Survivorship – Invasive Breast Cancer

Note: Mammograms may continue as long as the patient has a 10-year life expectancy and no co-morbidities that would limit the diagnostic evaluation or treatment of any identified problem.

ELIGIBILITY

Female or male with invasive breast cancer, 3-5 years from date of diagnosis[1] and NED

CONCURRENT COMPONENTS OF VISIT

SURVEILLANCE

- History and physical with clinical breast exam annually
- Imaging recommendations:
  - Routine imaging of the chest wall or reconstructed breast following mastectomy is not indicated
  - Diagnostic mammography[2,3] with or without tomosynthesis annually for patients who had breast conservation therapy for the first 5 years, followed by screening mammography thereafter
- Assess for compliance with hormone therapy and assess for toxicities if appropriate
- Review Endocrine Therapy options (see Breast Cancer – Invasive Stage I-III algorithm)

DISPOSITION

Suspect new primary or biopsy-proven recurrence?

- Yes → See evaluation for recurrence in Breast Cancer – Invasive algorithm
- No → Continue survivorship monitoring

MONITORING FOR LATE EFFECTS

Consider the following based on risk factors:

- Bone health[5] (see Breast Cancer Survivorship: Bone Health algorithm)
- Cardiac screening[6]
- Patient education regarding symptoms, including radiation therapy complications, if appropriate
- Sexual health/fertility
- Fatigue assessment
- Neuropathy assessment
- Cognitive dysfunction assessment
- Gynecological assessment if on tamoxifen
- Lymphedema assessment

→ Refer or consult as indicated

RISK REDUCTION/ EARLY DETECTION

PSYCHOSOCIAL FUNCTIONING

→ See Page 2

NED = no evidence of disease
USPSTF = United States Preventive Services Task Force

[1] Completion of all treatment with the exception of hormonal agents
[2] Diagnostic mammography for up to 5 years post diagnosis then screening mammography thereafter
[3] Consider additional MRI breast with and without contrast annually for patients with germline mutations (see Appendix A in the Breast Cancer Screening algorithm for type of mutation and recommended screening interval) **or** diagnosis prior to age 50 years and have dense breasts[4]. Alternating mammography and MRI breast every 6 months is suggested if feasible.
Note: Additional imaging can be considered as delineated in the recommendation from the American College of Radiology (ACR) and the American Cancer Society (ACS). Note that the data supporting these guidelines are outdated (as per our internal analysis) and additional imaging is not recommended by the National Comprehensive Cancer Network (NCCN) survivorship guidelines.
[4] Dense breast is defined as heterogeneously dense or extremely dense
[5] All postmenopausal women (especially those on aromatase inhibitors) and premenopausal women on ovarian suppression
[6] Consider use of Vanderbilt's ABCDE's approach to cardiovascular health

Department of Clinical Effectiveness V10
Approved by the Executive Committee of the Medical Staff on 03/21/2023

Survivorship – Invasive Breast Cancer

Note: Mammograms may continue as long as the patient has a 10-year life expectancy and no co-morbidities that would limit the diagnostic evaluation or treatment of any identified problem.

CONCURRENT COMPONENTS OF VISIT		DISPOSITION
RISK REDUCTION/ EARLY DETECTION	Patient education, counseling, and screening: • Lymphedema risk-reduction education • Lifestyle risk assessment[1] • Cancer screening[2] • HPV vaccination as clinically indicated (see HPV Vaccination algorithm) • Screening for Hepatitis B and C as clinically indicated (see Hepatitis B Virus (HBV) Screening and Management, Hepatitis C Virus (HCV) Screening algorithms) • Genetic screening (if not already done) see Genetic Counseling algorithm, NCCN, and USPSTF guidelines) • Vaccinations[3] as appropriate	Refer or consult as indicated
PSYCHOSOCIAL FUNCTIONING	Assess for: • Distress management (see Distress Screening and Psychosocial Management algorithm) • Body image • Financial stressors • Social support	

NED = no evidence of disease
USPSTF = United States Preventive Services Task Force

[1] See Physical Activity, Nutrition, and Tobacco Cessation algorithms; ongoing reassessment of lifestyle risks should be a part of routine clinical practice
[2] Includes cervical (if appropriate), colorectal, liver, lung, pancreatic, prostate (if appropriate), and skin cancer screening
[3] Based on Centers for Disease Control and Prevention (CDC) guidelines

SUGGESTED READINGS

Aapro, M., Abrahamsson, P. A., Body, J. J., Coleman, R. E., Colomer, R., Costa, L., … Thurlimann, B. (2008). Guidance on the use of bisphosphonates in solid tumors: Recommendations of an international expert panel. *Annals of Oncology, 19*(3), 420-432. doi:10.1093/annonc/mdm442

