term Monitoring and Survivorship:

- After completing treatment, individuals with early breast cancer will have regular follow-up appointments with their healthcare team to monitor for any signs of recurrence or complications.
- Long-term monitoring may involve regular mammograms, blood tests, and other imaging tests to ensure early detection of any potential recurrence.
- Survivorship programs and resources are available to help individuals transition into life after treatment and address any physical, emotional, or social challenges they may face.

Additional data on early breast cancer:

- Early breast cancer is the most common type of breast cancer, accounting for about 80% of all new cases.
- The five-year survival rate for early breast cancer is around 99% if the cancer is confined to the breast and nearby lymph nodes at the time of diagnosis.
- The risk of developing breast cancer increases with age, with the majority of cases occurring in women over 50 years old.
- Family history of breast cancer, certain genetic mutations (such as BRCA1 and BRCA2), early onset of menstruation, late onset of menopause, and hormone replacement therapy are some of the known risk factors for developing breast cancer.
- Breast cancer can occur in men, although it is rare. Less than 1% of all breast cancer cases occur in men.
- Regular physical activity, maintaining a healthy weight, limiting alcohol consumption, and breastfeeding may help reduce the risk of developing breast cancer.
- The development of targeted therapies, such as Herceptin (trastuzumab) and CDK4/6 inhibitors, has significantly improved treatment outcomes for certain types of early breast cancer.
- Clinical trials play a crucial role in advancing the understanding and treatment of early breast cancer, offering patients access to innovative therapies and treatment approaches.
- The emotional and psychological impact of a breast cancer diagnosis and treatment can be significant. Seeking support from mental health professionals, support groups, and loved ones can help individuals cope with the challenges they may face.

It's important to note that these data are general and can vary depending on the individual's specific circumstances and the stage and characteristics of their breast cancer.

The diagnosis of early breast cancer typically involves a combination of imaging tests and biopsy. Here is an overview of the diagnostic process:

Diagnosis

The diagnosis of early breast cancer typically involves a combination of imaging tests and biopsy. Here is an overview of the diagnostic process:

- Screening Mammogram: Routine screening mammograms are often the first step in detecting breast cancer. Mammograms use low-dose X-rays to create detailed images of the breast tissue.
- Diagnostic Mammogram: If an abnormality is detected on a screening mammogram or if a woman experiences symptoms such as a lump or breast changes, a diagnostic mammogram is performed. This is a more detailed mammogram that focuses on the specific area of concern.
- Ultrasound: Ultrasound uses sound waves to create images of the breast tissue. It is often used to further evaluate an abnormality found on a mammogram or to determine if a breast lump is solid or fluid-filled.
- Magnetic Resonance Imaging (MRI): In some cases, an MRI may be recommended to obtain more detailed images of the breast tissue. MRI is particularly useful in assessing the extent of the cancer and determining if it has spread to other areas.
- Biopsy: A biopsy is the definitive diagnostic test for breast cancer. It involves the removal of a small sample of tissue from the suspicious area in the breast. There are several types of biopsies, including:
    - Fine Needle Aspiration (FNA): A thin needle is used to extract cells or fluid from a lump or abnormal area.
    - Core Needle Biopsy: A larger needle is used to remove a small cylinder of tissue from the suspicious area.
    - Vacuum-Assisted Biopsy: A probe is inserted into the breast and uses suction to collect multiple tissue samples.
    - Surgical Biopsy: In some cases, a surgical procedure may be necessary to remove a larger sample of tissue for further analysis.
- Pathology Analysis: The biopsy samples are sent to a pathology laboratory, where they are examined under a microscope by a pathologist. The pathologist evaluates the tissue for the presence of cancer cells and determines the type and characteristics of the cancer, such as its stage and hormone receptor status

Staging

Staging is a crucial step in determining the extent and severity of breast cancer. It helps healthcare professionals plan the most appropriate treatment strategy. The staging system commonly used for breast cancer is the TNM system, which stands for Tumor, Node, and Metastasis. Here is an overview of the stages:

Stage 0: Ductal Carcinoma In Situ (DCIS)

The cancer cells are confined to the ducts of the breast and have not invaded surrounding tissue.

