




Improving Nuclear Medicine and Radiation Oncology Services in the Region through E-education

The internet has created a revolution in distance learning and training, and through the RCA e-learning is being applied with immense success to the education and training of radiation oncologists and nuclear medicine practitioners globally. Two projects have led the way - Distance Assisted Training for Nuclear Medicine Professionals (DAT), and the Applied Sciences of Oncology Course (ASOC).

Distance Assisted Training for Nuclear Medicine Professionals (DAT)

Recent years have witnessed remarkable development in the field of nuclear medicine-hybrid imaging techniques, novel analysis methods, and computed tomography procedures around the world. Similarly, there has been an attendant growth in the awareness that the safe management and use of radiation in medicine depends on the presence of well-trained medical professionals. Training of Nuclear Medicine (NM) Professionals is a continually evolving process, which needs to meet changing requirements in the workforce. Even where established higher education courses are available, these do not necessarily cater for the practical component of training and the ever-changing technology that is central to medical imaging. Continuing professional development (CPD) is encouraged and enforced by many societies and professional organizations, but is at times unstructured. In many parts of the world, however, even the basic training available to practitioners lags behind, and CPD activity is still in its infancy.

Official Launch of the Online Platform of the Distance-Assisted Tranining On-Line (DATOL) Programme through the Human Health Campus, September 2014

In response to this situation a series of Regional Cooperative Agreement (RCA) projects on Distance Assisted Training (DAT) for Nuclear Medicine Professionals were implemented. Originally initiated in the '90s through Australian Government funding and administered through the Australian developers under the auspices of the IAEA and the RCA, the projects have resulted in the development of a set of training modules which are designed to be used under direct supervision in the workplace and delivered through means of distance learning techniques such as e-learning. DAT has been utilised widely in the Asia-Pacific, Latin America and parts of Africa and Europe. The programme continues to evolve and has been available on-line since 2009. In total more than 700 off-line and on-line students have been fully assessed since the program first commenced.

DAT was initially designed to improve competence of NM technologists by enhancing basic knowledge and practical skills. The original goals were to provide cost-effective, sustainable training in countries with little or no training available and to establish an assessed common basic standard of training. However, with the recent addition of materials including SPECT/CT and PET/CT and on-line accessibility, the program now also has appeal to other NM professional groups, providing an opportunity to enhance skills through a work-integrated problem-solving approach, well-suited to CPD activity.

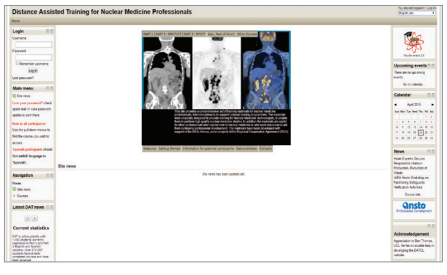
Extent of DATOL Worldwide

The delivery mechanism of DAT has progressed from traditional paper-based publishing and postal delivery, to provision in electronic form on CD-ROM and more recently through internet access. DAT on-line (DATOL, www.datnmt.org) has provided the opportunity to include so much more with image manipulation, interactive teaching tools, visual demonstrations, improved communication, student support capabilities and enhanced programme management, which serve to strengthen understanding of the field. The DATOL materials have been organised in a structured course that offers professionally-orientated education and training, designed specifically to enhance participants' skills in nuclear medicine practice. The comprehensive syllabus supports over 39 subjects, delivered in 16 modules.

In order to ensure that the correct skills are cultivated by participants, the distance-assisted training platform employs assessment procedures which are standardized regionally and inter-regionally. Each of the subjects includes a set of exercises, the results of which are recorded to verify course completion, on-line assignments and final examination questions as well as assessment of clinical practical skills.

The Online Training Material DATOL is now available through the IAEA CPL4NET platform, which provides Open Access without assignment and Instructor-led Access with assignment and assessment.

It is suitable for personal study, continuous professional development, formal vocational training and for adoption by universities and colleges for nuclear medicine professionals, and is now fully updated and available through the IAEA Human Health Campus (HHC).



