



CHILD-MED-RAD: Cohort studies of children with substantial medical diagnostic exposures (feasibility)

Background: Diagnostic radiation represents an indispensable, sometimes life-saving, tool in modern medicine. However, the growing use of diagnostic X-rays and of relatively high-dose techniques (CT scans, interventional procedures) is a topic of concern in radiological protection, especially in children and adolescents. Children are generally more sensitive to health effects of radiation than adults. In addition, they have a longer life-span to express any effect and, because of their smaller mass children, may receive higher doses to specific organs from these procedures if examination protocols are not adapted.

Objective: The increasing use of paediatric diagnostic exposures is therefore a unique opportunity to address the possible health effects of low doses of radiation in an *a priori* particularly sensitive population. The main objective of the project is to assess the feasibility of establishing trans-national cohorts suitable for long term follow up and to make recommendations concerning for future research needs.

Approach: Because of the small magnitude of anticipated effects, this requires the conduct of large-scale multinational collaborative studies. The countries included in this project at the outset are: Denmark, Finland, France, Germany, the Netherlands Spain, Sweden and the UK. Scientists from Japan, Canada, Israel, the U.S. and from the WHO (Geneva) are also involved as experts to ensure that planned studies are fully harmonized with other existing or planned activities around the world.

The project involves a broad variety of activities covering:

- Identification of the groups of patients of greatest concern;
- Evaluation of the likely size of the population and the likely magnitude of doses from these procedures;
- Evaluation of sources and mechanisms for identifying and following the cohorts;
- Assessment of the availability of information needed for dose reconstruction;
- Assessment of the likely statistical power of a study;
- Recommendations concerning the groups most suitable for follow-up;
- Development of study protocols, including dose reconstruction protocols;
- Development of procedures for follow-up;
- Establishment of necessary collaborations and preparation of applications for ethics approval, when applicable.

Outcome: A report produced at the end of the study should comprise two parts: 1) assessment of the feasibility of establishing trans-national cohorts suitable for long term follow up; 2) recommendations for future research needs.

If the feasibility is demonstrated, specific project proposals, including study protocols, procedures for follow-up, dose reconstruction protocols, will be developed.

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