Stage I: Early Stage Breast Cancer

- Stage IA: The tumor measures up to 2 cm in diameter and has not spread to the lymph nodes or other parts of the body.
- Stage IB: No tumor is found in the breast, but cancer cells are present in the lymph nodes under the arm, which are detected through biopsy.

Stage II: Locally Advanced Breast Cancer

- Stage IIA: The tumor measures up to 2 cm in diameter and has spread to 1-3 lymph nodes under the arm, or the tumor measures 2-5 cm and has not spread to the lymph nodes.
- Stage IIB: The tumor measures 2-5 cm and has spread to 1-3 lymph nodes under the arm, or the tumor measures larger than 5 cm but has not spread to the lymph nodes.

Stage III: Locally Advanced Breast Cancer

- Stage IIIA: The tumor measures any size and has spread to 4-9 lymph nodes under the arm, or the tumor is larger than 5 cm and has spread to 1-3 lymph nodes.
- Stage IIIB: The tumor has invaded the chest wall or skin and may have spread to 9 or more lymph nodes under the arm, or the tumor has caused swelling or ulceration of the breast skin.
- Stage IIIC: The tumor has spread to 10 or more lymph nodes under the arm, or has spread to lymph nodes above or below the collarbone.

Stage IV: Metastatic Breast Cancer

The cancer has spread to distant organs, such as the bones, liver, lungs, or brain.

It is important to note that staging also takes into account factors such as hormone receptor status (estrogen and progesterone receptors) and HER2/neu status, as these factors can influence treatment decisions and prognosis.

The staging process involves a combination of physical exams, imaging tests (such as CT scans, bone scans, and PET scans), and sometimes biopsies of other organs to determine if the cancer has spread. A pathologist will analyze the tumor tissue under a microscope to determine the characteristics of the cancer cells, such as their grade (how abnormal they appear) and whether they have certain genetic mutations.

Once the staging process is complete, the healthcare team can develop a personalized treatment plan. Treatment options for breast cancer may include surgery, radiation therapy, chemotherapy, hormone therapy, targeted therapy, or a combination of these approaches.

Staging is important for several reasons. It helps determine the prognosis or outlook for the patient, as well as guide treatment decisions. It also allows healthcare professionals to compare treatment outcomes across different groups of patients and conduct research studies to further understand and improve breast cancer treatment.

It's important to note that staging is just one aspect of the overall assessment of breast cancer. Other factors, such as a person's overall health, age, and preferences, are also taken into consideration when developing a treatment plan. It's always best to consult with a healthcare professional who can provide personalized information and guidance based on individual circumstances.

Staging also plays a role in clinical trials and research studies. By categorizing patients into specific stages, researchers can evaluate the outcomes of different treatments or interventions and develop new strategies to improve patient care.

It's important to note that staging is not a one-time process. In some cases, the stage of breast cancer may change over time due to the progression or regression of the disease. Regular follow-up appointments and imaging tests are essential for monitoring any changes and adjusting the treatment plan accordingly.

Subtypes

There are several different subtypes of breast cancer, each with its own unique characteristics and treatment approaches. The most common subtypes include:

- Hormone receptor-positive (HR+): This subtype of breast cancer is characterized by the presence of hormone receptors, specifically estrogen receptor (ER) and/or progesterone receptor (PR), on the cancer cells. Treatment for HR+ breast cancer often involves hormone therapy, which aims to block or lower the levels of estrogen in the body to prevent cancer growth.
- Human epidermal growth factor receptor 2-positive (HER2+): In this subtype, the cancer cells have an excess of a protein known as human epidermal growth factor receptor 2 (HER2). Targeted therapies, such as HER2-targeted antibodies or tyrosine kinase inhibitors, are commonly used to treat HER2+ breast cancer
- Triple-negative breast cancer (TNBC): TNBC is characterized by the absence of hormone receptors (ER and PR) and HER2 expression. It tends to be more aggressive and may require a combination of treatments, such as chemotherapy and radiation therapy.
- Luminal A and Luminal B: These subtypes are based on gene expression profiling and are associated with different prognoses. Luminal A breast cancer tends to have a better prognosis and is often treated with hormone therapy, while Luminal B breast cancer may require additional treatments, such as chemotherapy.
- Basal-like breast cancer: This subtype is often referred to as "triple-negative-like" and shares some similarities with TNBC. It is more common in younger women and may have a poorer prognosis. Treatment typically involves a combination of chemotherapy and surgery.

