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Commentary

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Overcoming Cancer Disparities Globally: Contributions of Norman Coleman

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Abstract

Dr. C. Norman Coleman, a distinguished cancer specialist and researcher, brought a passion for addressing health disparities to all of his roles from being on the faculty as a Radiation Oncologist at Stanford, as Chair of the Joint Center for Radiation Oncology at Harvard, as Associate Director of the Radiation Research Program at the U.S. National Cancer Institute, as Senior Medical Advisor to the US Government Office of the Assistant Secretary for Preparedness and Response, and as co-founder and Senior Scientific Officer for the International Cancer Expert Corps. With his passing earlier this year, this commentary by his colleagues at the International Cancer Expert Corps presents an overview of his many and significant contributions to addressing cancer disparities globally.

Norman Coleman was a man of many interests and talents who was dedicated to addressing cancer disparities globally and gifted at motivating others to join forces towards this goal. His training in internal medicine, medical oncology, and radiation oncology at the University of California San Francisco, the US National Institutes of Health (NIH), and Stanford, respectively, allowed him to understand medicine broadly and to make a measurable impact in so many areas in oncology. He is well known for having been Chair of the Harvard Joint Center for Radiation Therapy, a Senior Investigator in the National Cancer Institute (NCI) Radiation Oncology Branch, and Associate Director of the NCI Radiation Research Program. He also led successful research laboratories at Harvard and NIH.

However, one area that was of enormous importance to Norm, from early in his career, was a long-standing interest in the delivery of high-quality medical care to all people in the US as well as world-wide. He pursued these goals throughout his career. For instance, while at Stanford, Norm helped a cancer program in the East Bay where local physicians wanted to gain expertise for their cancer patients and while at Harvard, he helped establish satellite Radiation Therapy (RT) centers to serve patients in communities well outside the city of Boston.

This interest in expansion of a university's resources to outlying communities is not unusual. But, typical of Norm, he took this concept much further. When he arrived at the NCI, he worked with others to establish in 2002 the Cancer Disparities Research Partnership Program (CDRP), which would enhance access to state-of-the-art clinical trials to underserved populations at 6 regional centers across the country.[1] Working with Dan Petereit at the Rapid City Regional Cancer Care Institute, Rapid City, South Dakota, the Walking Forward program was established as 1 of the 6 CDRP sites to address barriers to cancer screening and care among American Indian (AI) populations in the Northern Plains. RT access for the AI/Alaska Native (AI/AN) population was known to be especially poor. The Walking Forward program resulted in patients presenting with earlier stages of disease and experiencing higher cure rates.[2] The CDRP program, which continues today, has successfully employed patient navigation for treatment and enrolled large numbers of patients in clinical trials,[3] resulting in a significant expansion of clinical trials to reach the populations served by these centers.[4]

In addition to addressing the lack of access by underserved populations in the US, Norm recognized that the lack of high-quality cancer care for disadvantaged populations globally, especially in Low- and Middle-Income Countries (LMICs), was a severe multi-faceted and complex problem. There is a shortfall of adequately trained physicians and facilities with the necessary equipment, and when there is equipment, there is limited to no capability to repair equipment such as linear accelerators. There are also large segments of the population who are not able to access RT treatment for reasons of expense, travel distance, or overwhelming patient volume.

To expand global impact to support enhanced cancer care programs in LMICs, in 2013, Norm co-founded the Washington DC-based International Cancer Expert Corps (ICEC) as a global NGO with an aim to improve the quality of life and reduce cancer mortality for people in LMICs, as well as for indigenous and underserved populations in high-income countries (HICs),[5] with an emphasis on the delivery of RT services. It would work to address the complex and multi-faceted set of issues noted as barriers.

Starting from the outset, ICEC assembled a group of experts from a wide variety of disciplines and cancer centers to establish sustainable cancer treatment programs in LMICs and in underserved regions of HICs through research, implementation, ongoing adaptation, and sharing of ideas with local champions who are mentored and guided by global experts through an established exponentially expanding trust-based network. Initially outlined in *Science, Service and Society* in 2014,[6] ICEC's ideas have been conceptualized and published in the peer-reviewed literature to make our information and approaches better known and to make them transparent, which is critical for trust-based partnerships.

