

VIEWPOINT

Framing New Models to Expand Access to Radiotherapy in Limited Resource Settings—Social Entrepreneurship

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In recent years, global oncology experts have considered potential models to develop radiotherapy services in low- and middle-income countries (LMICs) amid rising need.¹ Radiotherapy is required for definitive and palliative treatment in 50% to 70% of cancer cases in LMICs. While radiotherapy as a modality is less expensive than surgery and systemic therapies for cancer, it remains poorly accessible. Establishing a radiation therapy center is a capital-intensive process that requires detailed strategic and operational planning, quality assurance, workforce development, and structural investments that may exceed the financial capacity of health ministries in some LMICs.¹ Nonetheless, advancements in global oncology are possible through active diasporic participation and investment in radiotherapy infrastructure, as exemplified by a cancer center in Ethiopia built by members of the Ethiopian-American Doctors Group.² This Viewpoint responds to proposals that have become apposite to the growth in diasporans' remittance to LMICs in recent years. We discuss the viable diasporic engagement as a model for social entrepreneurship yet to be explored in the discourse on expanding global access to radiotherapy.

How to Spur Social Enterprises for Global Radiotherapy Development

Social entrepreneurs strive to create a mission-associated effect by which wealth creation is not a central criterion but rather a means toward sustainability and scalability. It seems daring to frame LMICs as favorable investment opportunities where monetary resources and returns are traditionally scarce. Engaging the diasporans in the LMIC health sector has been debated as a means to spur relevant regional health research, improve health outcomes, and economically transform regions. The LMIC diasporans often retain community ties, send remittance home, promote trade and foreign direct investment, create local businesses in the region, spur entrepreneurship, and transfer new knowledge and skills.³ According to the World Bank Migration and Remittances Factsheet, almost 80% of global remittance totaling US \$689 billion in 2018 went to LMICs.⁴ This economic transfer is a lifeline for millions of extended families in LMICs but is used mainly for short-term needs rather than capital intensive projects, such as radiotherapy.

Given the growing size of remittance, LMIC governments are interested in using this channel to foster priority projects. We propose that the 4-core model for diasporic engagement used by the International Diaspora Engagement Alliance could substantively expand radiotherapy services in LMICs. These models include investment and entrepreneurship, innovation, philanthropy, and/or volunteerism.

Investment and Entrepreneurship

As LMICs' public health systems strain to deliver prompt and effective cancer care under many barriers, an efficiently driven entrepreneurial model could scale radiotherapy within the current health care delivery systems. Such an approach would supplement existing governmental infrastructures and pioneer a nation's radiotherapy services. The goal of entrepreneurs is not necessarily monetary profit, as differences exist between social and traditional (commercial) entrepreneurship. Although both solve social problems, such as improving access to oncologic services, they differ in their primary goals. In this context, the traditional entrepreneur is one motivated by profit, whereas the social radiation oncology entrepreneur applies the same investment approach with the primary aim to improve radiotherapy access with or without monetary benefit.⁵ An entrepreneurial model for radiation oncology can be differentiated from current nongovernmental organization-modeled global oncology initiatives by independence from charity donations, although it may begin with one. Instead, it aims for self-sufficiency through adopting a viable business model, including investments and an embrace of calculated financial risks.

Innovative funding models for the social entrepreneurs in health care that are relevant to global radiation oncology include impact investments and social impact bonds (SIBs), also known as "pay for success" bonds. Impact investors are stakeholders who support social enterprises by profitable or even investments. The SIBs are contract bonds in which the public sector makes a commitment to pay the financier a predefined sum for substantial improvement in the social outcomes for a defined population. Social investors receive their profits from the government in addition to the initial capital invested after the aim is achieved. The SIBs could lower the risk associated with government spending to improve radiotherapy access, as the model forces investors to focus on specific outcomes, such as the sustainability of the facility, population access to treatment, and quality of care.⁶ Financiers include international organizations, companies, endowment bodies, and the LMIC diasporans. Emphasis has been placed on the LMIC diaspora social impact bond for developing radiotherapy infrastructure.^{1,2} Compared with typical international investors, diaspora investors are less risk-averse to invest in their country of origin given their cultural attachment, have a better knowledge of the business terrain, and have a decreased sensitivity to exchange-rate risks because of financial obligations that can be satisfied in local currency.

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Innovations

Diasporans are well poised to innovate different components of the radiotherapy business models in unconventional ways, as they can identify radiotherapy technologies and adapt them to the economic climate of their country. An example is the use of information communication technology for remote treatment planning, which can substantially reduce the cost of radiotherapy investment, assist staff training in LMICs, and mitigate the workforce shortage.² Currently, US-based Sub-Saharan Africa diasporans are collaborating with the US-based Quality Assurance and Review Center (QARC) to extend QARC support for clinical trials to radiotherapy centers in Africa.⁷ While QARC has provided radiation therapy quality assurance services in the United States since 1980, its potential to aid workforce training, treatment planning, and clinical trials in low-resource countries was identified at the diaspora engagement session of a Global Health Catalyst summit and has since become a theme at the African Organization for Research and Training in Cancer workshops.⁷ Other technological innovations that stirred the interest of diasporans at the Global Health Catalyst summit included an ongoing development of solar-powered linear accelerators, which might better suit LMICs given regions with unstable electricity.

Philanthropy or Volunteerism

Global oncology is replete with diasporans eager to volunteer in cancer advocacy, cancer education and awareness, cancer prevention,

crowdfunding research, online training, and telemedicine. Many US training programs have responded to the growing interest in global oncology by offering international training opportunities.⁸ The American Society of Radiation Oncology, in conjunction with the Association of Residents in Radiation Oncology and the American College of Radiology, promotes international outreach by sponsoring travel grants. Annually, grants are awarded to residents desiring to spend at least 1 month assisting health care in an LMIC. Similarly, the Canadian Association of Radiation Oncology has recently launched a global health scholarship for residents and fellows interested in clinical or research elective in an LMIC.⁸ These initiatives have the potential to engage diasporans, address the workforce gap, and lead training of native radiation oncologists, medical physicists, and radiation therapists.

The successful social entrepreneur ensures an appropriate assessment of the needs and values of the people being served and the communities in which they operate. The diasporans of LMICs globally are well positioned to facilitate entrepreneurial efforts. In conjunction, leaders of these efforts should be encouraged to explore a complete resource spectrum from pure philanthropy to profit-yielding methods of the business sector. In addressing the global burden of cancer, the new model leverages limited resources by drawing in partners and collaboration along shared incentives. Ultimately, the vision and determination of individuals will serve as the building blocks for the change desired in global oncology equity.

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