



Radiation protection awareness of healthcare staff – an essential issue in medical uses of ionizing radiation

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With the rapid advancement in medical use of ionizing radiation for both diagnostic and therapeutic purposes, the importance of radiation protection for healthcare professionals involved in the performance of radiological procedures, along with patient protection, has become more prominent. Accordingly, the International Atomic Energy Agency (IAEA) has established several safety standards and provides training materials and other resources to support improving radiation protection competence of the staff. In this regard, the general safety guide (GSG-7) provides general guidance on occupational radiation protection programmes. For the medical applications, this is complemented by the Specific Safety Guide (SSG-46) as well as safety reports, training materials, posters, and other informational resources on the Radiation Protection of Patient (RPOP) Website.

General Safety Guide (GSG-7) and Specific Safety Guide (SSG-46)

https://www-pub.iaea.org/MTCD/Publications/PDF/PUB1785_web.pdf

https://www-pub.iaea.org/MTCD/Publications/PDF/PUB1775_web.pdf

Training material on the RPOP webpage which includes occupational radiation protection in medicine (<https://www.iaea.org/resources/rpop/resources/training-material>)

- Diagnostic and interventional radiology (English, Spanish, Russian)
- Nuclear medicine (English, Spanish, Russian)
- Cardiology (English, Russian)
- PET/CT (English)
- Dental radiology (English, Spanish)
- Radiation Protection in Interventional Procedures: Practical Tutorials (English)



Poster

<https://www.iaea.org/resources/rpop/resources/posters-and-leaflets>

10 Pearls: Radiation protection of staff in fluoroscopy (in 30 different languages)

10 Pearls: Radiation protection of staff in fluoroscopy
Reducing patient dose always results in staff dose reduction

1. Use protective devices!
 - Advisable skirt type lead apron to distribute weight
 - 0.25 mm lead equivalence but with overlap on front to make it 0.5 mm on the front and 0.25 mm on the back (Provides >90% protection)
 - Lead glass eyewear with side protection
 - Thyroid protection
2. Make good use of time-distance-shielding (TDS) principles
 - Minimize time
 - Maximize distance as much as clinically possible
 - Use shielding
3. Use ceiling suspended screens, lateral shields and table curtains
 - They provide more than 90% protection from scattered radiation in fluoroscopy
 - Mobile floor shielding is advisable when using cine acquisition
4. Keep hands outside the primary beam unless totally unavoidable
 - Hands inside the central area of the primary beam will increase exposure factors (kV, mA) and doses to patient and staff

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5. Only 1-5% of radiation falling on the patient's body exits the other side
 - Stand on the side of the transmitted beam (i.e. by the detector), which contains only 1-5% of the incident radiation and its respective scatter
6. Keep X ray tube under the patient table and not over it
 - Undercouch systems provide better protection from scattered dose
7. Use personal dosimetry
 - Use at least two dosimeters
 - One inside the apron at chest level
 - One outside the apron at neck or eye level
 - Additional finger ring dosimeter for procedures requiring hands close to primary beam
 - Real time dosimetry systems are useful
8. Update your knowledge about radiation protection
 - Address your concerns about radiation protection to radiation protection specialists (medical physicists)

10 REMEMBER!

- Quality control testing of fluoroscopy equipment enables safe and stable performance
- Always wear equipment (using the equipment's features appropriately will help reduce doses to patients and staff)
- Use injector devices

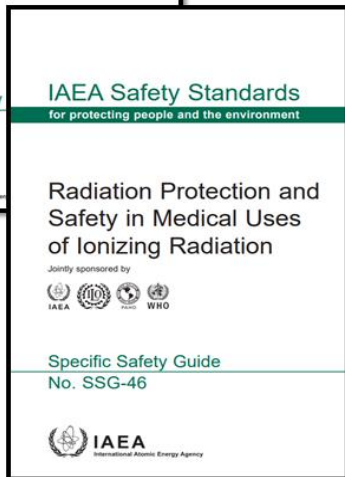
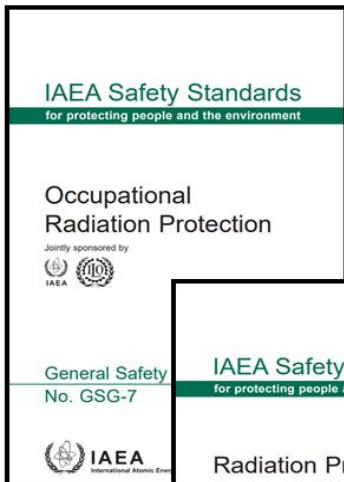
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Other resources

Summary of the IAEA Technical Meeting on Developing Effective Methods for Radiation Protection Education and Training of Health Professionals (<https://www.iaea.org/sites/default/files/21/04/technical-meeting-on-developing-effective-methods-for-radiation-protection-education-and-training-of-health-professionals.pdf>)

Bonn Call for Action Implementation Toolkit

<https://gnssn.iaea.org/main/bonn-toolkit/Pages/Bonn-Call-for-Action-Implementation-Toolkit.aspx>



RPOP Website (www.iaea.org/resources/rpop)

Radiation Protection of Patient (RPOP) – the leading resource for health professionals, patients and public on the safe and effective use of radiation in medicine.



For health professionals



For patients and public

