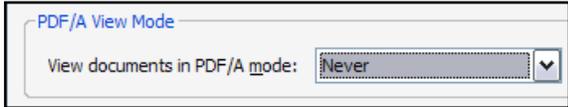
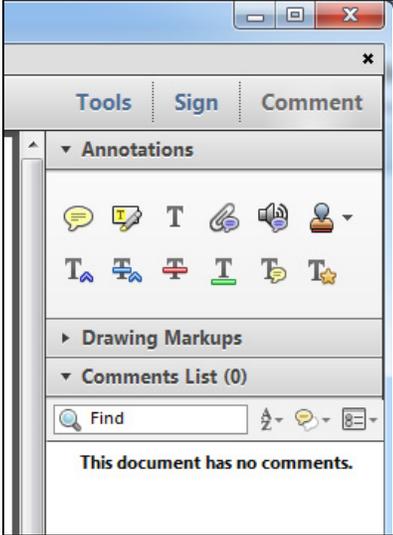


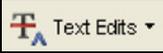
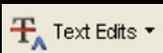
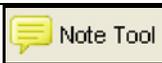
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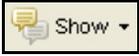
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EDITORIAL

Bringing Cancer Care to the Underserved Globally: A Challenging Problem for Which Radiation Oncology Can Pioneer Novel SolutionsC. Norman Coleman, MD,¹ on behalf of many others²^{Q1} *The International Cancer Expert Corps, Chevy Chase, Maryland and Wilmington, Delaware*

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There are times in society in which problems with the descriptor “too hard to solve” can no longer be tolerated. This issue of the *Journal* contains 9 papers and a provocative editorial by Editor-in-Chief Anthony Zietman addressing radiation therapy for underserved nations. The need for attention to the emerging burden of non-communicable diseases (NCDs) in Low- and Lower-Middle Income Countries³ (LMICs) was raised by the 2011 United Nations Declaration (1) and in a variety of recent publications (2-4). The challenge is a complex set of problems that requires a systems approach (5). Indeed, Love, Ginsburg, and I have proposed a framework called “Public Health Oncology” (6), which discusses the gaps and the interrelated social, economic, gender discrimination, corruption, and other issues that must be considered so as to be able to provide affordable cancer care in LMICs, as emphasized by Kerr and Midgley (7). The essence of the public health oncology concept is that there are clear mandates grounded in science for what interventions need to be addressed. These are service and research issues in which radiation oncology can have a key role.

Data from the International Atomic Energy Agency (IAEA) documents the dramatic shortage of radiation therapy capacity in LMICs (8). As presented in the

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accompanying papers, there is a serious interest in addressing this crisis across the spectrum of radiation oncology professional age and experience groups. The professional oncology societies such as ASTRO, ASCO, and ARRO⁴ have programs that emphasize education and “twinning” (9) between centers in resource-rich and resource-poor countries. There is much good will and many good intentions upon which to build.

The team of radiation oncology providers recognizes the curative potential of radiation therapy even in the advanced stages of disease that are frequently encountered in LMICs. Our field has developed hypofractionated radiation therapy based on improved imaging, technical feasibility, biological properties, and patient convenience. In settings where geographic access and limited treatment capacity are dominant problems, hypofractionation would be very useful for palliative and curative treatment, but methods and research are needed to do so with limited imaging and treatment technology. Patients with locally advanced cancers of the cervix, head and neck, lung, breast, and gastrointestinal tract are generally treated with combined modality therapies, including time-honored treatments using drugs that are much more affordable than the newer molecular-targeted agents. Combined modality therapy is

² Richard R. Love provided editorial advice. The list of individuals pertaining to the phrase “on behalf of many others” is on a manuscript under review.

³ WHO. How we classify countries. Available at: <http://data-worldbank.org/about/country-classifications>.

