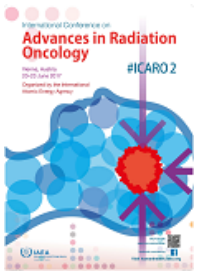

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Expertise mobilization: addressing the medical physics gap

Friday, 23 June 2017 10:30 (5 minutes)

The growing disparity in Medical Physics needs between high income countries (HICs) and low-to-middle income countries (LMICs) is especially evident with the growing incidence of cancer in LMICs. Recent Lancet Oncology Commission projections indicate that an additional 22,000 Medical Physicists (MPs) will be required by 2035 to provide uniform access to radiation therapy globally. The following highlight important factors in closing this Medical Physics gap:

- Local desire in LMICs for Medical Physics mobilization
- Basic infrastructure allowing Medical Physics mobilization
- Resources available for Medical Physics mobilization
- Local individuals seeking Medical Physics expertise advancement
- Collaboration and partnering with enriching organizations
- Clear understanding by mentors and collaborating organizations of local circumstances

Regarding formal education, the general consensus is that at minimum a Master's degree along with a 2-year "on-the-job"residency is required to become a clinically qualified MP. While in many LMIC jurisdictions such education and training may be difficult to obtain locally, it should be obtained as close to home as possible. With 55 countries having no radiation therapy and, by implication, no capacity to train MPs, outside partnering support will be required. Partnering can range from local on-site visits by international experts for lecturing to "hands-on"guidance for practical clinical applications. It could also consist of sending local LMIC MPs abroad; however, this has the risk of contributing to the "brain drain". Information and communication technologies (ICTs) are very useful tools for global interactions for the collaborating individuals.

Multiple (>35) Medical Physics and Oncology related organizations are involved in providing support to enhance cancer therapy in LMICs, especially as related to education, training and human resource development. To avoid redundancy and to ensure efficiency, the enriching organizations need to develop communication approaches that allow clear indications of activities planned or in progress in LMIC contexts. The collation and communication of these activities remains an on-going challenge.

MPs at all levels of their careers might be able to offer some partnering support. This may be especially relevant for retirees who have more free time available to share their well-honed skills. For those in regular employ, they could use (mini-)sabbaticals or even parts of their vacations for international activities. ICTs are an excellent resource for providing continued interactivity. For those in training or early in their careers, especially if they have global health interests, international collaborations could provide experiential opportunities. In all situations, except for the retirees, there would be a tremendous added incentive and benefit if their employers, i.e., upper level management, were to encourage this type of altruistic outreach. The benefits to involved individuals and institutions are substantial. However, this does require philosophical support from the employer for this type of outreach activity. Encouragement of employers by the Medical Physics community will increase employer support for outreach activity. While there are already examples of partnering institutions with LMIC environments, these represent a very small minority.

In summary, the mobilization of Medical Physics expertise in LMICs requires multiple approaches, which can be supported by HIC environments. Coordination of the multiple organizations and individuals supporting LMIC activities remains an on-going challenge, which could be aided by the resolve of one of the major international organizations. Additional support would be greatly aided if many of the cancer therapy institutions in HIC contexts would include a component of international outreach as a truly supported activity.

Overt attention with structured and altruistic actions by HIC contexts will help make inroads into the LMIC needs. Clear options throughout career structures in support of global health considerations combined with strong partnerships between interested parties in HICs and LMICs will enhance the development of safe and resource-appropriate strategies for advancing Medical Physics capabilities.

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