Purpose: Pediatric x-rays techniques are not standardized. They depend upon: patient size, anatomical localized and equipment manufacturers. Most pediatric techniques use the default factory settings. This project's goal is to find the best compromise between dose to pediatric patients and optimal image quality.

Methods: Low contrast discrimination is the key to image quality. The manufacturers (Philips and GE) specific techniques were used to establish baseline values. The following factors were evaluated: kVp, mA, time, use of grid, collimation, focal spot size, AEC/manual, and added filters. The entrance skin exposure, entrance exposure to detector, equipment exposure index (EI) and contrast to noise ratio (CNR) for different thickness from neonatal to average child were assessed.

Results: Overall, some manufacturer's specific pediatric exposures techniques have higher entrance skin exposure than typical specified techniques. Equipment reported exposure index are not accurate enough to be used as “dosimeter”. Lower kVp, mA with longer exposure time will increase the low contrast detectability with better CNR but these also change the entrance skin exposure. Removal of grid, filters do reduce the entrance skin exposure, but these also reduce low contrast detectability. Focal spot size does not make a big impact in image quality due to the average detector pixel size. Collimation does make a difference in AEC sensitivity and exposure index (EI).

Conclusions: There is no single technique that is the best technique. It is all depend upon many factors like exam type and the size of the patients. Moreover, it is difficult to program the generator to use low kVp techniques, add or remove of filters, collimation, and use of AEC or manual mode, grid on or off in order to optimize the image quality while minimizing the dose to the patients. Some pediatric techniques with their associate CNR and radiation dose will be presented.

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None