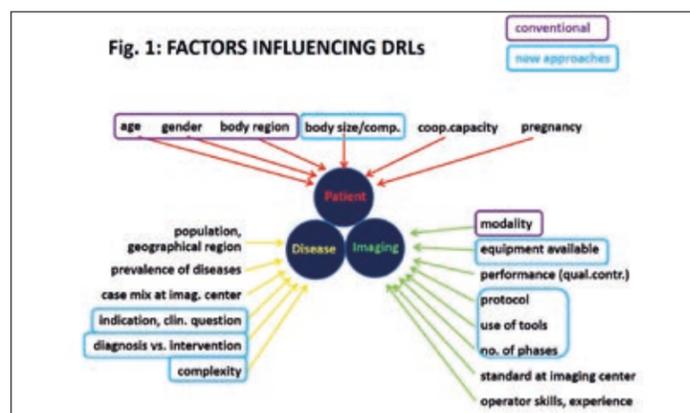


BY PETER VOCK

Clinical Diagnostic Reference Levels

For two reasons, today's EuroSafe Imaging session will be entirely dedicated to diagnostic reference levels (DRLs). First, Article 56.2 of the European Basic Safety Standards (Council Directive 2013/59/EURATOM) asks the Member States to transpose the establishment of DRLs for radiodiagnostic examinations into their national legislation by February 2018, and second, the methods for establishing DRLs and their practical use vary a lot, which underlines the need for recognised standards.



The session will be chaired by Prof. Guy Frija from Paris, chair of the EuroSafe Imaging Campaign, and Mr. Georgi Simeonov from Luxembourg, European Commission Directorate-General for Energy. First, Frija will introduce the concept of clinical DRLs. DRLs were proposed around 20 years ago as an optimisation tool in medical imaging using ionising radiation where – other than for occupational exposure and other uses – individual dose constraints do not apply, and where doing more good than harm is the supreme rule.

DRLs are defined for the different modalities and body regions by the 75th percentile of the dose distribution in a population of standard-sized patients. While exposure in an individual patient may thus exceed the specific DRL, the median dose of the whole group of patients (at a local, national or regional level) has to stay within the DRL in order to avoid unnecessarily high exposure. Frija will also point to the limitations

of conventional DRLs. He will do so by explaining that patients are not usually standard sized and different clinical questions (indications) do not need the same image quality in order to be answered, which means DRLs should reflect the indication and patient size.

Prof. Reinhard W.R. Loose from Nürnberg, chair of the ESR Radiation Protection Subcommittee, will then illustrate the reasons for clinical DRLs, their basics in the different imaging modalities and their practical impact. Radiography, fluoroscopy and intervention, as well as nuclear medicine, require clinical DRLs, but since CT is the major contributor to the medical population dose, he will dedicate a major part of his presentation to the specific implementation of clinical DRLs in computed tomography.

Prof. Eliseo Vaño from Madrid, chair of Committee 3 of the International Commission on Radiological Protection (ICRP), will present the ICRP's approach to changing

from methodological region-related DRLs to DRLs based on clinical indications, and he will be able to show both the ICRP's draft for recommendations of DRLs in medicine and the results of the consultation on this draft. It is an important intention of the ICRP to standardise the methodology of establishing DRLs, and he will include the related recommendations.

Recognising the need for clinical DRLs, the ESR started a pilot survey in 2015 to establish DRLs for a few frequent indications for CT. The results of this survey will be presented by Prof. Peter Vock from Spiegel, Switzerland, member of the EuroSafe Imaging Steering Committee. Not only did this survey demonstrate the feasibility of online DRL surveys, it also allowed the definition of DRLs for these few indications. Furthermore, it showed a wide variation of results. Many factors contribute to the spread of data, and some will be analysed in the session (Figure 1). Of course, one has to avoid complexity and concentrate on the most important factors. Lessons learnt from this pilot survey will help define more strict methods for future surveys among EuroSafe Imaging Stars.