The treatment plan for each subtype of breast cancer is tailored to the specific characteristics of the tumor, including its size, lymph node involvement, and presence of hormone receptors or HER2 expression. It is important for patients to work closely with their healthcare team to determine the most appropriate treatment approach based on their individual subtype and stage of breast cancer.

In addition to the subtypes mentioned above, there are additional subtypes of breast cancer that are less common but still important to consider:

- Invasive lobular carcinoma (ILC): This subtype accounts for about 10-15% of all breast cancers. ILC begins in the milk-producing glands (lobules) of the breast and tends to spread diffusely within the breast tissue. Treatment for ILC is similar to other types of invasive breast cancer, including surgery, radiation therapy, and systemic therapies such as hormone therapy and chemotherapy.

- Inflammatory breast cancer (IBC): IBC is a rare and aggressive subtype of breast cancer. It is characterized by redness, swelling, and warmth in the breast, often resembling an infection. IBC is usually diagnosed at an advanced stage, and treatment typically involves a combination of chemotherapy, surgery, radiation therapy, and targeted therapies.
- Paget's disease of the nipple: Paget's disease is a rare type of breast cancer that starts in the ducts of the nipple and spreads to the nipple surface. It often presents with itching, scaling, redness, or crusting of the nipple and is sometimes associated with an underlying ductal carcinoma. Treatment for Paget's disease usually involves surgery, radiation therapy, and systemic therapies as needed.

Each subtype of breast cancer has its own unique characteristics, prognosis, and treatment options. It is crucial for patients to undergo accurate diagnostic testing, such as biopsies and imaging, to determine the specific subtype and stage of their breast cancer. This information is then used by the healthcare team to develop a personalized treatment plan that best addresses the individual patient's needs.

Breast Cancer Recurrence

Breast cancer recurrence refers to the return of cancer cells in the breast or nearby lymph nodes after a period of time when the cancer was considered to be in remission or under control. Recurrence can occur locally in the same area as the original tumor, regionally in the nearby lymph nodes, or distantly in other parts of the body, such as the bones, liver, or lungs.

The risk of breast cancer recurrence varies depending on several factors, including the stage of the original cancer, the subtype of breast cancer, the presence of hormone receptors or HER2 expression, and the effectiveness of the initial treatment. It is important for individuals who have been treated for breast cancer to continue with regular follow-up appointments and screenings to monitor for any signs of recurrence.

The treatment approach for recurrent breast cancer depends on several factors, including the location and extent of the recurrence, the individual's overall health, and the treatments previously received. Some treatment options for recurrent breast cancer may include:

- Surgery: If the recurrence is localized, surgical removal of the tumor may be an option. This can involve a lumpectomy (removal of the tumor and surrounding tissue) or a mastectomy (removal of the entire breast)
- Radiation therapy: Radiation therapy may be used to target and kill cancer cells in the area of recurrence, particularly if surgery is not possible or to reduce the risk of local recurrence after surgery
- Systemic therapy: Systemic treatments, such as chemotherapy, hormone therapy, or targeted therapy, may be used to treat recurrent breast cancer that has spread beyond the original tumor site. The specific treatment approach depends on the subtype of breast cancer and the characteristics of the recurrent tumor
- Clinical trials: Participation in clinical trials may be an option for individuals with recurrent breast cancer, as it allows access to new and innovative treatments that are not yet widely available.

The treatment plan for recurrent breast cancer is individualized and based on a thorough evaluation of the patient's specific situation. It is important for individuals with recurrent breast cancer to work closely with their healthcare team to determine the most appropriate treatment options and to discuss the potential benefits and risks of each approach.