⁴ American Society of Radiation Oncology (ASTRO), American Society of Clinical Oncology (ASCO), Association of Residents in Radiation Oncology (ARRO).

administered by radiation and medical oncology teams and/or by clinical oncologists trained in both. So, worldwide our specialty has the knowledge and ability to bring cancer care to LMICs as part of an integrated public health approach (6).

Providing radiation equipment, such as functional units that are being replaced by newer technology and/or new units is one useful contribution, with Radiating Hope having that as a goal (10). There is a global shortage of ~5000 or more treatment machines (8), with the details of the technology gap now being examined by the Union for International Cancer Control (UICC) under the presidency of Dr. Mary Gospodarowicz. This is a huge opportunity for innovative technology and economic and business models. There is a major shortage in qualified personnel to deliver care and to service the machines. Well-trained radiation oncologists from LMICs have worldwide opportunities outside their home country; so can the local circumstances be changed such that they are part of a potentially transformational worldwide effort making it compelling for them to stay in country and help serve the underserved?

Although facilities, equipment, supplies and infrastructure are, of course, critical to cancer care, what is essential to their effective use is a capable workforce. To help address the need for a sustainable workforce, the International Cancer Expert Corps (ICEC) is now being established as a multi-national collaborative effort. The ICEC aims to establish a mentoring network of cancer professionals who will work with local and regional in-country groups and, along with required local investment, establish ICEC centers to develop and sustain expertise for cancer care (11). It is an active work in progress aiming for a rollout in 2014, with some details on the nascent website and more to follow. Among the underlying principles are the following:

1. Sustainability is better ensured with a critical mass of talent and projects. Currently, institution-to-institution projects are often dependent on the perseverance and dedication of a few persons or often just 1 person. Having a number of individuals on these projects work together, share ideas, and build expert teams to address critical social, economic, and research issues can provide both the necessary breadth of expertise and also a sufficient number of persons to allow for transitions as individual participants come and go.
2. Mentoring and person-to-person partnerships are a key to success that can help sustain the team working in the LMIC ICEC center. Much of the mentor-mentee educational relationship can be in weekly or biweekly case- and guideline-based conferences, with only limited travel necessary.
3. Service to the underserved through mentoring, teaching, and direct care provide extraordinary opportunities to learn for both the mentor and mentee. Nigel Crisp has

pointed this out at the global level in *Turning the World Upside Down* (12). At the local level, the care givers in LMICs have much to teach about compassion, courage, and dedication to mission, as related by Julie Livingston in *Improvising Medicine* (13).

4. Service to the underserved must be valued as an integral part of a career, not as a vacation add-on or as an activity considered a detriment to academic progress. This means establishing a bona fide career path including trainee, mid-career, senior mentor, and retiree, the latter expertise now often lost to retirement.

Although expertise is needed across the cancer care spectrum, addressing the global cancer crisis is an extraordinary opportunity for radiation oncology, because radiation is a very cost-effective treatment modality and will be the backbone of curative LMIC cancer care. Multi-modality oncology expertise can build from radiation oncology's technological and information technology expertise, adding on imaging, pathology, and guideline/protocol-based teaching. Because of the relatively small size of the field, we already have close international collaborations and networks. We can partner with industry to pilot new treatment technology and technological approaches to remote cancer medicine, for example, a pioneering start-up project Amader Gram in Bangladesh (<http://agbreastcare.org/>) that would be a great "laboratory" for new models, ideas, and treatment. Notably, we can also address "LMIC" issues domestically with programs for the rural underserved as pioneered at part of NCI's Cancer Disparities Research Partnership program (14).

Health care economics, research grant support, and career paths are rapidly changing. Although research, teaching, and patient care remain critical parts of an oncology career, there is a need to focus on greater societal issues (15, 16). Whether we do this through professional societies, institutional twinning, and/or broad international collaboration, as proposed by ICEC, radiation oncology has the opportunity to be a leader by taking on LMIC challenges, expanding our personal and specialty's horizons, and helping to bring altruistic service back as an integral part of health care careers.

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