

Pediatric CT dosimetry - how to optimize CT protocols

The technological advances in CT in recent years may involve reduced patient doses, but requires thorough knowledge about your choices influence image quality and dose. I will go through the practical dose parameters $CTDI_{vol}$ and DLP, popping up on the monitor when you order a new examination; diagnostic reference levels are linked to those quantities. DRL's is a useful tool in optimisation, but you must ever keep in mind the image quality requirements. Optimisation in paediatric CT is about^{*)}: 1) Accept noise as long as the scan is diagnostic for the specific clinical question, 2) Optimise scan parameters within the axial plane for your specific child, 3) Optimise scan parameters for volume coverage for your specific child, and 4) Scan minimal length, and 5) Minimal repeated scanning of repeated area. We will look at some new qualities for current CT's: Dynamic pre-patient collimation, anatomical tube current collimation, organ based tube current modulation, ECG controlled tube current modulation, tube voltage adapted to the size of object (child, adult, obese) and kind of material to be images (soft tissue, bone, contrast examinations), dual energy/dual source CT, and most importantly for dose reduction: new iterative reconstruction techniques. We will also address the multinational epidemiological paediatric CT study, <http://epi-ct.iarc.fr/> .

^{*)} Vock P et al. Dose Optimisation and Reduction in CT of Children. In: Tack et al (eds), Radiation Dose from Multidetector CT, Medical Radiology. Diagnostic Imaging, DOI: 10.1007/174_2011_499, Springer-Verlag Berlin Heidelberg 2012



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