In addition to the treatment options mentioned above, there are other considerations and strategies that may be employed in managing recurrent breast cancer:

- Targeted therapies: Depending on the molecular characteristics of the recurrent tumor, targeted therapies may be used. For example, HER2-positive breast cancer may be treated with targeted drugs like trastuzumab (Herceptin) or pertuzumab (Perjeta)
- Hormone therapy: If the recurrent breast cancer is hormone receptor-positive, hormone therapy may be used to block the effects of estrogen or progesterone on cancer cells. This can include drugs like tamoxifen, aromatase inhibitors, or ovarian suppression.
- Immunotherapy: Immunotherapy drugs, such as checkpoint inhibitors like pembrolizumab (Keytruda), may be used in certain cases of recurrent breast cancer, particularly those with high levels of tumor-infiltrating lymphocytes
- Palliative care: In cases where the recurrent breast cancer is advanced and cannot be cured, palliative care may be provided to manage symptoms, improve quality of life, and provide emotional and psychological support.
- Genetic testing: If not previously done, genetic testing may be recommended for individuals with recurrent breast cancer to assess the presence of inherited gene mutations, such as BRCA1 or BRCA2, which may impact treatment decisions and inform recommendations for family members.
- Lifestyle modifications: Adopting a healthy lifestyle, including regular exercise, a balanced diet, and stress management, may help improve overall well-being and potentially reduce the risk of cancer recurrence.

It is important for individuals with recurrent breast cancer to have open and ongoing communication with their healthcare team to discuss treatment options, potential side effects, and any concerns or questions they may have. Regular monitoring and follow-up appointments are crucial to detect any signs of further recurrence and to adjust the treatment plan accordingly.

Additional points to consider regarding breast cancer recurrence:

Surveillance and monitoring: Regular follow-up appointments and imaging tests, such as mammograms or PET scans, are typically recommended to monitor for any signs of recurrence. The frequency and type of surveillance will depend on the individual's specific situation and the recommendations of their healthcare team.

Psychological support: Dealing with breast cancer recurrence can be emotionally challenging. It is important for individuals to seek support from loved ones, support groups, or mental health professionals who can provide guidance and help navigate the emotional aspects of recurrence.

- Second opinions: If an individual is unsure about their treatment plan or wants to explore other options, seeking a second opinion from another healthcare provider can provide a fresh perspective and additional information to make an informed decision.
- Clinical trials: Participation in clinical trials may be an option for individuals with recurrent breast cancer, as it can provide access to new treatments and contribute to the advancement of medical knowledge.
- Lifestyle modifications: Adopting a healthy lifestyle, including regular exercise, maintaining a healthy weight, quitting smoking, and reducing alcohol consumption, may help improve overall well-being and potentially reduce the risk of cancer recurrence.

It is important to note that every case of breast cancer recurrence is unique, and the treatment approach will vary depending on individual factors. The most appropriate treatment plan should be determined in consultation with a multidisciplinary healthcare team, including medical oncologists, surgeons, radiation oncologists, and other specialists, who can tailor the approach to the specific needs of the patient.

Of those respondents diagnosed with early-stage breast cancer (Fig. 1)

- 88% of individuals with stage II EBC and 66% of individuals with stage III EBC will experience distant recurrence, even 20 years after receiving adjuvant endocrine therapy.
- 68% of respondents say the risk of recurrence is an important consideration in their treatment decision-making process.
- The majority of respondents wish they had more information about things they can do to potentially prevent recurrence.

- Many respondents have discussed the topic of recurrence with their healthcare provider (HCP).

It is important to note that these statistics are based on the information provided and may vary depending on individual circumstances and factors. It is always recommended to consult with a healthcare professional for personalized information and guidance regarding breast cancer.

Despite half of participants diagnosed with EBC ever having been on hormonal adjuvant therapy, nearly 2 in 5 (38%) feel their treatment options are limited.

