



EPI-CT study - overview

*EU scientific seminar on
Individual radiosensitivity*

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Major concerns: CT scans



- The use of CT scans has grown rapidly
- Radiation doses are substantially greater than from conventional X-rays
- CT protocols are not always adapted for paediatric patients
- Children may receive higher doses than adults
- Children are generally more sensitive to the effects of radiation
- Children have a longer life-span to express health effects





Main objectives of EPI-CT



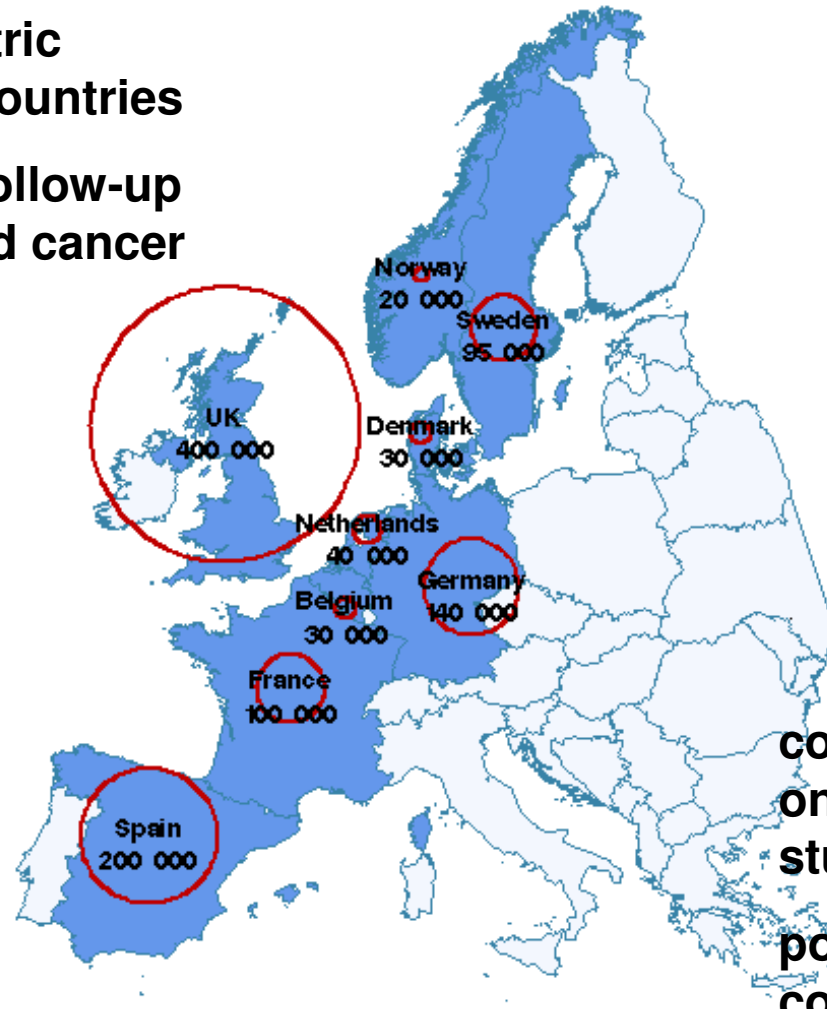
- Establish a large multinational cohort of paediatric patients who received CT scans
- Develop individual estimates of organ-specific doses
- Evaluate the radiation-related risk of cancer in this cohort
- Test biological markers of the mechanisms behind the low dose hypersensitivity – can we identify individuals who are more sensitive to adverse effects of CT?
- Provide recommendations for a “harmonised” approach to CT dose optimisation **and justification** for paediatric patients in Europe



Estimated cohort size per country



~ 1mln of paediatric patients from 9 countries
~ 11y - average follow-up for leukaemia and cancer



coordination with ongoing or planned studies outside Europe
possible size of the joint cohort ~1.7mln

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Objectives of the study of biological mechanisms



It is a pilot study to develop a protocol for a possible fully integrated main study