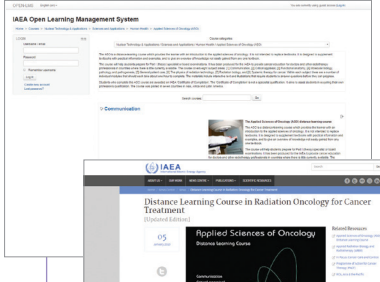
Webpage of DATOL

The Applied Sciences of Oncology Course (ASOC)

There is a worldwide shortage of cancer services, particularly in the developing countries. As infectious diseases decline, the significance of cancer as a cause of morbidity and mortality in developing countries will increase over time. It is estimated that there will be over 24 million new cases of cancer by 2035. At least half of these cases would benefit from radiotherapy.

Imaging being used in the radiotherapeutic management of a cancer patient

In 1999, the Government Parties of the RCA identified the bottleneck to radiation treatment for cancer in the region as a lack of adequately trained workforce rather than a lack of radiotherapy equipment. To address this bottleneck the RCA initiated a distance-learning program in the Applied Sciences of Radiation Oncology to assist in training medical practitioners from the region up to the level of professional college Part 1 (theory).



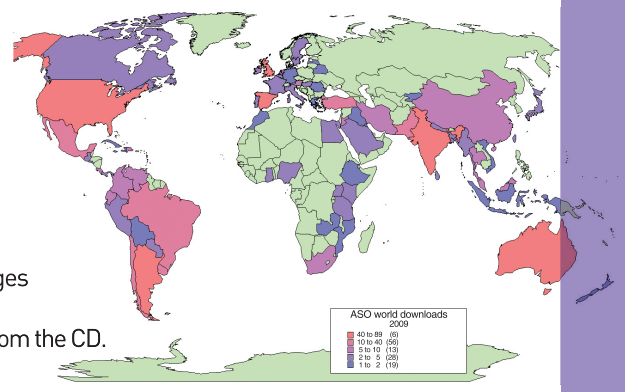
Webpage of ASOC

The Applied Sciences of Oncology Course (ASOC) contains 80 modules developed for the RCA to improve the training of radiation oncologists. The course covers essential subjects that are not easily taught in small isolated radiation oncology departments in low and middle income countries, and is a supplement to clinical training. The subjects include radiobiology, applied medical physics, oncology anatomy, communication skills, palliative care, and critical appraisal. Basics of pharmacology and interactions with radiotherapy are also covered in the course.

The ASOC course was successfully piloted during 2004 in three RCA Government Parties (Malaysia, Pakistan and the Philippines), two AFRA Member States (Egypt and Morocco) and two ARCAL Member States (Argentina and Uruguay). Twenty-five students participated in the pilot, including two students from Costa Rica.

ASOC was originally provided on multimedia CD-ROM, as bandwidth problems at the time precluded delivery of complex images via the internet to many developing countries. The courseware uses interactive techniques in text as well as graphics (problem-based learning), allowing students to monitor their skills against the answers presented by the authors. Animation is also a feature of the program and is used throughout. However, the CD format proved inflexible, and reconfiguring was periodically required to allow better user access. For this reason, a RCA project entitled "Reducing the Shortage of Oncology Professionals through an Applied Sciences of Oncology Course" was implemented in 2012 to carry out modifications to allow direct installation of ASOC onto a hard drive and access to individual modules so that they can be combined on educational software such as Moodle.

ASOC is a very efficient training technique compared to the alternative low volume method of IAEA-supported trainees undertaking fellowships in radiation oncology in centres of excellence in developed countries. That approach has many disadvantages including high costs, dislocation of trainees, and inadequate number of scholarships available to fulfil both the demand and current and long-term needs. The ASOC saves students travelling internationally for some of their training but does not replace clinical training. ASOC also reduces the time needed for international fellowships and provides prerequisite training to ensure that candidates have prepared before they begin their fellowship.



ASO World Downloads

Several developments to ASOC have been made to preserve and capitalise on the investment that RCA has made in the projects. These include:

- Splitting up the program into its component modules so that they are grouped into small learning packages for short courses and ease of download.
- Creation of a download-and-install version, avoiding the need to copy the download to CD and then install from the CD.
- Conversion to Moodle to allow even greater access to the modules.
- The establishment of a dedicated web site for student mentoring, and Frequently Asked Questions.

