

Ask EuroSafe Imaging Tips & Tricks

Paediatric Imaging Working Group

Collimation in Plain Radiography

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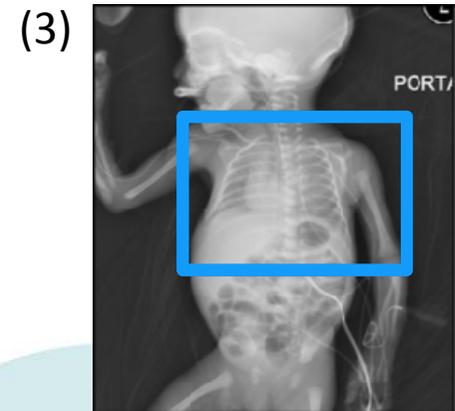
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Introduction

- The risk of exposure to radiation, especially in paediatrics, is a permanent topic on the agenda of global organisations like the ICRP, UNSCEAR, the IAEA and the WHO⁽¹⁾
- Paediatric radiographs are one of the first examinations for pathology diagnosis⁽²⁾

Introduction

- Technology development, although the high potential for dose reduction, in fact may contribute to a dose increase, due to incorrect use
- One example is the incorrect use of the imaging post-processing tool electronic collimation⁽³⁾

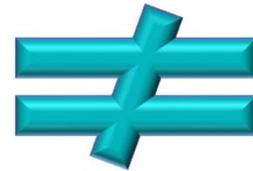


Procedure Optimisation

- Measure patient thickness
- Avoid the grid for body regions with less than 10 to 12cm
- Use of shielding materials
- **Appropriate collimation to the interest area**
- Verify the exposure parameters and the image quality⁽³⁾



Confusion

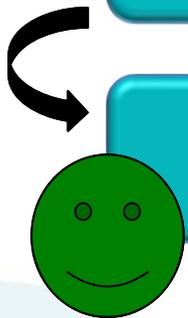


Beam Collimation

Electronic
Collimation

Radiation
protection

Image cropping



- The term “electronic collimation” is often misinterpreted as a radiation protection act, due to its proximity to the term “beam collimation”.

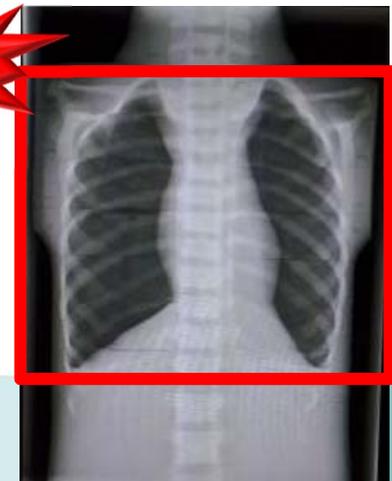
Experimental Tests



**Phantom
CIRS™ ATOM
model 705**

DAP increased by 17% per cm²
increased in beam collimation⁽⁴⁾

17
%



Additional Information

- Correct beam collimation will decrease radiation dose and improve the image quality, especially for digital images⁽⁵⁾
- Correct beam collimation will reduce the dose of the accompanying person
- Attention: A field that is too small may increase the risk of an erroneous diagnosis or require a second exposure for the child

Conclusion

Electronic collimation contributes to children overexposure⁽⁶⁾

Anatomic beam collimation is recommended as the best practice in digital systems⁽⁷⁾

Increase the awareness to use beam collimation instead of electronic in order to decrease patient exposure

References

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