IMPACTING THE SAFETY AND QUALITY OF CANCER CARE IN THE GLOBAL SETTING: AAPM AND THE ASSOCIATION OF MEDICAL PHYSICISTS IN RUSSIA

Eric Ford (Seattle, USA), Emilie Soisson (Montreal, Canada)

Совместная деятельность в области образования Американской ассоциации физиков в медицине и Ассоциации медицинских физиков России

От редакции: Ниже публикуется статья статья членов AAPM E.Ford and E. Soisson, участвовавших в чтении лекций на курсах повышения квалификации медицинских физиков "Медицинская физика и лучевая терапия", которые проходили 5–31 октября 2015 г. в РОНЦ им. Н.Н. Блохина. Мы благодарим авторов за прекрасные лекции, посвященные новым методикам лучевой терапии (IMRT, IGRT), и лестные отзывы об образовательной деятельности АМФР.

"In your life you occasionally have an opportunity where an enormously complicated problem is put on your doorstep and if you don't take advantage of that opportunity your window may close." – Dr. Norm Coleman, Addressing the role of medical physicists in addressing the global gap in cancer care [1], AAPM Annual Meeting 2015.

In October we travelled to Moscow to participate in a week-long training program for medical physicists sponsored by AAPM and the AMPR (Association for Medical Physicists in Russia). The activity is part of the educational efforts of the WGN-IMP workgroup within AAPM (for more information on the workgroup and its activities see the sidebar below). For the last two years AAPM physicists have been participating in this program: Yakov Pipman in 2013, and Dan Bourland and Charles Mayo in 2014. It was our privilege to participate this year.

These training activities serve an important role in improving the safety and quality of care in developing regions. In the remote regions of Russia and neighboring countries access to cancer care is a major challenge. In fact, in resource limited settings, cancer has now become the major killer due in part to the large reductions in the burden of communicable diseases (think Bill and Melinda Gates Foundation). The enormous gap in cancer care at the global level was highlighted by Dr. Coleman's AAPM presentation (quoted above and available online [1]) and also a recent report from

Eric Ford and Emilie Soisson

the Global Task Force on Radiotherapy for Cancer Control [2]. The AAPM/AMPR program is one concrete effort to improve access to quality radiotherapy care.

The AMPR training program draws medical physicists from all over the Commonwealth of Independent States (former Soviet Republics) for a four week course on the technical aspects of radiotherapy. The course is hosted by the N.N. Blokhin Russia Cancer Research Center (RCRC) in Moscow, Russia. Additional courses are offered along with the IAEA. Blokhin is the largest cancer center in Russia and home base for the AMPR main offices. Our contribution to this course consisted of a week of lectures focusing on IMRT and IGRT techniques. Our lectures were presented in the final week of the course where we contributed two thirds of the lectures (17 lectures in total; with live translation into Russian) and the rest was delivered by members of the faculty at the Blokhin training center. The lectures were coupled to a practical training component organized by the faculty at Blokhin. We were interested to note the value that the Russian faculty place on the educational offerings provided by AAPM. There were numerous references throughout the week to AAPM task group reports, several of which have been translated to Russian.

Students came mainly from remote areas of Russia, Tajikistan, Armenia, Uzbekistan and other countries. Many radiotherapy centers in these regions are going through a period of extremely rapid modernization. We met several students who were working at centers with Cobalt machines and taking the course in preparation for an influx of modern radiotherapy equipment with state of the art image guidance and IMRT. Two students were working at a center with a single cobalt machine with only 2D planning (wire contours) and plan to move directly to modern state-of-the-art linear accelerators in the coming years. If you think about this, most of us rolled out these features gradually over a few decades, it would be quite daunting to introduce linear accelerators, MLCs, IMRT, VMAT, image guidance, etc. all at the same time. In this setting, education plays a key role.

