



Mission: To enhance cooperation among cardiologists on radiation safety in cardiac catheterization procedures and in procedures that utilise ionizing radiations

From the Editor's Desk

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There has been an exponential increase in diagnostic and interventional cardiac procedures over the last decade world wide. A significant increase has occurred in Asia, due to the sheer burden of burgeoning cardiovascular disease. Given

cultural preferences, percutaneous coronary intervention (PCI) has been the preferred choice of revascularization for coronary artery disease. In 2006, it was estimated that around 250,000 PCIs were performed in the Asia-Pacific region, an increase of 40,000 cases compared to the preceding year.

Since 2005, cardiologists in Asia have been at the forefront of utilizing multislice CT as a non-invasive diagnostic modality for coronary artery imaging. Even though it is non-invasive, CT is another source of radiation. Currently, it is estimated that there are more than 700 cardiac CT scanners in Asia.

Historically, the majority of Asian cardiologists have not been trained in radiation protection for themselves, patients and other cath lab staff. Realizing these lacunae, the IAEA, under the leadership of Mr. Madan Rehani, has supported the creation of this network of Asian Cardiologists in Radiation Protection. With the level of awareness created in the past few years among Asian cardiologists, it is hoped that the network shall be leading the rest of the world in cooperative actions in radiation protection in interventional cardiology.

This newsletter is a starting point in strengthening radiation protection. We aspire to start a journal in the coming years. Needless to mention, radiation induced injuries to patients in cardiac interventions continue to occur. Young children will run a higher risk of cancer in future years. Interventionalists run the risk of developing cataracts after many years of work, if proper protection measures are not employed.

I urge you to share and circulate this newsletter within the cardiac fraternity. I welcome your comments and shall be happy to receive your contributions in radiation safety in cardiac interventions and also interesting news items for this newsletter.

Radiation Protection in Interventional Cardiology- IAEA's Actions

Madan M. Rehani

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A few years ago, a cardiologist colleague asked me, "Dr. Rehani, can you measure the amount of radiation I am exposed to from a patient in whom I have just implanted a radioactive (phosphorus-32 coated) stent". Surprising as it was for me to

hear that question, I said that it is a few thousand times less than what you are exposed to from the X rays you use in a catheterization procedure. Phosphorus-32 is a beta emitter and there is little chance of the radiation to penetrate out of the patient's body, and even less when small quantities such as 5 µCi (0.175 MBq) are involved. Yet people think that when radioactive materials are used they emit high levels of radiation, whereas the X rays used in catheterization procedures do not involve much radiation.



Participants (left to right): Houng Bang Liew. (Malaysia), Suphot Srimahachota (Thailand), Muhammad Munawar (Indonesia), Shihua Zhao (China), Anil Sharma (India), Madan Rehani (IAEA), Kui Hian Sim. (Malaysia), Soo Teik Lim (Singapore), Ghulam Mohammed Faruque (Bangladesh), Manaljav Shagdarsuren (Mongolia), Esmi Sepalika Mendis (Sri Lanka), Minh Hung Ngo (Vietnam).

The International Atomic Energy Agency (IAEA), through its mandate of developing standards of radiation safety and applying these standards in Member States has taken the lead to start training courses in radiation protection specifically dedicated to interventional cardiologists. So far cardiologists from over 50 countries have been trained as per details available at:

http://rpop.iaea.org/RPoP/RPoP/Content/AdditionalResources/Training/2_TrainingEvents_2007/Cardiology/index.htm

The details about the training program are available in the following publication:

Rehani, M.M., Training of interventional cardiologists in radiation protection - the IAEA's initiatives. *Int. J. Cardiol.* **114** 2 (Jan. 2007) 256-260. [Abstract »](#)

Information in frequently asked questions is available at:

http://rpop.iaea.org/RPoP/RPoP/Content/InformationFor/HealthProfessionals/5_InterventionalCardiology/index.htm

Many cardiologists who participated in IAEA training courses have taken the lead in organizing training courses in their respective countries. Realizing the greater need for interaction among cardiologists, the IAEA initiated a project under its Regional Cooperative Agreement for Asia (RCA) programme to create a network of IAEA trained cardiologists who will spearhead the activities in the region through cardiology societies. The project was started in 2007 and the meeting was attended by one cardiologist from each of the following countries: Bangladesh, China, India, Indonesia, Malaysia, Mongolia, Singapore, Thailand and Vietnam. The purpose was to develop a strategy for achieving improved radiation protection in interventional cardiology procedures. It included a combination of the following actions: a) creation of awareness; b) monitoring of the practice (or lack thereof) of radiation protection; c) channels of communication among the group; and d) wider communication among the whole community of interventional cardiologists. It was decided to start an e-newsletter. Professor K.H. Sim from Sarawak, Malaysia kindly agreed to take up the responsibility of editor of the newsletter. To the best of our information, this is the first newsletter by cardiologists in the field of radiation protection. I have no doubt that this newsletter will play an historical role not only in Asia, but in the whole world.



Organizers and Speakers in the special session on Radiation Protection in Cardiology during 16th ASEAN congress of Cardiology, 18-21 April 2007, Bali, Indonesia. (Houng Bang Liew. (Malaysia), Kui Hian Sim. (Malaysia), Suphot Srimahachota (Thailand), Muhammad Munawar (Indonesia), Minh Hung Ngo (Vietnam)).

For information about RCA activities, please contact Mr. Prinath Dias, RCA Coordinator in IAEA.

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Chronic radiodermatitis in a 70 years old 77 kg male in Malaysia, from percutaneous aortic endovascular stent graft repeated again after 7 months. Photograph taken 11 months after

first procedure (Case report under publication). [Photo courtesy HB Liew].

This photograph shows the leg of an interventional cardiologist, working with an X ray equipment without lead curtains to protect his legs and feet from radiation scattered by the couch and patient and from leakage radiation from the x-ray tube.



The cardiologist had never received instruction in radiological protection and

was never told that this could occur in an interventional cardiology laboratory. The line pointed by the yellow arrows show the end of the apron. Below, the unprotected area showing loss of hair. After this effect was discovered in a regional workshop, the cardiologist reviewed his clinical protocols in order to improve his procedures and optimize protection of himself, his staff and patients. [Photo courtesy Raul Ramirez Garcia and Pedro Ortiz Lopez].

Sustainability of Radiation Protection in the Asia Pacific Region

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The Regional Cooperative Agreement for Asia and the Pacific (RCA) has 17 Member States (Australia, Bangladesh, China, India, Indonesia, Japan, Republic of Korea, Malaysia, Mongolia,

Myanmar, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Thailand and Vietnam). The RCA operates under the aegis of the International Atomic Energy Agency and many of the RCA projects are funded by them. The IAEA also provides RCA with technical and secretarial support. For the past 20 years the IAEA/RCA has been working on building up radiation protection infrastructures. The new IAEA/RCA Project has the aim of developing action plans for regional self-sustainability in radiation protection.

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