At an international conference in 2014, there was a presentation by ICEC on its goals and objectives that included a discussion on the shortage and poor performance of currently available medical linear accelerators (LINAC) in the challenging environment found in many LMICs. This led to an offer of support from physicist investigators at the European Organization for Nuclear Research (CERN) in Geneva, Switzerland to help develop a LINAC that would be relatively inexpensive, have capabilities of delivering sophisticated radiation treatments, and would be relatively easy and inexpensive to maintain. Workshops sponsored by ICEC and hosted by CERN were held in 2016 and 2017 to explore development of such an accelerator. The UK Science and Technologies Facilities Council (STFC) provided financial support for the 2017 workshop that made it possible to bring physicians and medical physicists from Africa to give firsthand information on the status of RT in their countries. ICEC co-sponsored, with financial support from STFC, additional workshops in the UK in 2018 and in Botswana in 2019, also attended by physicians and medical physicists from several African countries.

To supplement the information provided by presentations and discussions at the workshops, the ***I**nnovative **T**echnologies towards building **A**ffordable and equitable global **R**adiotherapy capacity (ITAR)* study funded by STFC conducted a survey of the status of radiation oncology in all 28 of the African countries that in 2022 had the capacity to treat cancer patients with medical linear accelerators.[7] The ability to conduct this survey reflected the trusted network that had been established by ICEC and that network remains available for additional research. The data from these surveys are critical to the development of the design considerations for a LINAC for LMICs and informed the ITAR project led by Lancaster University.[8–10]

The ongoing effort to develop a new generation medical LINAC is just one small part of the solution to the entire problem of improving the level of cancer care in LMICs and in underserved regions in HICs. In keeping with its original charge, ICEC has a growing program of education, training, and mentoring that is needed to make the transition to higher levels of care in those underserved regions. Examples of these efforts include working with physicians and medical physicists in Tanzania at the Bugando Medical Center in collaboration with Duke University. We are developing similar mentoring programs with physicians in Moldova. We expect these programs to accelerate as needs are defined and additional relationships are established. We also combined efforts with Dr. Patricia Hardenbergh a radiation oncology mentee of Norm's, who founded Chartrounds.org to provide educational programs in the US, Africa, and India via an internet-based platform of lectures and peer review by disease site specialists.

Health care systems in LMICs need to be prepared to address a broad array of population health challenges, but the focus globally for several decades has been mainly on infectious diseases (IDs). While the investment in IDs is necessary and addressing devastating epidemics and pandemics is essential, the burden of non-communicable diseases (NCDs) – cardiovascular, respiratory, oncologic, and metabolic diseases – is escalating as an additional concern of epidemic proportions. ICEC sees an opportunity to address IDs and NCDs jointly through a systems approach called Flex-competence©, which requires the construction of multi-purpose health care systems that have the organizational capacity and expertise not only for complex management of IDs and NCDs but also to address essential maternal, child, and general health care and disease prevention.[11]

Informed by Norm's work in cancer, global health and emergency preparedness for the US Government's Administration for Strategic Preparedness and Response, the Flex-competence© model has the flexibility to rapidly address the surge of an infectious disease pandemic, a natural or industrial disaster, or a terrorist incident. It can also be incorporated into existing capacity building with a commitment for planning and managing education, resource investment, and partnership development. This concept is being embraced to link the efforts of the global health and biosecurity communities in a more collaborative and systematic manner beyond what are currently often disease-specific constraints.

Summary

ICEC understands the importance of integrating wisdom and experience which for global oncology, is built on decades-long partnerships that bring together generations of mentor-mentees and provide a meaningful pathway for young mentees later in their careers to act as mentors and advisors. With senior people having inspired creative successes, this paradigm welcomes a wide range of expertise to help inspire, support, sustain, and empower new generations of scientists and health care workers. With the introduction of new technology, remote communications, and artificial intelligence to a young generation attuned to global problems, it isn't overly optimistic to believe we will see dramatic improvement of global cancer care over the next 2-3 decades. The more individuals who are well trained, the more people will be available to provide assistance to others, sharing solutions and sustaining the effort.

The vision that inspired Norm Coleman to start ICEC is still with us. With Norm's passing, we are pushed more to succeed in order to live up to Norm's expectations. It takes a visionary to produce major change. Norm was that visionary, and we plan to continue ICEC's work as he would wish.

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