We had many lively and interesting discussions with the students, stimulated by the lecture material. The students expressed a keen interest in image-guided techniques. Some of these we might not have anticipated. For example, we fielded many questions about the clinical use of in-room ultrasound which is arguably a thing of the past in many centers here, but may be reasonable choice in an environment where on-board imaging is not yet available. On the opposite end of the spectrum there was an active interest in emerging technologies like Adaptive Radiotherapy and MR-guided Radiotherapy. The students valued the opportunity to learn about these techniques and anticipate how they might be incorporated into clinical practice. On the practical end, students had many questions related to QA techniques: What EPID-based solutions are available for IMRT QA? What are the best practices for the QA of 4D-CT devices? How can the accuracy of a linac isocenter be verified? These questions are, of course, crucial to safe and effective care. And the choice of QA devices is especially critical in a resource-constrained environment given the expensive involved. A final aspect of the course was education on quality improvement techniques. This included Failure Mode and Effects Analysis, ala AAPM Task Group-100, and other techniques. Students gained experience with these techniques through a half-day hands-on workshop which was very well received.

While at the training center we had the pleasure of meeting Dr. Valeriy Kostylev, one of Russia's most well-known Medical Physicist and one of the leaders behind the AMPR training program. Dr. Kostylev founded the APMR in 1993 and in 2013 was recognized by the International Association of Medical Physicists, IOMP, as one of "50 Outstanding Medical Physicists in the last 50 years". He is particularly proud of the AMPR's joint courses with both the IAEA and AAPM and their outreach to physicists throughout the region. We were honored to have the opportunity to meet with him and hear some of his experiences.

Overall, the course required a substantial effort but was an extremely rewarding experience for both of us. Despite the language barrier, students were interested an engaged throughout the course. We were treated extremely well by our Russian hosts and were thanked many times for our contributions to the course material and our willingness to come to Russia as educators. Students were enthusiastic in accompanying us sightseeing after class and introduced us to Russian culture and cuisine. We both developed a taste for borscht! We look forward to seeing the relationship between AAPM and AMPR thrive. AAPM has a role to play in supporting this organization in its continued efforts to develop and promote quality radiotherapy throughout Russia and the region.

Global oncology: How to contribute

There are a number of structured programs focused on global oncology where medical physicists can contribute in meaningful ways. Opportunities are available both in therapy and diagnostic physics. Below is a list of a few specific organizations. Most of these are newly-formed and volunteer run. Contribute to these organizations either by signing up as a volunteer expert, donating time and/or money, or simply by becoming more aware of the needs at an international level.

- ✓ *International Cancer Experts Core.* This US-based NGO has the goal of developing a mentoring network of professionals. The model is core of mentors who team up with centers in developing countries through a program of structured mentorship. This is organized through a system of regional hubs both domestically and internationally. For more information see: iceccancer.org.
- ✓ *Radiating Hope.* This nonprofit 501(c)(3) organization seeks to partner with local clinics, provide donated equipment and develop expertise through training and mentorship. It combines mountaineering with global oncology action in a unique way. For more information see: radiatinghope.org.
- ✓ *Medical Physicists Without Borders.* This mission of this newly-formed organization is to support activities which will yield effective and safe use of physics and technologies especially in low- and middle-income countries. Being very new, it is now incorporated in Canada and seeking incorporation in the US. Formal application for status as a non-profit, charitable organization in both Canada and the US is in progress. It has developed a memorandum of understanding with the AAPM largely to clarify communication and cooperation strategies. Various potential projects are under discussion. Soon it will send out a call for membership. For more information see: mpwb.org.

References

1. Dr. Coleman's presentation at AAPM 2015 is available on the virtual library at: http://aapm.org/education/VL/vl.asp?id=4408.
2. Borras C. et al. Medical Physics Challenges for Implementation of New Technologies in External Beam Radiotherapy // Med. Phys. 2012. Vol. 39, P. 3955.
3. Mahesh M. et al. Education of Radiotherapy Physicists // Med. Phys. 2014. Vol. 41, P. 454.
4. Borras C. Joint AAPM/SEFM/AMPR Educational Workshop on "Education of Radiotherapy Physicists" // AAPM Newsletter, 2014. Vol. 39. № 6. P. 48–49.
5. Atun R., Jaffray D.A., Barton M.B. et al. Expanding global access to radiotherapy // Lancet Oncol. 2015. Vol. 16. № 10. P. 1153–1186.