Bae, M.S., Sung, J.S, Bernard-Davila, B., Sutton, E.J., Comstock, C.E., & Morris, E.A. (2020). Survival outcomes of screening with breast MRI in women at elevated risk of breast cancer. *Journal of Breast Imaging, 2*(1), 29-35. doi:10.1093/jbi/wbz083

Barcenas, C. H., Shafaee, M. N., Sinha, A. K., Raghavendra, A., Saigal, B. Murthy, R. K., … Arun, B. (2018). Genetic counseling referral rates in long-term survivors of triple-negative breast cancer. *Journal of the National Comprehensive Cancer Network, 16*(5), 518-524. doi:10.6004/jnccn.2018.7002

Centers for Disease Control and Prevention. (2022). *Recommended immunization schedule for adults aged 19 years or older, United States, 2022*. Retrieved from https://www.cdc.gov/vaccines/schedules/hcp/imz/adult.html

Cho, N., Han, W., Han, B.-K., Bae, M.S., Ko, E. K., Nam, S.J., … Moon, W.K. (2017). Breast cancer screening with mammography plus ultrasonography or magnetic resonance imaging in women 50 years or younger at diagnosis and treated with breast conservation therapy. *JAMA Oncology, 3*(11), 1495-1502. doi:10.1001/jamaoncol.2017.1256

DeSantis, C. E., Lin, C. C., Mariotto, A. B., Siegel, R. L., Stein, K. D., Kramer, J. L., … Jemal, A. (2014). Cancer treatment and survivorship statistics, 2014. *CA: A Cancer Journal for Clinicians, 64*(4), 252-271. doi:10.3322/caac.21235

Fonseca, M. M., Alhassan, T., Nisha, Y., Koszycki, D., Schwarz, B. A., Segal, R., … Seely, J. M. (2022). Randomized trial of surveillance with abbreviated MRI in women with a personal history of breast cancer - impact on patient anxiety and cancer detection. *BMC Cancer, 22*(1), 774. doi:10.1186/s12885-022-09792-x

Giordano, S. H., Booser, D. J., Murray, J. L., Ibrahim, N. K., Rahman, Z. U., Valero, V., … Hortobagyi, G. N. (2002). A detailed evaluation of cardiac toxicity. *Clinical Cancer Research, 8*(11), 3360. Retrieved from http://clincancerres.aacrjournals.org/content/8/11/3360.full#ref-list-1

Hillner, B. E., Ingle, J. N., Berenson, J. R., Janjan, N. A., Albain, K. S., Lipton, A., … Pfister, D. G. (2000). American society of clinical oncology guideline on the role of bisphosphonates in breast cancer. *Journal of Clinical Oncology, 18*(6), 1378-1391. doi:10.1200/JCO.2000.18.6.1378

Hillner, B. E., Ingle, J. N., Chlebowski, R. T., Gralow, J., Yee, G. C., Janjan, N. A., … Brown, S. (2003). American society of clinical oncology 2003 update on the role of bisphosphonates and bone health issues in women with breast cancer. *Journal of Clinical Oncology, 21*(21), 4042-4057. doi:10.1200/JCO.2003.08.017

Ke, Y., Ng, T., & Chan, A. (2018). Survivorship care models for breast cancer, colorectal cancer, and adolescent and young adult (AYA) cancer survivors: A systematic review. *Supportive Care in Cancer, 26*(7), 2125-2141. doi:10.1007/s00520-018-4197-y

Lawson, M. B., Herschorn, S. D., Sprague, B. L., Buist, D. S., Lee, S. J., Newell, M. S., … Lee, J. M. (2022). Imaging Surveillance Options for Individuals With a Personal History of Breast Cancer: AJR Expert Panel Narrative Review. *American Journal of Roentgenology, 219*(6), 854-868. doi:10.2214/AJR.22.27635

Le-Petross, H.T., Whitman, G.J., Atchley, D.P., Yuan, Y., Gutierrez-Barrera, A., Hortobagyi, G.N., Litton, J.K., & Arun, B.K. (2011). Effectiveness of alternating mammography and magnetic resonance imaging for screening women with deleterious *BRCA* mutations at high risk of breast cancer. *Cancer, 117*(17), 3900-3907. doi:10.1002/cncr.25971

Mayer, D. K., Nekhlyudov, L., Snyder, C. F., Merrill, J. K., Wollins, D. S., & Shulman, L. N. (2014). American society of clinical oncology clinical expert statement on cancer survivorship care planning. *Journal of Oncology Practice, 10*(6), 345-351. doi:10.1200/JOP.2014.001321

Continued on next page

SUGGESTED READINGS - continued

Mehta, T. S., Lourenco, A. P., Niell, B. L., Bennett, D. L., Brown, A., Chetlen, A., … Moy, L. (2022). ACR Appropriateness Criteria® Imaging After Breast Surgery. *Journal of the American College of Radiology, 19*(11), S341-S356. doi:10.1016/j.jacr.2022.09.003.

