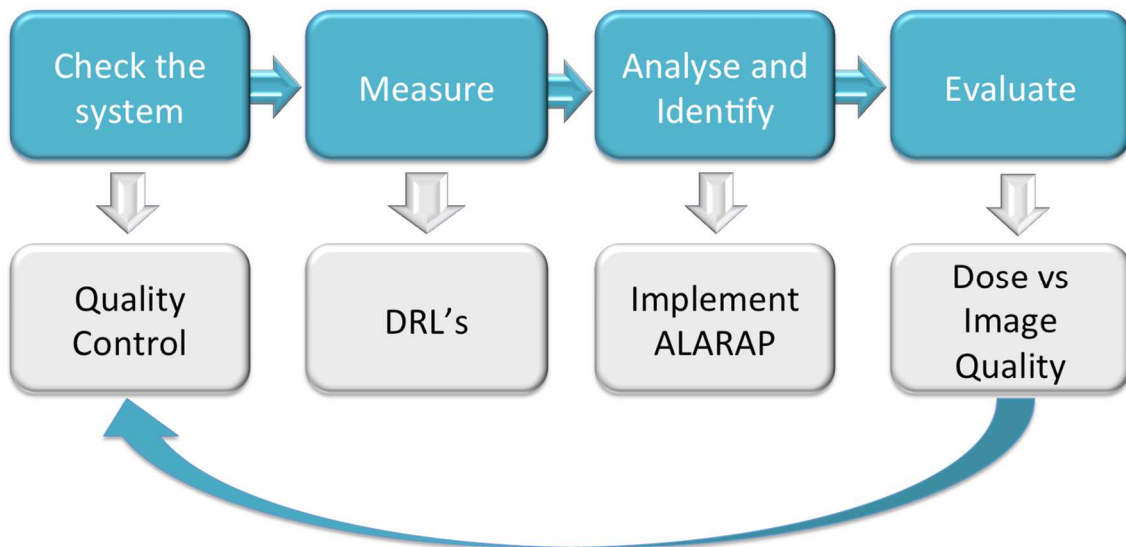


## Ask EuroSafe Imaging

### The optimisation process

Optimisation is a process that includes many steps as represented in the diagram:



The first step is checking the equipment quality control. The analysis of the dose values must be performed and local Diagnostic Reference Levels (DRLs) must be established (based on the 75<sup>th</sup> percentile dose values) for the different paediatric weight/age. The exposure parameters and dose values need to be compared with the literature and discussed with all the radiology team (radiologists, radiographers and medical physicists). The impact of the exposure parameter manipulation must be analysed in terms of radiation dose and image quality in order to find the optimum balance.

Optimisation is a process that demands the collaboration of radiologists, radiographers and medical physicists. It is, thus, very important that the team makes all the steps together. As image quality may be affected through optimization procedure, a good idea is to start with small steps and repeat the procedure in order to achieve and maintain good results.



The following references may be useful to optimise the exposure parameters and dose values, implementing ALARA principle:

EC. (1996b). *EUR16261- European guidelines on quality criteria for diagnostic radiographic images in paediatrics*. Retrieved from <ftp://ftp.cordis.europa.eu/pub/fp5-euratom/docs/eur16261.pdf>

EC. (2014). RADIATION PROTECTION N ° 180 Diagnostic Reference Levels in Thirty-six European Countries. Retrieved from <http://ec.europa.eu/energy/en/content/rp-180-medical-radiation-exposure-european-population-part-1-part-2>

IAEA. (2012a). *(International Atomic Energy Agency) Safety Reports Series N°71 Radiation Protection in Paediatric Radiology - IAEA Safety Standards and related publications*. Retrieved from <http://www-ns.iaea.org/standards/>

Image Gently. (2013). The alliance for radiation safety in pediatric imaging. Retrieved from <http://www.pedrad.org/associations/5364/ig/?page=365>

UNSCEAR. (2013). *United Nations Scientific Committee on the Effects of Atomic Radiation 2013 Report - (Vol. II)*. Retrieved from <http://www.unscear.org/unscear/en/publications.html>