

International Actions on Radiation Safety in Fluoroscopic Procedures Outside Radiology Departments

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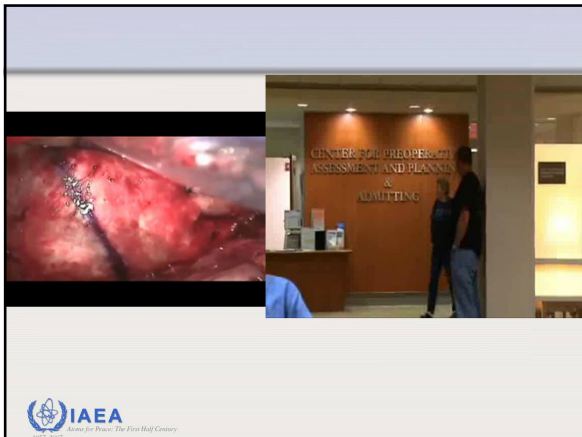


Specialists: fluoroscopy outside radiology*

- Vascular surgeons
- Orthopedic surgeons
- Urologists
- Gastroenterologists
- Electro-physiologists (EPs)
- Cardiologists
-

*Variations in practice, sometimes in radiology





ICRP Publication 117

Procedures with potential skin dose > 1 Gy (Besides cardiology)

- **Endovascular aneurysm repair (EVAR)-**
Vascular surgeons
- **Renal angioplasty, iliac angioplasty-** Urologists
and at some places IR
- **Ureteric stent placement-** Urologists
- **Therapeutic ERCP-** Gastroenterologists
- **Bile duct stenting and drainage-**Gastroenterologists



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Table 1.1. Examples of common procedures (not exhaustive) that may be performed in or outside radiology departments (adapted from NCRP, 2011).

Organ system or region	Procedure
Bones and joints or musculoskeletal <i>Specialties:</i> <ul style="list-style-type: none">• Radiology• Orthopaedics• Neurosurgery• Anaesthesiology• Neurology	Fracture/dislocation reduction
	Implant guidance for anatomic localization, orientation, and fixation
	Deformity correction
	Needle localization for injection, aspiration, or biopsy
	Anatomic localization to guide incision location
	Adequacy of bony resection
	Foreign body localization
	Biopsy
	Vertebroplasty
	Kyphoplasty
	Embolization
	Tumor ablation
	Nerve blocks
Diagnostic (ipsilateral femoral neck/shaft fracture)	
Intra-articular nailing	
Kirshner-wire/external fixator pin placement	
Percutaneous hardware placement	
Ligament reconstruction	



In most countries

Common Factor

**Lack of Training
of Doctors operating
Fluoroscopy machine**



Fluoroscopy outside radiology

Group I:

- Interventional Cardiologists & Electro-physiologists

Group II:




- Orthopedic surgeons, Urologists, Gastroenterologists, Anesthetists.....

Group III:


- Vascular surgeons




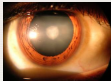

Radiation Risks


- Skin injuries to patients 
- Injuries to staff  

Carcinogenic risks



Radiation Risks

- Skin injuries to patients
- In which applications have they been demonstrated ? 
- Injuries to staff-In which applications have they been demonstrated ?  



Radiation Risks

- **Skin injuries to patients**
 - Demonstrated in IC/EP/IR
- **Not in other areas**
- **Skin injuries to staff- also in IC/EP/IR,**
- **Cataract also in above**
- **Carcinogenic-???**



International Actions

- **IAEA** (International Atomic Energy Agency, Vienna)
- **ICRP** (International Commission on Radiological Protection)
- **EC** (European Commission)



IAEA

- **Training courses**
- **Training material**
- **Faculty utilized- in some cases from USA**
- **Guidance material**



IAEA Training Material

Free Download of power point slides Doctors using fluoroscopy outside radiology (Urologists, Gastroenterologists, Orthopaedic surgeons etc.)

Topics List

- Topics & Objectives (84 KB)

Lectures/Slides

All 9 modules (Zip of 9 files, 44.7 MB)

- 01. Overview of radiation protection (1,432 KB)
- 02. Understanding radiation units (3,307 KB)
- 03. What can radiation do? (3,353 KB)
- 04. Anatomy of fluoroscopy & CT Fluoroscopy Equipment (11,507 KB)
- 05. How do I reduce my radiation risk? (20,162 KB)
- 06A. Radiation protection for patients in orthopaedic surgery (3,959 KB)
- 06B. Radiation Exposure in Gastroenterology (4,322 KB)
- 06C. Other medical specialities that use fluoroscopy (2,247 KB)
- 07. International standards and recommendations (4,564 KB)



IAEA training material fluoroscopy outside radiology

About 468,000 results (0.36 seconds)

[New training material on Radiation protection for ... - RPoP - IAEA](#)

<https://pop.iaea.org/~new-training-material-doctors-using-fluorosc>
IAEA Radiation Protection of Patients ... **training material** for doctors using **fluoroscopy outside radiology** (Urologists, Gastroenterologists, Orthopaedic surgeons ...

