

PiDRL Project – European diagnostic reference levels for paediatric imaging

The project is coordinated by the European Society of Radiology (ESR).
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Background

Tremendous growth in the use of computed tomography (CT) and interventional radiology procedures (IR) examinations took place after the introduction of multi-detector CT in 1999. Radiological imaging of children, some organs of whose are particularly sensitive to radiation, has been shown to be among the fastest growing areas in the last few years. In 1999, the European Commission issued Radiation Protection 109 (RP 109), 'Guidance on diagnostic reference levels (DRLs) for medical exposure'. This document highlights the importance of establishing DRLs for high-dose medical examinations, in particular CT and IR, of patients sensitive to radiation, especially children. The approach most commonly used for adults has been that of average-sized adult phantom or standard phantom. The same approach has not been considered appropriate for children in view of the wide variation in body habitus.

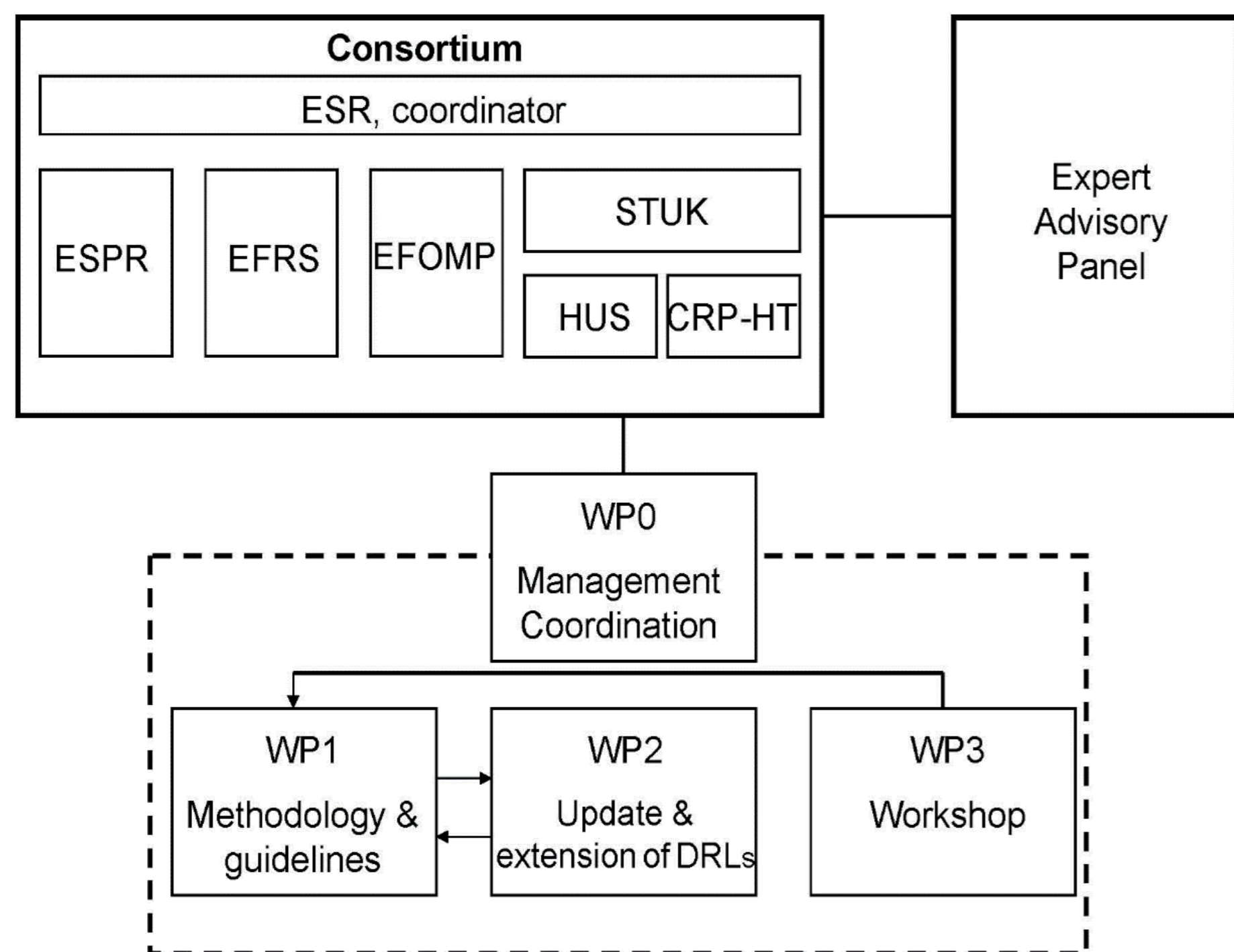
Despite a large number of studies available from European countries, European DRLs for paediatric patients are only available for some common radiological examinations. There is a need to consolidate what is available and to provide guidance on what actions are needed in using DRLs to further enhance radiation protection of children. The European Commission recognised this need and approved a project on the establishment of European DRLs for paediatric patients in December 2013.

