

Is digital better in dental radiography

Urban Zdešar Institute of Occupational Safety
 Damijan Škrk Slovenian Radiation Protection Administration

Is digital better in dental radiography?

YES



Thank you for your attention

Is digital better in dental radiography?

- › Comparing analog and digital technology in intraoral dental radiography
 - » In terms of dose to patients
 - » Image quality not taken into account
- › 280 x-ray machines tested in Slovenia in 2006

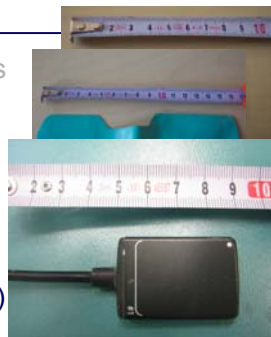
Technology

- › Analog image detectors
- › Dental film
- › ECO film

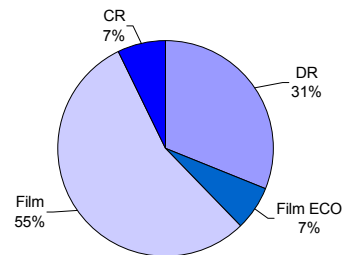


Technology

- › Analog image detectors
- › Dental film
- › ECO film
- › Digital (>1992)
- › CCD based image detectors (DR)
- › Phosphor plates (CR)

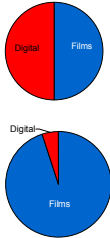


Distribution



Public / private

- › About 2/3 of x-ray machines in private sector and 1/3 in public
- › Private sector
 - › 50 % films
 - › 50 % digital
- › Public sector
 - › > 95 % films
 - › < 5 % digital



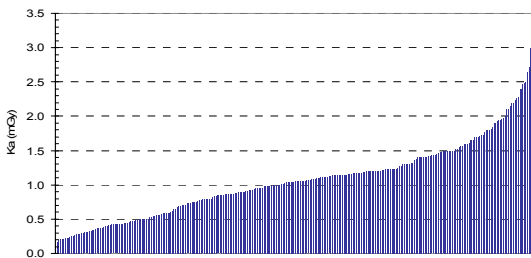
Radiation Protection Department
<http://www.zvd.si/>

Method

- › Measuring Ka at tip of x-ray machine cone
- › Exposure settings for adult molar tooth

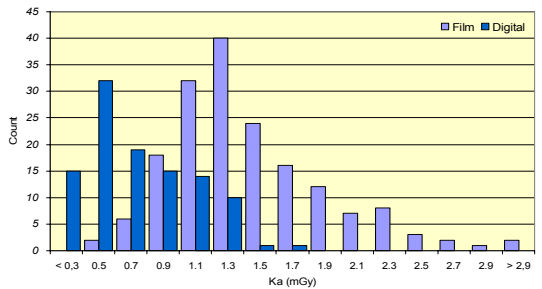


Ka distribution (all)



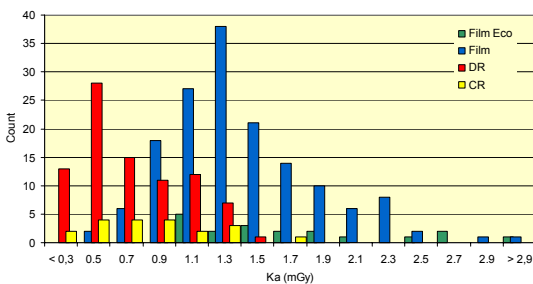
Radiation Protection Department
<http://www.zvd.si/>

... analog / digital



Radiation Protection Department
<http://www.zvd.si/>

... by technology



Radiation Protection Department
<http://www.zvd.si/>

Statistics

Ka (mGy)	Film	Digital det.	All
Minimum	0.30	0.15	0.15
Average	1.33	0.63	1.06
Third Quartile	1.52	0.87	1.32
Maximum	3.09	1.61	3.09

Radiation Protection Department
<http://www.zvd.si/>

Diagnostic reference levels

- › Proposal to Slovenian Radiation Protection Administration:
 - » Use two sets of DRLs
 - » **0,9 mGy** for digital
 - » **1,5 mGy** for films

Radiation Protection Department
<http://www.zvd.si/>

Is digital better in dental radiography?

- › DOSE – YES
- › Image Quality – I don't know
- › BUT
 - » For low volume users digital detectors more suitable due to possible problems with developing process
 - » The ease of taking and deleting an image can cause unjustified exposures

Radiation Protection Department
<http://www.zvd.si/>

Is digital better in dental radiography?

YES



Thank you for your attention

Radiation Protection Department
<http://www.zvd.si/>