

Reportage

A decade of strengthening breast oncology in Ethiopia



Addressing global disparities in breast cancer outcomes requires sustained international collaboration. Ethiopia is the second most populous country in Africa, with 114 million people. It also has one of the lowest gross domestic product on the continent and one of the fastest growing economies. Nearly 80% of its population resides in rural areas. 23 radiation oncologists provide both radiotherapy and chemotherapy for the entire country. Our teams from Ethiopia, USA, and Germany have worked together with other colleagues for the past decade to increase workforce capacity and strengthen breast cancer care, research, and education in a challenging context of extremely limited resources. Here, we report our decade of collaborative work and lessons learned to improve breast cancer outcomes.

The most common malignancy in Ethiopia is breast cancer.¹ Most patients with breast cancer are young, with ages ranging between late 30s and early 40s. The majority of patients present with advanced-stage disease, associated with morbidity and premature death. Since 2012, data from the Addis Ababa Cancer population-based cancer registry has been submitted to the global database Cancer Today, compiled by the International Agency for Research on Cancer. Data estimate 16 000 new breast cancer cases per year, although the actual national burden of disease might be closer to 30 000 cases per year. Disparities exist in breast cancer survival between women living in rural and urban areas. Patients in rural areas are more likely to present with locally advanced breast cancer. **Their 2-year survival with surgical treatment alone was 46% compared with a cohort treated in the urban region of Addis Ababa who had a survival rate of 74% after access to chemotherapy, surgery, and endocrine therapy.** Importantly, two-thirds of the breast cancer cases are hormone receptor positive—curable if detected and treated early with mastectomy and endocrine therapy costing US\$7 per month. Therefore, extremely limited resources must be strategically prioritised to optimise outcomes. Efforts to improve breast cancer detection and treatment must also be integrated with progress at the national level: it would be unethical to increase awareness of breast abnormalities and have no capacity to diagnose and then treat patients.

Over the past decade, several groups mobilised with the core value that we must supplement, and not duplicate, our activities. From 2010 to 2016, the annual multidisciplinary Ethiopian National Oncology Conference took an inventory of human resources, equipment, and unmet needs. Nearly 100 people participated annually to discuss clinical observations and research. Stakeholders included the Ethiopian Ministry of Health (MOH), Roche African Research Foundation, Clinton Health Access Initiative (CHAI),

American Cancer Society (ACS), and Mathiwos Wondu-Ye Ethiopian Cancer Society. Major academic centres that participated included the Addis Ababa, Mekele, Hawassa, Gondar, and Jimma Universities in Ethiopia; Martin Luther University (MLU) in Halle, Germany; and Albert Einstein College of Medicine (Bronx, NY) and City of Hope National Medical Center (COH; Duarte, CA) in the USA. Specialists and trainees represented the following disciplines: surgery, urology, gynaecology, pathology, radiation oncology, internal medicine, epidemiology, infectious disease, palliative care, and nursing. In 2015, an Interdisciplinary Cancer Group was spearheaded at the Addis Ababa University (AAU) College of Health Sciences. **By 2016, the Ethiopian National Cancer Control Plan was launched. The document highlights the need for evidence-based interventions to improve cancer care with an emphasis on downstaging disease and increasing awareness of breast abnormalities, especially among health-care workers.**

These conferences and working groups also generated other interdisciplinary collaborative initiatives to strengthen oncology education and research. For example, the MLU-COH-AAU team was awarded a Susan G Komen Graduate Training Program in Disparities Research grant to support six trainees from diverse fields—two in epidemiology or public health, two in translational science, and two in oncology nursing. In 2016, COH worked with the American Society of Clinical Oncologists to deliver a course entitled *Cancer Control for Primary Care Providers* in Gondar and Hawassa for medical, pharmacy, and nursing students. Since 2011, MLU has been awarded funding from the **German government, Else Kröner Foundation, Volkswagen Foundation, and EU** to build capacity for cancer treatment and strengthen networks across the health-care system. Interdisciplinary areas of research and education have included investigating self-sampled screening methods for cervical cancer in rural communities, training of health-care professionals, and building capacity for molecular analysis of cancers.

We declare no competing interests.

