

European Population Dose from Radiodiagnostic Procedures - Results of Dose Datamed 2

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1. Introduction

In the end of 2010 the European Commission launched the DOSE DATAMED 2 (DDM2) project (www.ddmed.eu) with the objective to collect available data on the doses from radiodiagnostic (x-ray and nuclear medicine) procedures in the European Union and to facilitate the further implementation of the "Radiation Protection 154. European Guidance on Estimating Population Doses from Medical X-Ray Procedures". A database for population doses will be established for the purpose of systematic evaluation of results and to enable a continuous follow-up and up-date of population doses in Europe as well as trends in their development.

2. Materials and methods

The data collection was carried out by electronic online questionnaires. Data consists of frequencies and effective doses for the Top 20 procedures and nuclear medicine Top 5 examinations. Moreover, the existing diagnostic reference levels (DRLs) were collected for all radiodiagnostic procedures.

3. Results

For the first time in Europe the DDM2 project will estimate the European population dose from radiodiagnostic procedures. The preliminary estimation is 1 mSv per caput. That is based on the data received until 12th of March 2012 from 33 countries for frequency and dose data of x-ray procedures by Top 20 method according to the RP 154 (Fig 1). The preliminary estimated population dose using Top 20 method is 0,76 mSv per caput including the following countries: Austria, Belgium, Bulgaria, Czech Republic, Croatia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, Macedonia, Malta, Moldova, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Sweden, Switzerland, Ukraine and United Kingdom. According to the RP 154 the Top 20 method underestimates the dose so that the dose represents 70-90 % of the total dose of all procedures. Within few weeks the countries will verify their own data that was provided for the project. The results will be presented in the Workshop in Athens 24-26 April 2012.

Data concerning nuclear medicine examinations was available for five most common examinations from 31 countries. DRLs for adult X-ray procedures were reported from 21 countries until 12th March 2012 (Fig 2).

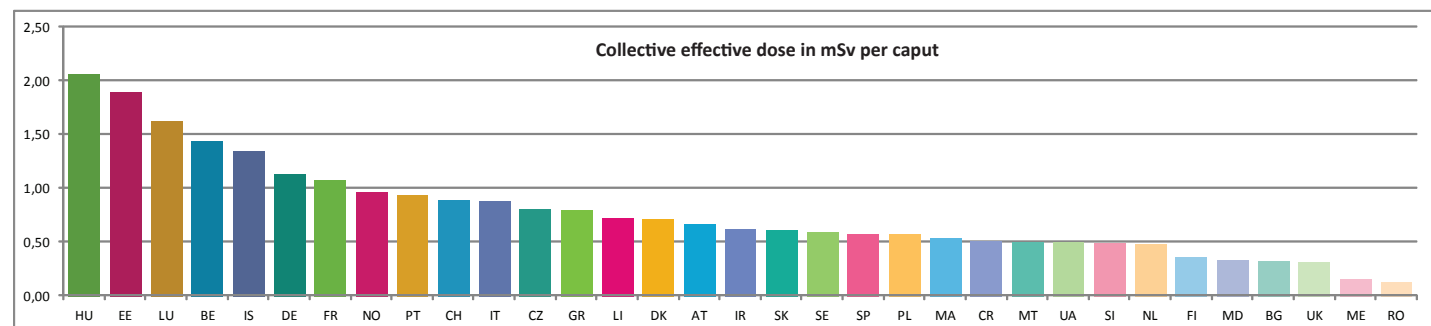


Figure 1. Collective effective dose [mSv] per caput in 33 European countries was estimated using Top 20 method. The data is preliminary data available on 12th March 2012 and will be verified by countries before the Workshop in Athens on 24-26 April 2012. Some countries have expressed their willingness to submit their data later during the project.

4. Conclusions

In the European Union Member States regulations or recommendations to estimate population dose originating from radiodiagnostic procedures exists in two thirds of the countries. The DDM2 project will provide the first estimation of the population dose from radiodiagnostic procedures in the whole Europe. The final results will be available by the end of 2012.

The usefulness of the Top 20 method will be tested in the project and suggestions for improving the method will be given. For nuclear medicine suggestions for similar guidelines will be presented.

Most comprehensive national data from some countries will be used as a baseline to which Top 20 method will be compared. Also new conversion factors from ICRP 103 (ICRP 2007) will be used and the influence of them on the population dose will be investigated.

DDM2 is a two years project financed by the European Commission. The project started in the beginning of 2011.

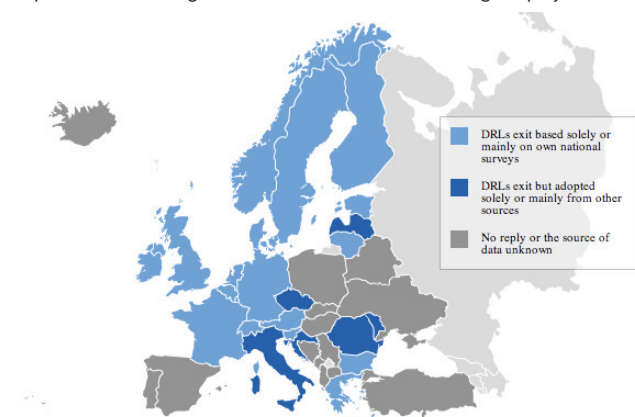


Figure 2. Diagnostic reference levels (DRLs) for most common X-ray procedures for adults exist in most European countries and they are mainly based on national surveys.