Summary

Through the RCA Projects, the IAEA has been assisting Government Parties to develop the competencies and capabilities of individuals, groups, or countries in the safe and efficient practice of nuclear medicine and radiation oncology through harmonised web-based distance learning programmes.

Nuclear and radiation techniques are commonly deployed to address a large number of maladies, from infectious disorders to non-communicable diseases such as cancer and cardio-vascular disease. DATOL has been used to train more than 700 students in the detection and treatment of these illnesses, most notably in Asia and the Pacific region and Latin America. The advent of translation and availability of the nuclear medicine syllabus in Spanish has significantly contributed to the success of the outreach efforts in promoting this innovative online e-learning service in Latin America.

There is a worldwide shortage of radiation oncology professionals and many countries do not have the complete range of expertise needed to train radiation oncology professionals. ASOC has helped provide specialist training for oncologists in subjects that underlie clinical practice. From the early days of delivery of ASOC via direct distribution of CDs to its current distribution via the internet using educational software such as Moodle, ASOC has had a significant global outreach, contributing to addressing the ever-growing need for radiotherapy service in treating cancer patients.

E-education through the RCA is having a profound effect on the quality and extent of training of professionals and practitioners in nuclear medicine and radiation oncology, not only in the Asia-Pacific region, but well beyond.

Regional Co-operative Agreement

For Research, Development and Training
Related to Nuclear Science and Technology
for Asia and the Pacific

For Further Information

RCA Regional Office :
Daedeok-daero 989-111, Yuseong, Daejeon,
Republic of Korea
Telephone : +82-42-868-2778, 8584
Fax : +82-42-864-1626
Web Site : http://www.rcaro.org
E-mail : rcaro@rcaro.org

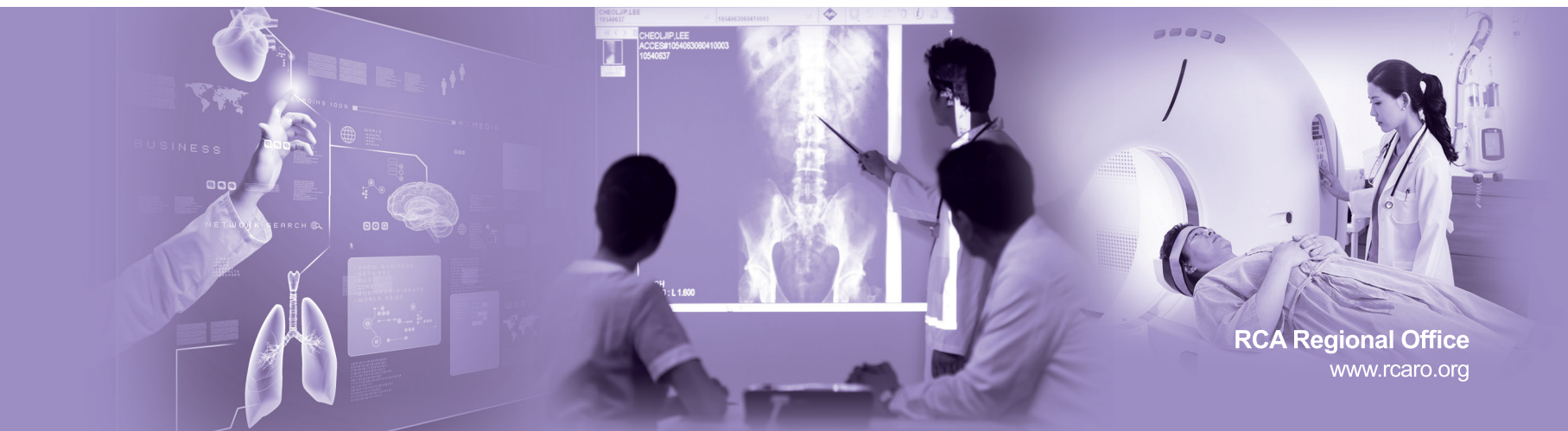
Printed in Korea 2016

Regional Co-operative Agreement

For Research, Development and Training
Related to Nuclear Science and Technology
for Asia and the Pacific

RCA Success Story 2016 Edition

Improving Nuclear Medicine and Radiation Oncology Services in the Region through E-education



RCA Regional Office
www.rcaro.org