



DAMEX – A Patient Dose Database for the Continuous Assessment of the Medical Radiological Practice in Switzerland

Treier, R.¹; Trueb Ph. R.¹; Samara, E.²; Aroua, A.²; Verdun, F.²; Zeller, W.¹

¹ Federal Office of Public Health, Bern, Switzerland

² University Institute of Applied Radiation Physics, Lausanne, Switzerland

1. INTRODUCTION

- In Switzerland, the Federal Office of Public Health (FOPH) represents the responsible supervisory authority for radiation protection in medicine.
- The FOPH performs regularly technical audits to check the compliance with the legal requirements and to collect patient doses.
- Collected patient doses in diagnostic radiology provide the basis for national diagnostic reference levels (DRLs).
- DRLs are defined as the 75th percentiles of the dose distributions.
- The aim of this project was to develop a patient dose database allowing the continuous adaptation of national DRLs to the actual radiological practice.

2. MATERIALS & METHODS

- "DAMEX" (Database of medical radiological examinations) has been developed and implemented using Microsoft Office Access 2007.
- DAMEX contains information on the licence holder, audit, manufacturer, X-ray unit, patient doses as well as technical parameters for computed tomography (CT), fluoroscopy and radiography.
- Audit data as recorded using Microsoft Office Word documents has been manually entered in DAMEX by means of user-defined forms.

3. RESULTS

- Descriptive statistics of the DAMEX data is presented in the table below.

	CT	Fluoroscopy	Radiography
Start of data collection	2007	2004	2008
Number of X-ray units audited	274	38	50
Number of indication-based examinations	21 (adults) 5 (children)	12 (diagnostic) 15 (therapeutic)	7
Dose quantities	<ul style="list-style-type: none"> Computed Tomography Dose Index (CTDI_{vol}) Dose-Length-Product (DLP) 	<ul style="list-style-type: none"> Dose-Area-Product (DAP) Number of images (N) Fluoroscopy time (t) 	<ul style="list-style-type: none"> Entrance-Surface-Dose (ESD)
Number of dose entries	3'286	2'078	2'574
Publication date of national DRLs	01.04.2010	31.01.2008	01.07.2011

- National DRLs are published in technical bulletins and are available for download at the FOPH Website

<http://www.baq.admin.ch/themen/strahlung/10463/10958/index.html?lang=de>

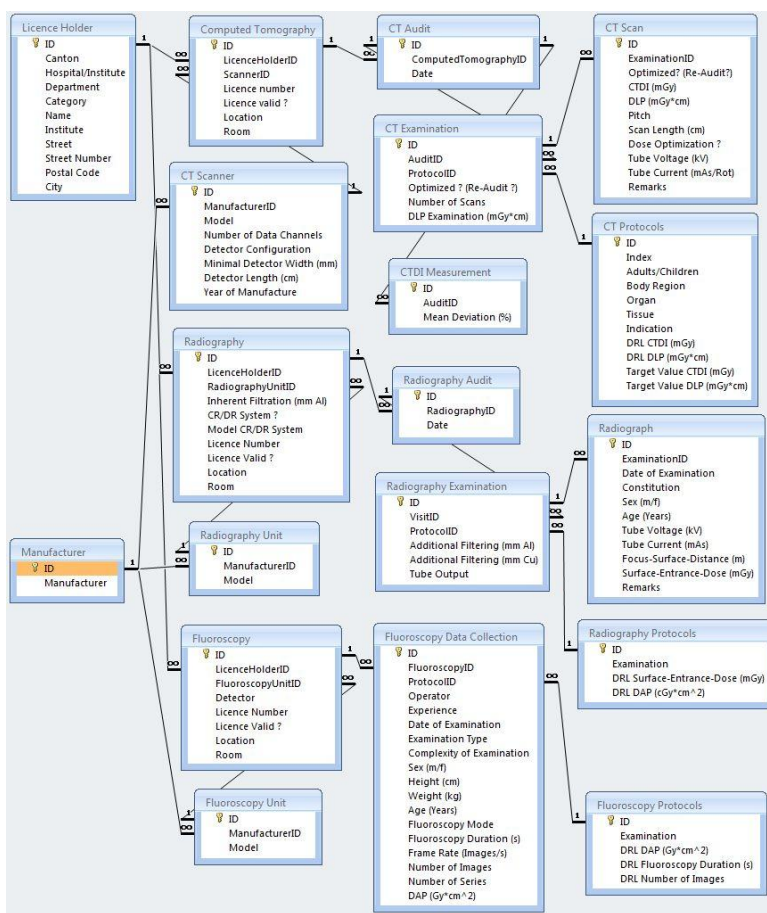
Presenting author

Dr. Reto Treier, PhD
Federal Office of Public Health
Radiation Protection Division
Phone +41 31 322 96 05
Email reto.treier@baq.admin.ch



- The figure below shows the DAMEX structure with relationships.

Tables in 1st column: general data on licence holder and manufacturer
Tables in 2nd column: technical data on X-ray unit
Tables in 3rd column: general data on the audit
Tables in 4th column: data on patient doses and imaging parameters



4. DISCUSSION & CONCLUSION

- The database DAMEX has been developed for patient dose registration of CT, fluoroscopy and radiography procedures.
- DAMEX provides the basis for defining national DRLs and thus allows the continuous assessment of the medical radiological practice in Switzerland.

5. OUTLOOK

- Expansion of the database to cover additional data for mammography (start of audits is scheduled for summer 2012).
- Development of web-based masks or specifically designed tables in Microsoft Office Excel for automatic data import in DAMEX.
- Link DAMEX to RADDOSSE (<http://www.raddose.ch/>; database containing frequencies of diagnostic X-ray procedures in Switzerland) to estimate more realistically the collective effective dose for the Swiss population.