Computed Tomography (CT) is responsible for a large proportion of effective collective dose in the USA, UK, Germany and Portugal (66%, 47%, 60% and 67% respectively) [1-3] and the number of paediatric patients undergoing CT examinations has dramatically increased in the last decade [4].

Concern is particularly justified for paediatrics due to their higher sensitivity to radiation and longer expected life time [5], especially as some radiological examinations at young ages are exposed to CT dose values similar to those for older children or adults [6].

To optimise paediatric CT examination the following procedures must be fulfilled:

1. Know the CT equipment
2. Regularly analyse CT dose values
3. Pre-set protocols according to the paediatric age categorisation
4. Adapt the protocol to the child’s size
5. Position the area of interest in CT gantry isocenter
6. Use a lower tube voltage and tube current suitable for paediatric categorisation
7. Use dedicated paediatric curves for tube current and voltage modulation
8. Increase the pitch in order to avoid overlapping
9. Use thin slices only when necessary
10. Restrict scan range length to what is necessary
11. Position the area of interest in CT gantry isocenter
12. Use dedicated paediatric curves for tube current and voltage modulation
13. Increase the pitch in order to avoid overlapping
14. Use thin slices only when necessary
15. Restrict scan range length to what is necessary
16. Avoid multiphase scanning
17. Use in-plane and out-of-plane shielding

In order to analyse the optimisation impact, image quality must be analysed in an objective and subjective mode. To perform objective analyses, image signal and noise must be compared pre and post-optimisation. Subjective analyses should follow the recommended imaging criteria and must be performed and discussed between radiographers and radiologists.

A multidisciplinary discussion of the optimisation process is essential for paediatric CT dose reduction without impairing image quality.

References