Despite half of the participants diagnosed with EBC having been on hormonal adjuvant therapy, nearly 2 in 5 (38%) feel their treatment options are limited. This suggests that there may be a perception among some individuals that there are not enough treatment options available to them, even after receiving adjuvant therapy. It is important for healthcare providers to address these concerns and provide information about additional treatment options that may be available, such as targeted therapies, immunotherapies, or participation in clinical trials. Open communication between patients and healthcare providers can help ensure that individuals feel empowered to make informed decisions about their treatment and are aware of all available options.

Support and Patient Needs

Support and addressing patient needs are important aspects of the overall care and management of individuals diagnosed with EBC. Here are some considerations related to support and patient needs:

- Emotional Support: A breast cancer diagnosis can be emotionally challenging. Providing emotional support through counseling, support groups, or therapy can help individuals cope with the emotional impact of their diagnosis and treatment.
- Information and Education: Many individuals diagnosed with EBC express a desire for more information about their condition, treatment options, and potential side effects. Healthcare providers should ensure that patients have access to accurate and understandable information to help them make informed decisions about their care.
- Survivorship Care Planning: Developing a survivorship care plan can help individuals transition from active treatment to post-treatment care. This plan should include follow-up care, long-term monitoring, and strategies to address potential late effects or recurrence.
- Lifestyle and Wellness Support: Encouraging healthy lifestyle choices such as regular exercise, balanced nutrition, and stress management can positively impact overall well-being and potentially reduce the risk of recurrence.
- Financial and Practical Support: Breast cancer treatment can have financial implications, and individuals may need assistance navigating insurance coverage, managing medical bills, or accessing financial resources. Practical support such as transportation assistance or help with daily tasks can also be beneficial.
- Shared Decision Making: Engaging patients in shared decision making about their treatment options can enhance their sense of control and involvement in their care. Healthcare providers should ensure that patients' preferences, values, and goals are considered when determining the most appropriate treatment approach.

Addressing these support and patient needs can contribute to improved patient experiences, quality of life, and overall outcomes for individuals diagnosed with EBC. It is important for healthcare providers to have open and ongoing communication with their patients to understand their unique needs and provide appropriate support throughout their treatment journey.

- Peer Support: Connecting individuals with breast cancer support groups or peer-to-peer mentoring programs can provide a sense of camaraderie and understanding. Peer support allows individuals to share experiences, ask questions, and receive encouragement and advice from others who have gone through a similar journey.
- Fertility Preservation: For younger individuals diagnosed with EBC who wish to preserve their fertility, discussions about fertility preservation options should be initiated early in the treatment planning process. Referrals to fertility specialists can help individuals explore options such as egg or embryo freezing before undergoing treatments that may affect fertility.
- Sexual Health Support: Breast cancer treatments can impact sexual health and intimacy. Healthcare providers should address these concerns and provide information on strategies to manage potential side effects, such as vaginal dryness or decreased libido. Referrals to sexual health specialists or counselors may be beneficial in addressing these issues.
- Survivorship Programs: Survivorship programs or clinics can provide comprehensive care and support for individuals after completing active treatment for EBC. These programs may include regular follow-up visits, survivorship care plans, psychosocial support, and resources to manage long-term side effects or concerns
- Palliative Care: Palliative care should be integrated early in the treatment journey to provide individuals with EBC relief from symptoms, pain management, and emotional support. Palliative care can be provided alongside curative treatments and is focused on improving overall quality of life.
- Access to Clinical Trials: Healthcare providers should discuss the possibility of participating in clinical trials with eligible individuals. Clinical trials can offer access to innovative treatments, potentially improving outcomes and expanding treatment options for EBC patients.

Conclusion

In conclusion, providing support and meeting the various needs of individuals diagnosed with early-stage breast cancer is essential for their overall well-being and treatment journey. By addressing emotional, informational, financial, and practical needs, healthcare providers can help patients feel supported and empowered throughout their treatment. Additionally, offering peer support, fertility preservation options, sexual health support, survivorship programs, palliative care, and access to clinical trials can further enhance the care and outcomes for individuals with early-stage breast cancer. By taking a comprehensive approach to care, healthcare providers can ensure that patients receive the support they need to navigate their diagnosis and treatment successfully.

