

CT in Paediatric Abdominal Trauma: Dose Considerations

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CT for imaging pediatric trauma is an excellent tool because it is fast, accurate and does not usually require sedation or anaesthesia. In brain, chest and abdominal imaging it provides information that is not available from routine radiographs which affects management directly. Furthermore the wide availability of post processing software allows for reconstructions that facilitate communication of findings with clinicians and patients. CT for trauma has advantages over ultrasound in that it demonstrates renal vasculature and perfusion, provides more accurate detection of major organ injury and allows detection of skeletal trauma simultaneously at one sitting.

The advantages and hence increased use of CT have made it the major contributor of medical radiation to humans. Children are particularly at risk because of their size and susceptibility to radiation, and without tailored CT scan protocols a single abdominal CT can approximate the dose received by the atom bomb survivors in a 2km zone from the epicenter. This is associated with an increased risk of cancer in later life.

This paper will provide insight into the radiation risk from CT by:

- Quantifying the dose from CT in understandable terms
- Highlighting reasons why children are more susceptible
- Describing mechanisms for reducing radiation through educating clinicians
- Describing simple technical mechanisms for decreasing CT dose
- Providing examples of alternative imaging and the disadvantages of these
- Providing evidence of the limited knowledge of both clinicians and radiologists with regard to radiation exposure