The final lecturer, Prof. Richard L. Morin from Jacksonville, U.S., will present the approach of the American College of Radiology to defining DRLs using the Dose Index Registry (DIR). While the American and the European DRL projects share the aim of optimising medical imaging radiation exposure and reaching the image quality needed for the specific task, there are subtle

practical and cultural differences between the two continents. For example, using the effective diameter of patients' trunks, the DIR uses future-oriented, software-generated and size-specific dose estimates (SSDE) to adapt exposure to the size of the patient.

The panel of session chairs and speakers will conclude the talks by discussing the future role and limitations of clinical DRLs, the cooperation with EuroSafe Imaging Stars and answering questions from the participants.

The session – through the implementation of the new European Directive – addresses most congress participants, whether they are radi-

ologists, radiographers, medical physicists or administrative and IT team members of departments of radiology in Europe.

Peter Vock is retired chairman and senior consultant radiologist at the University Hospital of Bern, Switzerland; he chaired the ESR Radiation Protection Subcommittee for many years and is now the coordinator of EuroSafe Imaging's Subgroup for Clinical DRLs.



EuroSafe Imaging Session

Wednesday, March 1, 16:00–17:30, Room M1
EU 1 Clinical diagnostic reference levels

Moderators: G. Frija; Paris/FR
G. Simeonov; Luxembourg/LU

- » **Introduction**
G. Frija; Paris/FR
- » **Clinical diagnostic reference levels: from concept to impact in clinical practice**
R.W.R. Loose; Nurnberg/DE
- » **ICRP perspective: from methodological region-related DRLs to DRLs based on clinical indications**
E. Vaño; Madrid/ES
- » **EuroSafe Imaging clinical DRLs: detailed results of the pilot survey and lessons learnt for the survey among the EuroSafe Imaging Stars**
P. Vock; Spiegel/CH
- » **North American DRLs: a view from across the pond**
R.L. Morin; Jacksonville, FL/US
- » **Panel and public discussion**

This session is part of the EuroSafe Imaging campaign.

BY FILIPE CASEIRO-ALVES

Portugal to adopt ESR's European Training Curriculum for Radiology

In Portugal, the radiology training programme has been based on a 4+1 module since its inception in 1999, and at that time Portugal was among the first countries to include the concept of subspecialisation; with the last year of residency devoted to the choice of one of the specific fields of neuroradiology, paediatric radiology, interventional radiology and general radiology.

The residency programme in Portugal is highly demanding and

includes a final board examination. Until now this system has prevailed, but we are currently in the midst of a changing process in order to accommodate the European Training Curriculum for Radiology, and deliver a 3+2 (Level I+II) post-graduate course to our residency programmes. This will be a major endeavour since the majority of Portuguese Hospitals still deliver residency programmes in radiology that are more technique-ori-

ented than organ-oriented. Several organisational issues need to be met before we can fully embrace the 3+2 European structure. The Portuguese Society of Radiology and Nuclear Medicine (SPRMN) has collaborated closely with the European Society of Radiology (ESR) in the past to promote the ESR's educational view, but locally a professional cultural change will undoubtedly be needed. University hospitals will need to focus more and more on

organ-oriented services in radiology, promoting and protecting time for clinical interaction in multidisciplinary meetings, along with more involvement in clinical research. The educational activities of the ESR, especially the annual exchange programmes such as fellowships, together with the subspecialisation learning by the School of the SPRMN, are instrumental tools to deliver and anchor the future format of radiology training.

This is our big agenda for the years to come for the sake of radiology and for the sake of educational harmonisation throughout Europe.

Prof. Filipe Caseiro-Alves is a radiologist at the Centro Hospitalar Universitario de Coimbra, Portugal, and President of the Sociedade Portuguesa de Radiologia e Medicina Nuclear (SPRMN), Portuguese Society of Radiology and Nuclear Medicine).