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

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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 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.

<table>
<thead>
<tr>
<th>Start of data collection</th>
<th>CT</th>
<th>Fluoroscopy</th>
<th>Radiography</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of X-ray units audited</td>
<td>2007</td>
<td>2004</td>
<td>2008</td>
</tr>
<tr>
<td>Number of indication-based examinations</td>
<td>274</td>
<td>38</td>
<td>50</td>
</tr>
<tr>
<td>Number of dose entries</td>
<td>21 (adults) 5 (children)</td>
<td>12 (diagnostic) 15 (therapeutic)</td>
<td>7</td>
</tr>
</tbody>
</table>

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

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 RADDOS (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.