

IAEA Safety Report 108

Radiation Protection in Dental Radiography

Integration in undergraduate education

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Background

- Dentistry is relative exception in use of radiation in healthcare
- In general healthcare patients are mostly referred for radiography
- Dentistry mostly self-referral
- Self-referral practice leads to potential weaknesses in procedure (objectiveness? economic factors?)
- Great emphasis on radiation protection in dental undergraduate curriculum

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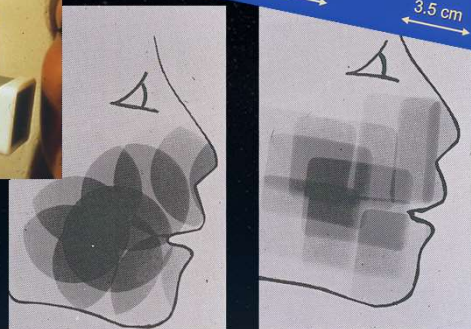
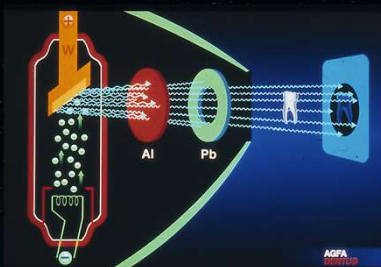
Undergraduate Education

- Basics of X-ray device and image formation
- Radiographic imaging and radiation protection
- Radiological diagnostics
- Justification in dental radiology
- Optimization in dental radiography (ALADA)
- Radiation protection officer

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Basics X-ray device and attenuation



Basic understanding radiation protection: size radiation field
 Collimation: round → rectangular
 50-70% reduction dose

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Radiographic imaging and radiation protection



Training radiographic skills

- improved diagnostic value
- less retakes

Emphasis on use of aiming devices in intraoral radiography

- Predictable
- Verifiable
- Reproducible

Manikin training → internship radiology clinic

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Radiological diagnostics



Radiation protection: optimal diagnostic yield from radiation dose

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Justification

Based on..

- clinical examination (+history)
- routine use / screening unacceptable
- following (inter)national guidelines → selection criteria
- radiological diagnostics ≠ specific radiological examination
 - optimization / ALADA



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Justification

- cost/benefit analysis
 - benefits: diagnostic information
 - costs: dose ($<2\mu\text{Sv}$ intraoral)
 - costs: false positive diagnoses!
- patient benefit or doctor benefit?



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Optimization (ALADA)

ALADA: As Low As Diagnostically Acceptable
Adjust exposure to diagnostic task

- Don't take 'standard radiographs'
- Think of diagnostic task
- Adjust settings to task
 - type of radiograph (intraoral, panoramic, CBCT)
 - field of view
 - exposure (time, kV, mA)



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Radiation Protection Officer



Basic Safety Standards (Euratom – EU)

- Radiation Protection Expert & Radiation Protection Officer
- Dentist responsible for radiation protection in clinic
- Knowledge about environmental dose from dental radiological procedures
- Knowledge how to supervise and optimize procedures
- Local expertise, required for using radiation in the clinic → RPO

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Thank you

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