

## One day workshop on “Radiation Safety in Interventional Radiology including Cath Lab”

April 09, 2009

Niyamak Bhavan 'B' Auditorium.

The workshop was held on April 9, 2009 in Niyamak Bhavan - B, Auditorium.

Participants of this workshop included cardiologists, interventional radiologists, biomedical engineers maintaining the cath lab units, suppliers of cath lab units, suppliers of personnel protective devices and cath lab technologists.



During inaugural function, Shri S.P. Agarwal, Head, RSD welcomed all and introduced all with the objective of the workshop, Dr. K. S. Parthasarathy, Former Secretary, AERB gave remarks and Dr. V. Karira, Head, Medical Division, BARC inaugurated the workshop and Shri R. Kannan proposed vote of thanks.

Shri S.P. Agarwal mentioned that it is recognized that there is a potential of high radiation doses to patients, cardiologists and other staff in cath lab procedures including fluoroscopy and cine angiography. Therefore it is essential that doses are optimized to get the desired results.

To achieve this objective, it is important that cath lab equipment meeting with all QA requirements and qualified staff having adequate level of knowledge on radiation safety are available to perform the procedures. This meeting is one of the steps to apprise all the stake holders, including cardiologists, interventional radiologists, suppliers of cath lab, technologists, biomedical engineers and supplier of personal protective devices.



Dr. K.S. Parthasarathy, Former Secretary, AERB expressed thanks to Shri S.P. Agarwal, Head, RSD for inviting him to attend this workshop. He mentioned that this workshop is considered as an appreciation meeting focusing on various issues related to interventional radiology procedure and radiation safety of operating personal. He shared his experience on reports of radiation injuries to patients and staff reported in some of the cath lab procedures which is attributed to poor quality of cath lab equipment and lack of knowledge on radiation safety.



In his inaugural address, Dr. V. Karira explained that side effect associated with interventional radiology procedures should be briefed to patient and his family members. He also stressed on the importance on maintaining records.

Twenty six (26) participants attended the workshop which included two cardiologists, four biomedical engineers, three suppliers of cath lab units, ten Radiologists, four technologists, three former scientific officers of AERB and one supplier of personal protective devices.

Information of this workshop was sent to about 350 cardiologists but only two could participate in the workshop. It indicates that for cardiologists, it is very difficult to spare the time for such meetings.

Presentations were made by:

1. Kum. Anjaria, RPAD, BARC on radiation fundamentals and biological effects of radiation.
2. Shri. V.S. Iyer, RSD, AERB on regulatory requirements of x-ray installations.
3. Shri R.Kannan, RSD, AERB on radiation protection techniques and hazard control.
4. Shri K. Ramani, M/s. Siemens Limited, Mumbai on his experience in installing cath lab units in hospitals.
5. Shri Manoj Arora, M/s. Philips Electronics India Limited, Mumbai on his experience in installing cath lab units in hospitals
6. Shri Edmond Paul, Wockhardt Hospital, Mumbai on his experience in installing cath lab units in hospitals.
7. Shri Guru Prasad Bhatt, M/s. Kiran X-ray Screens Limited, Mumbai on the personal radiation protection devices used in interventional radiology.



Dr. Haresh Mehta, a cardiologist mainly attached with Dr. Balabhai Nanavati Hospital, Mumbai made a presentation on the current scenario of handling cath lab units by cardiologists. He mentioned that:

1. Cardiologists are not aware on the radiological safety precautions which need to be taken during angiography or angioplasty or other interventional radiology procedures.
2. Lack of awareness on personal protective equipment and its proper use.
3. Lack of awareness on use of personnel monitoring badges and their proper use.
4. Self regulation approach for radiation safety of operating personnel.
5. Lady patients should be asked about her pregnancy before diagnostic examination.

Dr. Soneji, another cardiologist, mainly attached with Dr. Harkrishan Das Hospital, Mumbai also endorsed the experience of Dr. Mehta.

A very active interaction feedback session took place after all the presentations. During detailed discussions with the participants, it was noted that:

- a. Suppliers of cath lab units need to play an important role in spreading message on regulatory requirement for the use of the unit.
- b. Cardiologist would not be able to participate in such workshops in large numbers due to their preoccupation and their priority to attend the patients.
- c. Hospitals and cardiologists attached to the hospital are not aware on radiological safety aspects of the use of cath lab for occupational and patient protection.
- d. Cardiologists are attached to many hospitals.
- e. Cath lab and fluoroscopic units need to be checked periodically for its performance. Appropriate filtration is one of the important radiation safety components of cath lab x-ray unit.
- f. Many substandard personal protective devices are availed in the market and used by concerned personnel in interventional radiology.

### **Summary:**

In summarizing all the feedback from the workshop, following is the input from the workshop:

1. Guidelines on safety precautions to be observed in interventional radiology including cath lab procedures should be made by AERB and sent to all concerned and also should be displayed on website of AERB. This guidelines should highlight the fact that CT Scan Units and Interventional radiology units are included under the licensing categories in Atomic Energy (Radiation Protection) Rules, 2004, in view of their potential for exposing patients and workers to high radiation doses.
2. AERB code on Medical X-ray needs review to include various modern technologies of diagnostic radiology such as mammography, dental, cath lab x-ray machine and interventional radiology procedures.
3. Suppliers of cath lab units are recommended for supplying radiation protection accessories as an integral part of the cath lab unit to diagnostic centers. A list of essential radiation protection accessories must be prepared. Not using such accessories during work will be considered as serious violation.
4. Every year advertisement should come in leading newspapers highlighting the importance of radiation safety precautions and regulatory requirements in context of interventional radiology.
5. BIS should be pursued to adopt IEC standards applicable on cath lab units.
6. All consultants performing cath lab procedures should be required to use TLD badges for personnel monitoring. The badges should be issued to the individuals so that whichever hospital they perform the procedures, they can use it. Carrying out procedures without wearing personnel monitoring badges will be considered as a violation. AERB shall direct licences/employees not to allow physicians violating safe practices to continue work in their facilities.
7. In view of preoccupation of the cardiologists, AERB should consider addressing cardiologists during their conference organized by their professional associations.
8. Licensing of all cath labs should be taken on priority basis by AERB.
9. In view of relatively high potential for exposure to staff and patient in cath lab procedures, AERB should consider arranging for one or two days training program for

- cath lab technicians or radiologists for consideration their notations for approval as RSO in Cath Lab. Each facility must have such approves RSOs for their continued operation.
10. Personal protective devices such as lead aprons, lead gloves, lead glasses etc. should be certified against standards for use by the concerned staff.
  11. Suppliers of cath lab should ensure that the hospital requesting for installation of interventional radiology x-ray unit meets with all the regulatory requirements prior to commissioning.
  12. QA of cath units should be checked annually by the supplier.
  13. Since cardiologists are not aware on the radiologist safety measures to be adopted during cath lab procedures, it is recommended that AERB should advice Medical Council of India to include radiation safety chapter in the syllabus of cardiologists during their educational program.
  14. Such meetings need to be arranged frequently for better coordination among all stake holders.

At the end of the workshop, Head, RSD, thanked Dr. Parthasarathy for his support and valuable suggestions and also thanked all participants for their interest in the meeting.