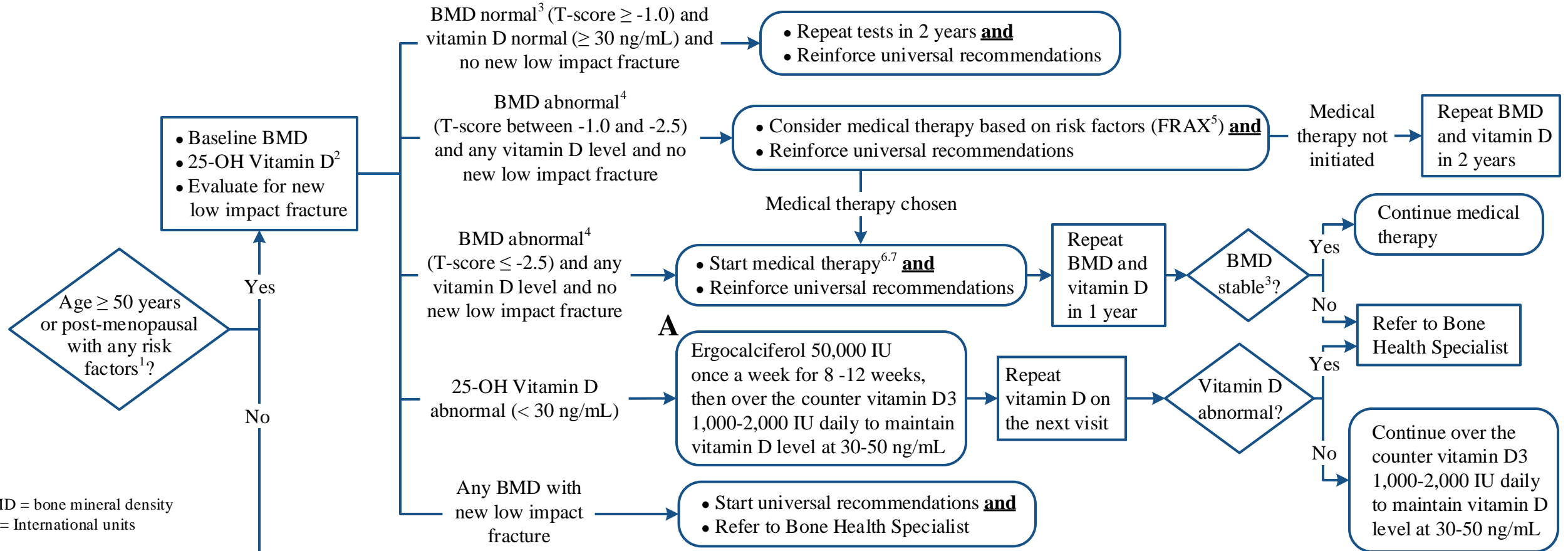


Disclaimer: This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.

## PRESENTATION

## TREATMENT



BMD = bone mineral density  
 IU = International units

- <sup>1</sup> Risk factors:
- Low body weight
  - Family history of hip fracture
  - Rheumatoid arthritis
  - Prior bone fracture
  - High risk medical condition
  - History of prior steroid use of 3 months or longer

<sup>2</sup> 25-OH Vitamin D: 25-hydroxyvitamin D (hydroxycholecalciferol, calcidiol), the main vitamin D circulating in plasma

<sup>3</sup> Stable BMD = same T-score or improvement

<sup>4</sup> Abnormal BMD: Osteopenia T-score between -1.0 and -2.5  
 Osteoporosis T-score ≤ -2.5

- Universal recommendations:
- Calcium 1,200 mg/day
  - Vitamin D 800 IU/day
  - Exercise (see [Physical Activity algorithm](#))
  - Limit alcohol
  - Limit caffeine
  - Avoid tobacco (see [Tobacco Cessation algorithm](#))

<sup>5</sup> FRAX<sup>®</sup> - Fracture Risk Assessment Tool at [www.shef.ac.uk/frax](http://www.shef.ac.uk/frax)

<sup>6</sup> Consider bisphosphonate, denosumab, raloxifene or if clinically indicated

<sup>7</sup> If vitamin D level is < 26 ng/mL, replenish with supplementation prior to initiating medical therapy for osteoporosis. See Box A for recommendation on vitamin D repletion.