[Free Material - RPoP - IAEA](#)

https://pop.iaea.org/~training1_trainingmaterial/index.htm
Visual aids/ Presentation (usually distributed on CD) used at **IAEA training** ... Doctors using **fluoroscopy outside radiology** (Urologists, Gastroenterologists, ...

https://pop.iaea.org/~training1_trainingmaterial/nonradiologists

Nucleus - IAEA Radiation Protection of Patients ... Home - **Training** - **Free Material**
Doctors using **fluoroscopy outside radiology** (Urologists, Gastroenterologists, ...

[IPPI#1 RADIATION PROTECTION IN DIAGNOSTIC ... - RPoP - IAEA](#)

https://pop.iaea.org/~TrainingRadiology/_RDIR4.16.2_Fluoroscopy_d...
File Format: Microsoft PowerPoint - Quick View
IAEA **Training Material** on Radiation Protection in Diagnostic and ... Subject matter: radiation protection in **fluoroscopy** equipment: Both physical and ... Scattered dose rate is higher **near** the area into which the **X-ray** beam enters the patient ...

[IPPI#1 RADIATION PROTECTION IN DIAGNOSTIC ... - RPoP - IAEA](#)

https://pop.iaea.org/~TrainingRadiology/_RDIR4.16.1_Fluoroscopy_s...



radiation protection gastroenterology

About 248,000 results (0.29 seconds)

[The IAEA establishes a network of gastroenterologists in radiation ...](#)

https://pop.iaea.org/RPOP/RPOP/Content/_network-gastroenterologists.it
To the best of our understanding, there is no group of **gastroenterologists** existing anywhere in the world with the mission to improve **radiation protection**.

[IPPI#1 From the Editor's Desk](#)

https://pop.iaea.org/RPOP/RPOP/Content/_gastro-newsletter-issue1.pdf
File Format: PDF/Acrobat - Quick View
gastroenterologists in radiation protection I am pleased to be ... radiation protection with **gastroenterologists** It was in 2006 that we started a training course for ...

[Gastroenterology](#)

https://pop.iaea.org/RPOP/RPOP/Content/_gastroenterology/index.htm
Radiation Protection in Gastroenterology The use of ionizing radiation in **gastroenterology** is somewhat in transition. In the past, **gastroenterologists** performed a ...

[Radiation protection in the endoscopy suite](#)

www.worldgastroenterology.org/Programs/GlobalGuidelines
WGO Practice Guideline: **Radiation protection** in the endoscopy suite. Title: **Radiation protection** in the endoscopy suite - Minimizing radiation exposure for ...




radiation protection urology

Urology
 rpop.iaea.org/RPOP/RPoP/Content/.../6...Urology/index.htm
 by P Top - Related articles
 Jump to [What is the major cause of radiation exposure to personnel during...](#). The major source of radiation exposure to personnel in fluoroscopy ...

Radiation Protection in Urology :: The Society of Radiographers ...
 www.soraditl.com/sub.php?content=newsDetail&id=63
 This update is centered on **Radiation Protection in Urology** and what professionals in the field need to pay attention to during these procedures. The IAEA ...

Radiation Protection in Percutaneous Renal Surgery - BOWSHER ...
 onlinelibrary.wiley.com > ... British Journal of Urology | Vol 69 issue 3
 by WG BOWSHER - 1992 - Cited by 11 - Related articles
 26 Nov 2008 - BOWSHER, W. G., BLOTT, P. and WHITFIELD, H. N. (1992),
Radiation Protection in Percutaneous Renal Surgery. British Journal of **Urology** ...


Radiation Protection Urology - Siemens Medical Solutions ...
 www.medical.siemens.com .../CategoryDisplay-4_catalogId=...11-a...
Radiation Protection Urology MAVIG Radiation protection Uro, 46 cm - MAVIG
 Radiation protection Uro, 85 cm - MAVIG Lower Body Radiation Protection ...