- To investigate age dependence of radiation sensitivity – monitoring of DNA damage
- To analyse new methods of gene expression profiling - if there is a common pattern
- To investigate inflammatory response analysis of chemokines, cytokines
- To assess and compare different experimental protocols from different centres
- To test feasibility of using less invasive biological samples



List of EPI-CT Participants



No	Name	Short name	Country	month ¹⁰	month
1	CENTRE INTERNATIONAL DE RECHERCHE SUR LE CANCER	IARC	France	1	60
2	UNIVERSITAETSMEDIZIN DER JOHANNES GUTENBERG-UNIVERSITAET MAINZ	UMC-Mainz	Germany	1	60
3	SATEILYTURVAKESKUS	STUK	Finland	1	60
4	KAROLINSKA INSTITUTET	KI	Sweden	1	60
5	UNIVERSITY OF NEWCASTLE UPON TYNE	UNEW	United Kingdom	1	60
6	FUNDACIO CENTRE DE RECERCA EN EPIDEMIOLOGIA AMBIENTAL - CREAL	CREAL	Spain	1	60
7	INSTITUT NATIONAL DE LA SANTE ET DE LA RECHERCHE MEDICALE (INSERM)	INSERM	France	1	60
8	KRAEFTENS BEKAEMPELSE	DCS	Denmark	1	60
9	STICHTING HET NEDERLANDS KANKER INSTITUUT	NKI	Netherlands	1	60
10	STUDIECENTRUM VOOR KERNENERGIE	SCK-CEN	Belgium	1	60
11	INSTITUT DE RADIOPROTECTION ET DE SURETE NUCLEAIRE	IRSN	France	1	60
12	Centre d'Assurance de qualité des Applications Technologiques dans le domaine de la Santé	CAATS	France	1	60
13	CENTRE DE RECHERCHE PUBLIC HENRI TUDOR	CRP	Luxembourg	1	60
14	NORWEGIAN RADIATION PROTECTION AUTHORITY	NRPA	Norway	1	60
15	OSLO UNIVERSITETSSYKEHUS HF	OUS	Norway	1	60
16	INSTITUT CURIE	IC	France	1	60
17	UNIVERSITEIT GENT	UGent	Belgium	1	60
18	BUNDESAMT FUER STRAHLENSCHUTZ	BFS	Germany	1	60

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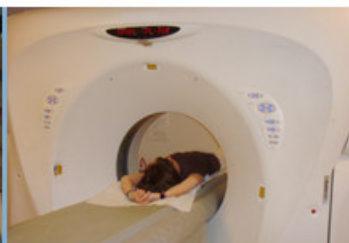
epi-ct.iarc.fr

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EPI-CT: International pediatric CT scan study



http://epi-ct.iarc.fr



Waiting for the picture



HOME

SCOPE OF THE PROJECT

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ETHICS

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BIOLOGY

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Diagnostic radiation represents an indispensable tool in modern medicine. Physicians see benefits of using computerised tomography (CT) scanning in their daily clinical practice. The growth of CT use in children has been driven primarily by the reduction in the time needed to perform a scan. As a consequence, it is now possible to perform more examinations in a given time, extend the scope of some examinations, as well as to introduce some new techniques and examinations. The ease of acquisition of images results sometimes in unnecessary exposures of patients to radiation, particularly in the developed countries. Furthermore, organ doses from CT scanning are considerably larger than those from corresponding conventional X-rays. For example, a dose to the stomach from a conventional abdominal x-ray examination is approximately 0.25 mGy, which is at least 50 times smaller than the corresponding stomach dose from an abdominal CT scan (Brenner & Hall, 2007).

The growing use of CT technology despite the introduction and wider use of other modalities, such as magnetic resonance imaging, raises concerns in radiological protection, especially for children and adolescents. Children are generally more sensitive to the carcinogenic effects of ionizing radiation than adults. In addition, they may receive even higher radiation doses from a CT procedure than an adult. The long-term



Thank you !

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