



Commission for the Protection From Ionising and Non-Ionising Radiation

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Guideline on radiation protection of students involved in medical radiological procedures, including dental practice

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1. Purpose and scope

This guideline establishes radiation protection requirements for students and trainees participating in medical radiological procedures as part of an approved education or clinical training programme, including diagnostic and dental radiology.

It addresses the protection of students from ionising radiation, their education and training, supervision, participation in practical aspects of medical exposure, and protection of patients.

This guideline is only applicable for students and trainees during clinical practice as part of the students' programme of studies.

References: S.L. 585.01, Regulations 18–19 and relevant provisions on occupational and medical exposure; Council Directive 2013/59/Euratom, Articles 10, 11, 18, 55–57; IAEA GSR Part 3.

2. General requirements

Students shall participate in medical radiological procedures only as part of an appropriate education or clinical training programme and within the scope of their training and demonstrated competence.

Before commencing practical activities involving ionising radiation, students shall receive appropriate theoretical and practical radiation protection training.

Students undergoing an appropriate training programme may participate in practical aspects of medical radiological procedures. However, a student who is not independently entitled to perform the relevant practical aspects shall not independently assume clinical responsibility for a medical exposure.

Every medical exposure shall remain under the clinical responsibility of an appropriately entitled practitioner.

References: Directive 2013/59/Euratom, Article 18(1)–(2) and Article 57(1); S.L. 585.01, Regulations 18–19.

3. Supervision and permitted involvement

The level of supervision shall be appropriate to the student's competence, experience, type of procedure, equipment and associated radiation risk.

Student/activity	Permitted involvement	Supervision	Radiation protection
Student observing a procedure	Observation without operating equipment	General supervision	Remain in designated protected area; comply with local rules
Student beginning practical radiography training	May perform practical aspects within approved training	Direct supervision	Apply time, distance and shielding; monitoring as determined by risk assessment
Competent senior student	May undertake specified practical aspects within demonstrated competence	Level determined by training programme and risk	Same protection requirements as applicable to the activity
Intraoral dental X-ray	Positioning and exposure within approved training	Appropriate supervision; direct supervision until competence demonstrated	Student shall not remain in primary beam or routinely hold patient/receptor
Panoramic/cephalometric imaging	Operation within approved clinical training	Appropriate supervision	Use protected operator position and follow local rules

Dental CBCT	Participation only following specific training	Enhanced/appropriate supervision due to complexity and dose considerations	Particular attention to justification, selection of the smallest appropriate field of view (FOV) and exposure optimisation
Interventional/high-dose procedures	Limited according to training and competence	Close/direct supervision	Specific risk assessment, protective equipment and dosimetry as applicable

Where clinical training involves patients, appropriate workplace procedures shall be followed, and medical exposures shall be undertaken under appropriate supervision.

Reference: IAEA guidance on education and training in radiation protection and safety, Appendix III, including para. III–4.

4. Patient radiation protection

Student participation shall not result in unnecessary or unjustified patient exposure.

All examinations shall comply with the same justification and optimisation requirements irrespective of whether a student participates.

Students shall follow approved protocols, use appropriate positioning, collimation and exposure parameters, and seek assistance whenever uncertain.

A radiological examination shall not be repeated solely for teaching, demonstration or to allow another student to practise.

References: Directive 2013/59/Euratom, Articles 55–57; corresponding medical exposure provisions of S.L. 585.01.

5. Specific requirements for dental practice

Dental students shall receive specific training in dental radiation protection before undertaking practical radiological procedures.

Training shall cover, as applicable:

- intraoral, panoramic and cephalometric radiography;
- patient positioning;
- selection of exposure parameters;
- collimation and image receptor selection;
- prevention of repeat/reject images;
- operator positioning and shielding;
- local rules;
- justification and optimisation;
- CBCT-specific radiation protection.

For CBCT, particular attention shall be given to justification, selection of the smallest appropriate field of view, appropriate exposure parameters and adequate student supervision.

Students shall not routinely hold patients, image receptors or X-ray equipment during exposure.

References: Directive 2013/59/Euratom, Articles 18, 55 and 56; S.L. 585.01 medical exposure provisions; IAEA guidance concerning education and clinical training in dental radiology.

6. Dose limits and radiation protection of students

The applicable radiation protection arrangements depend on the student's age and circumstances of exposure.

Student category	Applicable protection / dose limit	Regulatory basis
≥18 years, required to work with radiation sources during studies	Occupational dose limits apply	S.L. 585.01, Reg. 11(1), referring to Reg. 9; Directive 2013/59/Euratom, art. 11(1), referring to art. 9
16–18 years, required to work with radiation sources during studies	Effective dose: 6 mSv/year ; lens: 15 mSv/year ; skin: 150 mSv/year ; extremities: 150 mSv/year	S.L. 585.01, Reg. 11(2)–(3); Directive 2013/59/Euratom, art. 11(2)–(3)
Other students	Public limits apply: 1 mSv/year from all authorised practices, with 0.25 mSv/year from any one authorised practice	S.L. 585.01, Reg. 11(4), referring to Reg. 12; Directive 2013/59/Euratom, art. 11(4)
Pregnant student subject to occupational exposure provisions	Conditions should ensure protection of the unborn child comparable with that provided for members of the public; dose shall be as low as reasonably achievable and unlikely to exceed 1 mSv during the remainder of pregnancy	S.L. 585.01, relevant provisions for pregnant workers; Directive 2013/59/Euratom, art. 10(1)

Note: Dose limits shall not be regarded as dose targets. All exposures shall be optimized and unnecessary exposure avoided.

7. Dosimetry and monitoring

The need for individual monitoring shall be determined through the radiation risk assessment, taking into account:

- type and frequency of procedures;
- expected exposure;
- working position;
- applicable worker classification;
- use of protective barriers;
- potential for significant exposure.

Individual dosimetry should therefore not automatically be required solely because a person is a student.

Where dosimeters are required, they shall be individually assigned, correctly worn, periodically reviewed and abnormal results investigated.

8. Pregnant students

Pregnancy shall not automatically result in exclusion from clinical training involving ionising radiation.

Following declaration of pregnancy, the student's working and training conditions shall be reviewed and modified where necessary to ensure appropriate protection of the unborn child.

Where occupational exposure provisions apply, the dose to the unborn child shall be as low as reasonably achievable and unlikely to exceed 1 mSv during at least the remainder of the pregnancy.

Reference: Directive 2013/59/Euratom, Article 10(1).

9. Responsibilities of the undertaking / educational institution

The undertaking, in cooperation with the educational institution where applicable, shall ensure:

- appropriate radiation protection education before clinical placement;
- assessment of competence;
- clearly defined permitted activities;
- appropriate supervision;
- communication of local rules;
- risk assessment and dosimetry where required;
- reporting and investigation of incidents;
- maintenance of relevant training, competence and monitoring records.

The RPE should be consulted regarding occupational radiation protection arrangements where required.

10. Records

Undertaking records should include, as applicable:

- radiation protection training;
- clinical training completed;
- competence assessments;
- permitted scope of activities;
- supervision arrangements;
- individual monitoring results;
- incidents or abnormal exposures;
- corrective actions/additional training.

11. References

1. S.L. 585.01 – Basic Safety Standards for Ionising Radiation Regulations, particularly **Regulations 18–19** and the relevant provisions concerning occupational exposure, education/training and medical exposure.
2. Council Directive 2013/59/Euratom, particularly **Articles 9–11, 18 and 55–57**.

3. GSR Part 3, Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, together with relevant IAEA guidance on education and training and clinical training involving patients.