

Meeting the Need for Breast Imaging Training in Tanzania

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Breast cancer is the most common cancer in sub-Saharan Africa and a major cause of cancer mortality among women in Tanzania, second only to cervical cancer.^{1,2} The five-year survival rate of breast cancer in Tanzania is 45%, compared to 90% in the United States.³ In Tanzania, 80% of cases are diagnosed at later stages (III or IV), compared to only 35% in the United States.²⁻⁵ Furthermore, breast cancer incidence and mortality in Tanzania are projected to increase by 80% by 2030.²

Improving breast cancer mortality requires early detection, accurate diagnosis and staging, and tissue sampling to determine receptor status and guide chemotherapy.

Multiple barriers delay the presentation of breast cancer patients in Tanzania. These include a lack of basic knowledge and awareness, stigma associated with the disease, and financial and local healthcare system barriers.⁵ Local barriers, such as limited access to diagnostic services, a lack of trained personnel able to recognize early signs of breast cancer, and broken referral pathways,

lead to diagnostic delays and improper management, even when patients present with early-stage disease.⁵ Patient management is largely limited to mastectomy and axillary lymph node dissection; chemotherapy, when available, is often non-targeted because of the limited ability to determine breast cancer receptor status.³

Breast imaging specialists are essential to each of these steps; as such, high-quality radiologist training programs in breast imaging are fundamental to improving the care of patients with breast cancer in Tanzania.

Phased Implementation Approach to Breast Cancer Management in Tanzania

In 2017, the Tanzania Ministry of Health (MoH) commissioned a comprehensive report on breast cancer that recommended a resource-stratified and phased implementation approach to addressing detection, diagnosis, and treatment.² The report recommended starting with systematic triaging and diagnosis of palpable breast disease while working toward building the healthcare system's capacity to diagnose and manage nonpalpable breast disease. The report acknowledged standardized guidelines, protocols, and a trained healthcare workforce as prerequisites to this approach; however, it did not

specify breast imaging specialists as critical to the effort.

The MoH released the first edition of the National Cancer Treatment Guidelines in 2020. They incorporated evidence-based advances in breast cancer management⁷ and included the 2017 recommendations for a phased approach to implementation, with phase 1 consisting of triaging and diagnosing palpable breast disease, and phase 2 consisting of resource-adapted, stage-appropriate treatment planning.² The guidelines put breast imaging expertise at the center of every step of management of patients with palpable breast disease: detection, diagnosis, staging, and tissue sampling for breast cancer receptor status.

Previously, patients with suspicious lesions were only referred for clinical breast exams, but they are now required to undergo imaging as part of their initial workup. Various imaging modalities are recommended for staging before any intervention is undertaken. Core needle biopsy under ultrasound or stereotactic guidance is now recommended for tissue sampling, whereas fine needle aspiration (FNA) should be reserved for screening; abnormal FNA results require histopathology confirmation. Each step of this process now requires a breast imaging expert.

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Breast Imaging Training Program

Unfortunately, no clear plan was presented for recruiting or training such specialists. The worldwide shortage of radiologists is even more acute in Tanzania, with only about one radiologist per 1 million residents.⁸ Tanzania and other low-to-middle income countries (LMICs) cannot afford to recruit breast imaging experts, especially those from high-income countries. Creating in-country breast imaging training programs offers one pragmatic solution for LMICs.

In 2021, RAD-AID began working with key stakeholders in Tanzania, including the MoH, the Muhimbili University of Health and Allied Sciences (MUHAS), Muhimbili National Hospital (MNH), and Ocean Road Cancer Institute, to establish a two-year Master of Science in Women's Imaging Fellowship to focus on the training of radiologists specifically in breast and cervical cancer imaging.

The team's efforts are organized and supported by the Radiological Society of North America Global Learning Center program in Tanzania. Led by volunteer international faculty from RSNA and hosted at the MUHAS/MNH complex, the fellowship enrolled its inaugural cohort of three Tanzanian fellows in 2022.

The fellowship consists of a four-semester curriculum that mirrors the

phased implementation of the MoH's recommendations. It focuses on palpable breast disease during the first year of training (Introduction to Breast Imaging in semester 1, and Breast Ultrasound in semester 2); and building competence in nonpalpable breast disease during their second year (Mammography in semester 3 and Breast MRI and Other Modalities in semester 4). The fellowship also provides a mentored clinical diagnosis and breast biopsy service for patients presenting with palpable breast disease. This in-country training also allows the fellows to develop cross-discipline partnerships with other healthcare providers, strengthening the professional networks required to comprehensively treat breast cancer patients in Tanzania.

Conclusion

Breast cancer patients in Tanzania face already-high incidence and mortality that are projected to more than double by 2040.^{9,10} Breast imaging specialists are urgently needed to lead the country's phased-implementation approach to treatment and management. Collaboration with international partners to create and support in-country training programs is one pragmatic solution that can help to birth the local breast imaging experts who will lead the effort and train breast imaging experts of the future. Lessons learned

from this experience, moreover, could likely be applied to other LMICs facing similarly high impacts from an otherwise highly treatable disease.

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