

Global Strategies to Improve Access to Radiotherapy Services in Oncology

Daniel Mensah *

Department of Radiation Oncology, School of Medicine, Global Health University, Accra, Ghana

DESCRIPTION

Improving access to radiotherapy services in oncology is an urgent global health priority as cancer incidence continues to rise worldwide, particularly in Low- And Middle-Income Countries (LMICs) where resources are scarce and healthcare systems face significant challenges. Radiotherapy is an essential component of cancer treatment, with evidence showing that approximately 50–60% of all cancer patients would benefit from radiotherapy at some point in the course of their disease. Despite this clear clinical benefit, global disparities in access to radiotherapy are profound. High-Income Countries (HICs) boast well-established radiotherapy infrastructure and highly trained personnel, while many LMICs struggle with insufficient machines, limited trained workforce, prohibitive costs, poor maintenance of equipment and geographic barriers that prevent patients from receiving timely and effective treatment. Addressing these inequalities requires coordinated global strategies that encompass policy, financing, technology, training and community engagement.

One fundamental strategy for improving radiotherapy access involves national and regional cancer control planning. Countries must adopt comprehensive cancer control plans that prioritize radiotherapy as a core treatment modality along with surgery and systemic therapy. Effective plans require accurate data on cancer incidence, treatment outcomes and current radiotherapy capacity, yet many LMICs lack reliable cancer registries. Strengthening cancer surveillance systems enables health authorities to accurately forecast radiotherapy needs, advocate for resource allocation and monitor progress. International agencies like the World Health Organization (WHO) and the International Atomic Energy Agency (IAEA) have developed frameworks and tools to assist member states in creating and implementing such plans, emphasizing radiotherapy as a component of universal health coverage.

Financing mechanisms are also central to expanding radiotherapy services, as the high initial cost of purchasing and installing radiotherapy equipment often acts as a formidable barrier. Innovative financing models, including international development partnerships, public-private collaborations and pooled procurement strategies, can reduce costs by achieving

economies of scale. For example, regional consortia might negotiate bulk purchases of linear accelerators or share maintenance contracts to decrease per-unit costs. Governments can also explore health financing reforms such as national insurance schemes that cover radiotherapy services, thereby reducing out-of-pocket expenses for patients. Donor funding and grants from global health organizations can support the initial setup and training phases, but sustainable national budget commitments are necessary to ensure long-term operation and maintenance of radiotherapy facilities.

Workforce development is another critical element in improving access. Radiotherapy delivery depends on a multidisciplinary team that includes radiation oncologists, medical physicists, radiation therapists, dosimetrists and biomedical engineers. Many countries, particularly in sub-Saharan Africa and parts of Asia and Latin America, suffer from a severe shortage of these professionals. To address this, global collaborations for education and training are essential. Partnerships between established cancer centers in high-income countries and emerging programs in LMICs can facilitate knowledge transfer through fellowships, exchange programs and online training platforms. Distance learning and telemedicine can augment local training by providing remote mentorship, case reviews and continuing education. Additionally, strengthening local educational institutions to offer accredited programs in radiotherapy disciplines will build sustainable workforce capacity over time.

Infrastructure development must go hand in hand with human resource training. Beyond the procurement of machines, reliable power supply, radiation shielding, quality assurance systems and regular maintenance are vital to ensure safe and effective radiotherapy delivery. Countries can adopt phased approaches to build capacity, starting with basic external beam radiotherapy services and progressively integrating advanced technologies such as Intensity-Modulated Radiotherapy (IMRT) and image-guided techniques as local expertise and resources grow. International technical support, such as that provided by the Programme of Action for Cancer Therapy (PACT), helps countries assess facility needs, design treatment bunkers and establish safety standards in accordance with international guidelines.

Correspondence to: Daniel Mensah, Department of Radiation Oncology, School of Medicine, Global Health University, Accra, Ghana, E-mail: daniel.mensah@ghu.edu

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Addressing geographic barriers is also important. In many regions, radiotherapy centers are concentrated in urban areas, forcing patients from rural and remote locations to travel long distances, incurring additional costs and delays. Decentralized service delivery, including satellite centers connected to central hubs through tele-oncology networks, can improve access for underserved populations. Mobile radiotherapy units and outreach programs, though logistically complex, offer potential stopgap solutions in areas with extremely limited infrastructure. Community engagement and patient navigation programs help patients understand treatment options, coordinate logistics and access financial support, which can mitigate non-medical barriers to care.

Policy advocacy at national and international levels remains a cornerstone strategy. Civil society organizations, cancer survivor groups and professional societies must advocate for radiotherapy to be recognized as an essential health service. Integration of radiotherapy access indicators into global health monitoring frameworks, such as the Sustainable Development Goals, would

elevate the issue within the global health agenda and mobilize political commitment. Furthermore, research into cost-effective radiotherapy models, implementation science and outcomes in resource-limited settings can generate evidence to guide policymakers and funders on optimal strategies.

CONCLUSION

In conclusion, improving access to radiotherapy services in oncology is a multifaceted challenge that demands global cooperation and local commitment. Strategies involving comprehensive cancer control planning, innovative financing, workforce development, infrastructure investment, decentralized service models and strong policy advocacy collectively pave the way toward equitable access. As cancer burden intensifies globally, particularly in LMICs, these concerted efforts are critical not only to save lives but also to build resilient health systems capable of delivering high-quality cancer care for all.