EC Tender Project

This 27-month tender project was awarded to a consortium, which is headed by the European Society of Radiology (ESR). Other participating organisations are key European stakeholders and professional groups with relevance to radiation protection of paediatric patients:

- » European Society of Paediatric Radiology (ESPR)
- » European Federation of Radiographer Societies (EFRS)
- » European Federation of Organisations for Medical Physics (EFOMP)
- » Finnish Radiation and Nuclear Safety Authority (STUK) with Helsinki University Hospital (HUS) and Public Research Centre Henri Tudor (CRP-HT) as subcontractors

The kick-off meeting and first Steering Committee meeting took place in Luxembourg in January 2014.



Objectives

PiDRL is intended to provide European DRLs for paediatric examinations and to promote their use so as to advance the optimisation of radiation protection of paediatric patients, with a focus on CT, interventional procedures using fluoroscopy, and digital radiographic imaging.

The specific objectives are to:

- » Agree on a methodology for establishing and using DRLs for paediatric imaging
- » Update and extend the European DRLs to cover more procedures and a wider patient age/weight range based on current knowledge

Tasks

The project's work includes three major tasks:

1. Developing of European Guidelines on diagnostic reference levels for paediatric imaging covering plain radiography; fluoroscopy; CT; IR procedures; and as far as possible, examinations using mobile equipment, e.g. on neonates (**Work Package 1**)
2. Deciding on European DRLs for the main paediatric imaging procedures, involving plain radiography, fluoroscopy, CT, IR and as far as possible, examinations using mobile equipment, e.g. on neonates (**Work Package 2**)
3. Organising a European workshop to discuss the results of the first two tasks and the need for further action on DRLs and the optimisation of radiation protection of paediatric patients (**Work Package 3**). This workshop will probably take place in October 2015.

To fulfil these objectives, this project relies on:

- » The cooperation of the most relevant European umbrella organisations and their key experts in this field, supported by a radiation protection authority with wide experience on setting DRLs and radiation protection of paediatric patients, further supported by its sub-contractors of a paediatric hospital and an IT expert institute.
- » A European workshop to discuss and disseminate the results of the work packages, in particular the new insights gained, the need for further action on DRLs and their use in optimising the radiation protection of paediatric patients.
- » An Expert Advisory Panel made up of representatives from the World Health Organisation (WHO), the International Atomic Energy Agency (IAEA), the National Council on Radiation Protection and Measurement (NCRP), Public Health England (PHE), and the Cardiovascular and Interventional Radiological Society of Europe (CIRSE). Heads of the European Radiological Protection Competent Authorities (HERCA) and the International Commission on Radiological Protection (ICRP) have been asked to nominate a representative. The consortium will keep the option open of approaching and consulting experts or representatives of European international organisations or other organisations for detailed expertise not covered by the consortium members, in view of scientific nature of the project.
- » Interaction with the Working Party on Medical Exposures of the Article 31 Group of Experts of the EURATOM Treaty during the project lifetime for feedback on the work performed.



Participating experts:

ESR: M. Rehani (Scientific Coordinator; Chair WP 0, WP 2 and WP 3; Member WP 1), P. Vock (Scientific Co-Coordinator; Chair WP 0; Member WP 1 and WP 2), J. Damilakis (Member WP 2), R. Loose (Member WP 2), M. Hierath (Project Manager)

ESPR: C. Owens (Co-Chair WP 3; Member WP 1), H. Ducou Le Pointe (Member WP 2), C. Granata (Member WP 2), E. Sorantin (Member WP 1), K. Rosendahl (Member WP 1)

EFRS: G. Paulo (Co-Chair WP 2; Member WP 1), S. Foley (Member WP 2 and WP 3), D. Pekarovic (Member WP 1)

EFOMP: S. Evans (Member WP 1 and WP 2), H. Bosmans (Co-Chair WP 1; Member WP 2), V. Tsapaki (Member WP 1 and WP 3), J. Vassileva (Member WP 1 and WP 2)

STUK: H. Järvinen (Chair WP 1; Member WP 2 and WP 3)

HUS: M. Kortetniemi (Member WP 1), R. Seuri (Member WP 1 and WP 2)

CRP-HT: A. Jahnen (Member WP 1)