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For more on the characteristics of patients with breast cancer in Ethiopia see *J Multidiscip Healthc* 2020; **13**: 1391–401 and *Clin Breast Cancer* 2021; **21**: e112–19

For more on the Ethiopia national burden of breast cancer see *Oncologist* 2021; **26**: e1009–17

For more on survival for women with breast cancer in rural areas see *Breast Cancer Res Treat* 2018; **170**: 111–18

For more on the cohort of women treated in Addis Ababa see *Int J Cancer* 2014; **135**: 702–09

For more on molecular subtypes of breast cancer in Ethiopia see *BMC Cancer* 2014; **14**: 895

For cervical cancer screening in rural areas see *Cancer Prev Res (Phila)* 2019; **12**: 609–16, *BMC Cancer* 2020; **20**: 563, and *Int J Cancer* 2021; **148**: 723–30



For more on the assessment of oncological interventions see *Breast Cancer Res Treat* 2021; 187: 877–82



Three major milestones have improved capacity to provide breast cancer care: (1) training specialists in country; (2) improving the supply of essential drugs, including chemotherapy; and (3) decentralising diagnostic and treatment centres. First, the multidisciplinary oncology workforce in Ethiopia has grown. For example, since 2013, Oslo University and other Norwegian organisations have established oncology training programmes in Ethiopia for nurses, pharmacists, and physicians. A major achievement was the joint creation of the Clinical Oncology training programme in 2013, at Tikur Anbessa Specialized Hospital in Addis Ababa—the first one in country. To date, 20 clinical oncologists have graduated and currently 35 oncology residents are enrolled. Between 2011 and 2016, the Roche African Research Foundation-COH-Einstein-AAU team supported the training of 19 health-care professionals from Hawassa to provide breast cancer care, including general practitioners, nurses, internists, and clinical pharmacists. Also noteworthy, CHAI provided training for general practitioners and surgeons in 15 sites outside Addis Ababa.

The second major milestone was securing supplies of drugs, such as anthracyclines, cyclophosphamide, taxanes, tamoxifen, aromatase inhibitors, and morphine. Ethiopia now manufactures morphine in country. In 2017, CHAI and ACS launched the Chemotherapy Access Partnership to improve availability of drugs.

The third major milestone was achieved when the MOH supported the expansion of oncology care across the major academic centres outside of Addis Ababa. The rationale was to make diagnostic testing and treatment accessible to patients, which improves early detection and adherence. New buildings have been constructed to install linear accelerators. Six regional academic centres now have at least one clinical oncologist providing consultation services and systemic therapy. In 2020, a large project to decentralise oncology care and expand access to diagnostic services was initiated—the *Else-Kroner Cancer Center Ethiopia: Upgrading and Decentralizing Oncology Services*. Initiatives are designed within the framework of national efforts.

Epidemiological research achievements have also been substantial. The establishment of the Addis Ababa city population-based cancer registry enabled study of the burden of disease over time. Within specific projects of the ACS, the database also allowed for assessment of survival,

other outcomes besides survival (eg, percentage of patients who completed chemotherapy and radiotherapy, and the effectiveness of interventions). Other key studies have focused on better understanding of the treatment-seeking behaviour among women with breast cancer; the quality of life of patients receiving oncology care; the psychosocial impact of breast cancer treatment care on patients; and how to improve adherence to adjuvant treatments, such as tamoxifen. Current projects involve strengthening early detection and accurate, timely diagnosis. The approach is to include information on breast cancer with educational content about other non-communicable diseases and cervical cancer. Initiatives in the community are taking into account ties to traditional healers and the diversity of the population: the many languages, customs, and religious practices. Programmes are being developed to identify breast cancer survivors as advocates to help raise community awareness about early diagnosis and destigmatise fears related to treatments, such as mastectomy.

Progress has been made to establish immunohistochemical staining, which is crucial for understanding breast cancer tumour biology and directly affects clinical decisions. For example, the Armauer-Hansen Research Institute, St Paul's Hospital, and Tikur Anbessa Specialized Hospital in Addis Ababa have made remarkable advances in this area. Scientists from AAU have been active in assessing the needs for building laboratory capacity to share with the MOH. Notably, projects with biobanking began in Tikur Anbessa Specialized Hospital in 2016, enabling graduate students to research the molecular and immunologic landscape of breast cancer.

In another milestone, the Ethiopian Society of Hematology and Oncology held its first national conference in February, 2021, as a professional society. It is composed of clinical oncologists, haematologists, and paediatric oncologists, with more than 50 members. The theme of the multidisciplinary conference was capacity building to improve cancer care in Ethiopia. The conference also featured sessions on the current state of cancer management, oncology training, and research.

As we gained knowledge about the magnitude of breast cancer and the predominant hormone positive phenotype, our international collaborations and capacity building approach prioritised limited resources with the very tangible goal to improve outcomes and survival. Multidisciplinary, international teams span many institutions, pool resources to advance scientific discovery, and included a variety of perspectives. Collectively, we have increased capacity for breast cancer care and built a foundation for future global interdisciplinary work.

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