Monticciolo, D. L., Newell, M. S., Moy, L., Niell, B., Monsees, B., & Sickles, E. A. (2018). Breast cancer screening in women at higher-than-average risk: Recommendations from the ACR. *Journal of the American College of Radiology, 15*(3), 408-414. doi:10.1016/j.jacr.2017.11.034

National Comprehensive Cancer Network. (2022). *Breast Cancer* (NCCN Guideline Version 4.2022). Retrieved from https://www.nccn.org/professionals/physician_gls/pdf/breast.pdf

O'Carrigan, B., Wong, M. H. F., Willson, M. L., Stockler, M. R., Pavlakis, N., & Goodwin, A. (2017). Bisphosphonates and other bone agents for breast cancer. *Cochrane Database of Systematic Reviews, 2017*(10), CD003474. doi:10.1002/14651858.CD003474.pub4

Park, V. Y., Kim, M. J., Kim, G. R., & Yoon, J. H. (2021). Outcomes following negative screening MRI results in Korean women with a personal history of breast cancer: Implications for the next MRI interval. *Radiology, 300*(2), 303-311. doi:10.1148/radiol.2021204217

Reid, D. M., Doughty, J., Eastell, R., Heys, S. D., Howell, A., McCloskey, E. V., … Coleman, R. E. (2008). Guidance for the management of breast cancer treatment-induced bone loss: A consensus position statement from a UK expert group. *Cancer Treatment Reviews, 34*(1), S3-S18. doi:10.1016/j.ctrv.2008.03.007

Runowicz, C. D., Leach, C. R., Henry, N. L., Henry, K. S., Mackey, H. T., Cowens-Alvarado, R. L., … Ganz, P. A. (2016). American Cancer Society/American Society of Clinical Oncology breast cancer survivorship care guideline. *Journal of Clinical Oncology, 34*(6), 611-635. doi:10.1200/JCO.2015.64.3809

Runowicz, C. D., Leach, C. R., Henry, N. L., Henry, K. S., Mackey, H. T., Cowens-Alvarado, R. L., … Ganz, P. A. (2016). American Cancer Society/American Society of Clinical Oncology breast cancer survivorship care guideline. *CA: A Cancer Journal for Clinicians, 66*(1), 43-73. doi:10.3322/caac.21319

Saslow, D., Boetes, C., Burke, W., Harms, S., Leach, M. O., Lehman, C. D., … American Cancer Society Breast Cancer Advisory Group. (2007). American Cancer Society guidelines for breast screening with MRI as an adjunct to mammography. *CA: A Cancer Journal for Clinicians*, 57(2), 75-89. doi: 10.3322/canjclin.57.2.75

The American Society of Breast Surgeons. (2019). *Position Statement on Screening Mammography*. Retrieved from https://www.breastsurgeons.org/docs/statements/Position-Statement-on-Screening-Mammography.pdf

Vanderbilt Cardio-Oncology Program. (2017). *Know Your ABCDE's*. Retrieved from http://www.cardioonc.org/2017/08/29/know-your-abcs/

DEVELOPMENT CREDITS

This survivorship algorithm is based on majority expert opinion of the Breast Cancer Survivorship work group at the University of Texas MD Anderson Cancer Center. It was developed using a multidisciplinary approach that included input from the following:

Core Development Team Leads

Therese Bevers, MD (Clinical Cancer Prevention)
Abenaa Brewster, MD (Breast Medical Oncology)
Kelly Hunt, MD (Breast Surgical Oncology)
Rosa F. Hwang, MD (Breast Surgical Oncology)
Kimberly B. Koenig, MD (Breast Medical Oncology)
Melissa P. Mitchell, MD (Breast Radiation Oncology)
Alma Rodriguez, MD (Cancer Survivorship)
Wei Yang, MD (Breast Imaging)

Workgroup Members

Beatriz Adrada, MD (Breast Imaging)
Carlos H. Barcenas, MD (Breast Medical Oncology)
Donald P. Baumann, MD (Plastic Surgery)
Olga N. Fleckenstein, BS♦
Katherine Gilmore, MPH (Cancer Survivorship)
Thoa Kazantsev, MSN, RN, OCN♦
Jessica Leung, MD (Breast Imaging)
Tanya Moseley, MD (Breast Imaging)
Amy Pai, PharmD♦
Mark V. Schaverien, MD (Plastic Surgery)
Nina Tamirisa, MD (Breast Surgical Oncology)
Debu Tripathy, MD (Breast Medical Oncology)
Gary Whitman, MD (Breast Imaging)
Wendy Woodward, MD (Breast Radiation Oncology)

♦ Clinical Effectiveness Development Team