

Diagnostic Reference Levels – a tool for implementing ALARA into medical practises

Diagnostic reference levels (DRL):

Dose levels in radiology for typical examinations for broadly defined types of equipment determined for a “typical patient”. These levels are expected not to be exceeded for standard procedures when good and normal practice regarding diagnostic and technical performance is applied.



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Swedish Radiation Protection Authority

Radiological Protection in Medicine before DRL

- Justification
- Optimisation
- No dose limit to patients
- No dose constraints for different investigations
- No dose measurements routinely performed

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Diagnostic Reference Levels

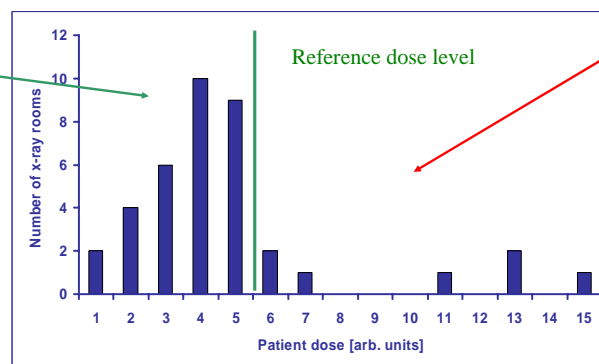
- Required by the EC Medical Exposure Directive
- Recommended e.g. by IAEA and ICRP
- Incorporated in National regulations

Swedish Approach

- Measurements have to be performed in the hospitals
- All hospitals and departments involved
- Typical dose for a typical patient is determined
- Action when exceeding reference levels by the hospitals

Typical dose distribution – huge range and some outliers

- Requirement for further analysis met e.g. comparing technique
- Further optimisation possible
- Possible dose reduction



- Investigate demanded
- Result:
Change of technique
Change of equipment
- Radiation dose reduced

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Immediate outcome of DRL

- RP work is high lighted at all levels in the organisation
- Reduced radiation dose to patients
- Improved documentation of examination technique
- Improved competence in dosimetry in the hospitals
- Improved knowledge and awareness of RP in the hospital

Long term outcome of DRL

- Improved status of the safety work
- Improved safety culture
- Improved quality assurance systems
- Improved awareness by suppliers and manufactures
- ALARA is an integrated part of the daily work