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Interventional Cardiologists

Radiation Protection (RP) survey	Vienna 2004 (25 countries)
Is this 1 st time you are attending a structured program on RP. Ans. Yes	88%
Any cardiologists conference you attended where there was lecture on RP. Ans. No	85%
Do you measure radiation dose to patient. Ans. No	96%




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Interventional Cardiologists

Radiation Protection (RP) survey	Vienna 2004 (25 countries)	Singapore 2005 (8 countries)	Ethiopia 2006 (9 countries)	Iran 2006 (6)	Bangkok 2006 (8 countries)
Is this 1 st time you are attending a structured program on RP. Ans. Yes	88%	84%	93%	100%	93%
Any cardiologists conference you attended where there was lecture on RP. Ans. No	85%	100%	100%	100%	100%
Do you measure radiation dose to patient. Ans. No	96%	100%	87%	89%	71%

San Jose 2007 (11 countries of Latin-America)
 Yerevan 2008 (7 countries of Eastern Europe)
 Manila 2009 (8 countries)



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Urologists, Orthopedic surgeons, Gastroenterologists, Gynecologists..

Question regarding Radiation Protection (RP)	Auckland, New Zealand 2006	Dubai, UAE 2007	Sofia, Bulgaria 2008	Montevideo, Uruguay 2008
Is this 1st time you are attending a structured program on RP. Answer: Yes	100 %	100%	100%	95%
Any conference you attended where there was lecture on RP. Answer: No	100%	87%	100%	100%
Do you measure radiation dose to patient. Answer: No	100%	95%	89%	95%
Do you use badge to monitor your personal exposure. Answer: Yes	20%	9%	78%	47%
Was this course relevant to you (highly relevant)	100% (80%)	100 % (75%)	100 % (88%)	100 % (96%)

Year	Place	Participation of Doctor(s) from countries
2006	Auckland, New Zealand	Bangladesh, China, India, Malaysia, Pakistan, Thailand, Vietnam
2007	Dubai, UAE	Bangladesh, Iran, Jordan, Lebanon, Mongolia, Pakistan, Sri Lanka, Thailand, Yemen, UAE
2008	Sofia, Bulgaria	Azerbaijan, Bosnia and Herzegovina, Croatia, Georgia, Kyrgyzstan, Lithuania, Poland, Bulgaria
	Montevideo, Uruguay	Bolivia, Brazil, Chile, Costa Rica, Ecuador, El Salvador, Panama, Paraguay, Peru, Uruguay, Venezuela.



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Are you aware about trainers among clinicians who use fluoroscopy in OT?



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Atom for Peace: The First Half Century


Our Cardiologists trainers in Radiation Protection



Tunisia



Singapore



Thailand



Uruguay

IAEA They are ALL interventional cardiologists
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Radiation protection session at the AsiaPCR/SingLive 2011 (13-15 Jan)
A session on radiation protection was organized on 13th Jan. 2011 at Singapore and it had a catchy name: *Radiation protection issues that every cath lab staff needs to know, but may not have paid enough attention to.*



It was a 90 min session with following objectives:

Workshop on Radiation Protection for Interventional Cardiologists
Coimbatore, India
Report by Govinda Rajan and J.S. Bhuvanewaran, India



Sessions in EP Conference



Network members in Jeju, S. Korea, 26-28 Oct 2010

News from Thailand: Training course & Eye Testing
Suphot Srimachota, Interventional Cardiologist, King Chulalongkorn Hospital, Bangkok



Heart Association of Thailand and the Cardiovascular Intervention Society of Thailand arranged the one-day course on radiation protection for cardiologists on 23rd December 2009. More than 120 participants including cardiac interventionalists, cardiac surgeons, cardiac fellows,

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Training course on Radiation Protection in Interventional Cardiology 16-17 April 2009, Kuala Lumpur, Malaysia
Prepared by, Liew HB



Information from Africa
Prof. Gamal Abdul Nasr, National Heart Institute, Cairo, Egypt



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

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**Asian Network of
Cardiologists in Radiation
Protection** – under RCA/IAEA project

**Newsletter
January 2008**

Issue No.
2

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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Dear Colleagues,
Recent timely publications on radiation risks from cardiac imaging modalities have made this very important, but under-recognized, unglamorous topic in our cardiac profession very "hot" world-wide, particularly in Western countries.

Unfortunately, very little data on knowledge and practice of radiation protection among interventional cardiologist is available from Asia.

Through the desert, looking for garden

LIM Soo Teik
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Director of Interventional Cardiology,
National Heart Centre of Singapore
(ljm.soo.teik@nhc.com.sg)



While it is pleasing to note the momentum Asian network is creating, the road ahead is long before one reaches garden.

Let me start as a critic. I had the chance of visiting many labs or interacting with cardiologists from China, Vietnam, Indonesia, Philippines, Thailand, India, Sri Lanka, Bangladesh, Myanmar, Malaysia, Japan and Singapore. I noticed scant attention to



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