References:

1. Siegel RL, Miller KD, Jemal A. (2020) Cancer statistics, CA Cancer J Clin. 2020;70(1):7-30.
2. National Cancer Institute. Breast Cancer Treatment (PDQ®)–Patient Version. Updated June 2020.

3. Cardoso F, Senkus E, Costa A, et al. (2018) 4th ESO-ESMO International Consensus Guidelines for Advanced Breast Cancer (ABC 4). Ann Oncol. 29(8):1634-1657.
4. Early Breast Cancer Trialists' Collaborative Group (EBCTCG). (2018) Long-term outcomes for neoadjuvant versus adjuvant chemotherapy in early breast cancer: meta-analysis of individual patient data from ten randomised trials. Lancet Oncol. 19(1):27-39.
5. Howlader N, Noone AM, Krapcho M, et al. (2021) SEER Cancer Statistics Review, 1975-2017. National Cancer Institute. Bethesda.
6. Goss PE, Ingle JN, Martino S, et al. (2005) Randomized trial of letrozole following tamoxifen as extended adjuvant therapy in receptor-positive breast cancer: updated findings from NCIC CTG MA.17. J Natl Cancer Inst. 97(17):1262-1271.
7. Burstein HJ, Lacchetti C, Anderson H, et al. (2019) Adjuvant endocrine therapy for women with hormone receptor–positive breast cancer: ASCO clinical practice guideline focused update. J Clin Oncol. 37(5):423-438.
8. Tutt A, Ellis P, Kilburn L, et al. (2018) TNT: A randomized phase III trial of carboplatin compared with docetaxel for patients with metastatic or recurrent locally advanced triple negative or BRCA1/2 breast cancer. J Clin Oncol. 36(15_suppl):1007.
9. Sparano JA, Gray RJ, Makower DF, et al. Adjuvant chemotherapy guided by a 21-gene expression assay in breast cancer. N Engl J of Medicine
10. Early Breast Cancer Trialists' Collaborative Group (EBCTCG). Aromatase inhibitors versus tamoxifen in early breast cancer: patient-level meta-analysis of the randomised trials. Lancet. 386(10001):1341-1352.
11. Peto R, Davies C, Godwin J, et al. (2012) Comparisons between different polychemotherapy regimens for early breast cancer: meta-analyses of long-term outcome among 100,000 women in 123 randomised trials. Lancet. 379(9814):432-444.
12. National Comprehensive Cancer Network. NCCN Clinical Practice Guidelines in Oncology: Breast Cancer. Version 4.2021. Accessed September 7, 2021.
13. Burstein HJ, Temin S, Anderson H, et al. (2014) Adjuvant endocrine therapy for women with hormone receptor-positive breast cancer: American Society of Clinical Oncology clinical practice guideline focused update. J Clin Oncol. 32(21):2255-2269.
14. Gradishar WJ, Anderson BO, Balassanian R, et al. (2020) Breast cancer, version 4.2020, NCCN clinical practice guidelines in oncology. J Natl Compr Canc Netw. 18(4):452-478.
15. Cardoso F, Costa A, Senkus E, et al. (2017) 3rd ESO-ESMO international consensus guidelines for advanced breast cancer (ABC 3). Ann Oncol. 28(12):3111-3136.
16. Wolff AC, Hammond ME, Schwartz JN, et al. (2007) American Society of Clinical Oncology/College of American Pathologists guideline recommendations for human epidermal growth factor receptor 2 testing in breast cancer. J Clin Oncol. 25(1):118-145.
17. National Comprehensive Cancer Network. NCCN Clinical Practice Guidelines in Oncology: Breast Cancer Screening and Diagnosis. Version 2.2021. Accessed September 7, 2021.
18. Giordano SH, Temin S, Kirshner JJ, et al. Systemic therapy for patients with advanced human epidermis
19. Rimawi MF, Schiff R, Osborne CK. (2015) Targeting HER2 for the treatment of breast cancer. Annu Rev Med. 66:111-128.
20. DeSantis CE, Ma J, Gaudet MM, et al. (2019) Breast cancer statistics, 2019. CA Cancer J Clin. 69(6):438-451.

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