## Supplementary File 2

Pathogenic/likely pathogenic variant-positive management include screening and risk reduction surgery. Semiannual clinical breast examinations should begin at 25 years of age. [1-3] The age to begin screening can be individualized if the family history includes a breast diagnosis prior to 30 years of age. [4] Prospective studies on comparative surveillance modalities in women at high risk have consistently reported higher sensitivity of MRI screening (91%–94%) compared with mammography (40%–65%) and ultrasound (40%–65%) in detecting breast cancers. [5-7] The combined use of mammography and ultrasound increase the sensitivity to 49%–63%. [2,3] The specificity with MRI and mammography screening were 97.2% and 96.8%, [5-7] respectively. A large cohort study suggested an increased risk in women exposed to radiation at a young age. [8]

- Kriege M, Brekelmans CT, Boetes C, Besnard PE, Zonderland HM, Obdeijn IM, et al. Magnetic Resonance Imaging Screening Study Group. Efficacy of MRI and mammography for breast-cancer screening in women with a familial or genetic predisposition. N Engl J Med 2004;351:427-37. doi: 10.1056/NEJMoa031759.
- 2. Lehman CD, Blume JD, Weatherall P, Thickman D, Hylton N, Warner E, et al. International Breast MRI Consortium Working Group. Screening women at high risk for breast cancer with mammography and magnetic resonance imaging. Cancer 2005;103:1898-905. doi: 10.1002/cncr.20971.
- 3. Warner E, Plewes DB, Hill KA, Causer PA, Zubovits JT, Jong RA, et al. Surveillance of BRCA1 and BRCA2 mutation carriers with magnetic resonance imaging, ultrasound, mammography, and clinical breast examination. JAMA 2004;292:1317-25. doi: 10.1001/jama.292.11.1317.
- 4. Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic Version 1.2021-September 8, 2020. http://www.NCCN.org.
- Kuhl CK, Schrading S, Leutner CC, Morakkabati-Spitz N, Wardelmann E, Fimmers R, et al.
   Mammography, breast ultrasound, and magnetic resonance imaging for surveillance of women at high familial risk for breast cancer. J Clin Oncol 2005;23:8469-76. doi: 10.1200/JCO.2004.00.4960.
- 6. Sardanelli F, Podo F, Santoro F, Manoukian S, Bergonzi S, Trecate G, *et al*. High Breast Cancer Risk Italian 1 (HIBCRIT-1) Study. Multicenter surveillance of women at high genetic breast cancer risk using mammography, ultrasonography, and contrast-enhanced magnetic resonance imaging (the high breast cancer risk italian 1 study): final results. Invest Radiol 2011;46:94-105. doi: 10.1097/RLI.0b013e3181f3fcdf.
- 7. Riedl CC, Ponhold L, Flöry D, Weber M, Kroiss R, Wagner T, *et al.* Magnetic resonance imaging of the breast improves detection of invasive cancer, preinvasive cancer, and premalignant lesions

- during surveillance of women at high risk for breast cancer. Clin Cancer Res 2007;13:6144-52. doi: 10.1158/1078-0432.CCR-07-1270.
- 8. Pijpe A, Andrieu N, Easton DF, Kesminiene A, Cardis E, Noguès C, *et al.* Exposure to diagnostic radiation and risk of breast cancer among carriers of BRCA1/2 mutations: retrospective cohort study (GENE-RAD-RISK). BMJ 2012;345:e5660. doi: 10.1136/bmj.e5660.