The process of optimisation of radiological protection – the significance of diagnostic reference levels

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The system of diagnostic reference levels in medicine has been presented as a tool to advice on when a local review of the procedures and equipment is warranted in order to determine whether the protection has been adequately optimised. The system is somewhat country specific, presumably due to different national regulations or guidelines, but as a whole relies on the same principles and standards. Diagnostic reference levels are typically set for standardised patients and procedures with minor considerations of the need to manage individual patient characteristics or specific medical tasks in the optimisation process.

Optimisation of radiological protection should involve key aspects influencing the radiation dose to the patients and also include the needs of optimising the protection for each patient individually. The actual given radiation dose to the patient is affected by a number of factors, amongst other things equipment specific features and training of staff performing the examinations. This emphases the need to take a holistic approach and integrate different clinical processes - e.g. purchasing of equipment or the implementation of new examination protocols in the clinic – in the process of optimisation. Taking this approach gives the opportunity to evaluate the significance of the current system of diagnostic reference levels in the process of optimisation and to identify other reference levels supporting the process of optimisation.

This paper will investigate the optimisation process and identify key instances where reference levels could provide support to the optimisation process. The issue of optimising the individual examination with regard to patient characteristics and medical indication will be specifically addressed.