Disclaimer: *This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.*

## SUGGESTED READINGS

- Adler, R. A. (2007). Cancer treatment-induced bone loss. *Current Opinion in Endocrinology, Diabetes and Obesity*, 14(6), 442–445. doi: 10.1097/MED.0b013e3282f169b5.
- Brown, J. E., Neville-Webbe, H., & Coleman, R. E. (2004). The role of bisphosphonates in breast and prostate cancers. *Endocrine-Related Cancer*, 11(2), 207-224. doi:10.1677/erc.0.0110207
- Brown, S. A., & Guise, T. A. (2009). Cancer treatment-related bone disease. *Critical Reviews in Eukaryotic Gene Expression*, 19(1), 47–60. doi: 10.1615/CritRevEukarGeneExpr.v19.i1.20
- Bruno, D., & Feeney, K. J. (2006). Management of postmenopausal symptoms in breast cancer survivors. *Seminars in Oncology*, 33(6), 696-707. doi:10.1053/j.seminoncol.2006.08.010
- Crandall, C., Petersen, L., Ganz, P. A., & Greendale, G. A. (2004). Bone mineral density and adjuvant therapy in breast cancer survivors. *Breast Cancer Research and Treatment*, 88(3), 257-261. doi:10.1007/s10549-004-0804-3
- Gralow, J., Biermann, J., Farooki, A., Fournier, M. N., Gagel, R. F., Kumar, R. N., . . . Van Poznak, C.H. (2009). NCCN task force report: Bone health in cancer care. *Journal of the National Comprehensive Cancer Network*, 7(Suppl 3), S-1-S-32. doi:10.6004/jnccn.2013.0215
- Hoff, A. O., & Gagel, R. F. (2005). Osteoporosis in breast and prostate cancer survivors. *Oncology*, 19(5), 651-658. Retrieved from <https://www.cancernetwork.com/oncology-journal/osteoporosis-breast-and-prostate-cancer-survivors>
- Hu, M. I., Gagel, R. F., & Jimenez, C. (2007). Bone loss in patients with breast or prostate cancer. *Current Osteoporosis Reports*, 5(4), 170-178. doi:10.1007/s11914-007-0013-1
- Limburg, C. E. (2007). Screening, prevention, detection, and treatment of cancer therapy-induced bone loss in patients with breast cancer. *Oncology Nursing Forum*, 34(1), 55-63. doi:10.1188/07.ONF.55-36
- Loprinzi, C. L., Wolf, S. L., Barton, D. L., & Laack, N. N. (2008). Symptom management in premenopausal patients with breast cancer. *The Lancet Oncology*, 9(10), 993–1001. doi:10.1016/S1470-2045(08)70256-0
- North American Menopause Society. (2006). Management of osteoporosis in postmenopausal women: 2006 position statement of the North American menopause society. *Menopause: The Journal of The North American Menopause Society*, 13(3), 340-367. doi:10.1097/01.gme.0000222475.93345.b3
- 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
- Rozenberg S., Antoine C., Carly B., Pastijn, A., & Liebens, F. (2007). Improving quality of life after breast cancer: Prevention of other diseases. *Menopause International*, 13(2), 71-74. doi:10.1258%2F175404507780796398
- Salani, R., Backes, F. J., Fung, M. F., Holschneider, C. H., Parker, L. P., Bristow, R. E., & Goff, B. A. (2011). Posttreatment surveillance and diagnosis of recurrence in women with gynecologic malignancies: Society of gynecologic oncologists recommendations. *American Journal of Obstetrics and Gynecology*, 204(6), 466-478. doi:10.1016/j.ajog.2011.03.008
- Stricker, C. T. (2007). Endocrine effects of breast cancer treatment. *Seminars in Oncology Nursing*, 23(1), 55-70. doi:10.1016/j.soncn.2006.11.006
- Tham, Y., Sexton, K., Weiss, H. L., Elledge, R. M., Friedman, L. C., & Kramer, R. M. (2006). The adherence to practice guidelines in the assessment of bone health in women with chemotherapy-induced menopause. *Journal of Supportive Oncology*, 4(6), 295-298.
- The University of Sheffield. (n.d.). *Welcome to FRAX*. Retrieved from <https://www.sheffield.ac.uk/FRAX/>
- Van Poznak, C., & Sauter, N. P. (2005). Clinical management of osteoporosis in women with a history of breast carcinoma. *Cancer*, 104(3), 443–456. doi:10.1002/cncr.21201
- Watts, N.B, Lewiecki, E.M., Miller, P.D., & Baim, S. (2008). National osteoporosis foundation 2008 clinician's guide to prevention and treatment of osteoporosis and the world health organization fracture risk assessment tool (FRAX): What they mean to bone densitometrist and bone technologist. *Journal of Clinical Densitometry*, 11(4), 473-477. doi:10.1016/j.jocd.2008.04.003

Disclaimer: *This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.*

---

## DEVELOPMENT CREDITS

This survivorship algorithm is based on majority expert opinion of the Gynecologic 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:

Katherine Gilmore, MPH (Cancer Survivorship)  
Mimi I-Nan Hu, MD (Endocrine Neoplasia & HD)<sup>‡</sup>  
Thoa Kazantsev, MSN, RN, OCN<sup>♦</sup>  
Huifang Lu, MD (Rheumatology)

<sup>‡</sup>Core Development Team

<sup>♦</sup>Clinical Effectiveness Development Team