Key Performance Indicators for Radiation Protection

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Background/introduction

The ESR EuroSafe initiative has developed several action items. One of these tasks is Action Topic 5 on the development of performance indicators for radiation protection management (1). The basis for this task are Action Items Number 7 and 8 of the IAEA Bonn Call for Action from 2012. These items are about

- Improve prevention of medical radiation incidents and accidents
- Strengthen radiation safety culture in health care

The ESR Subcommittee on Professional Issues and Economics in Radiology (PIER) has been asked to provide a concept for Key Performance Indicators (KPIs) for this EuroSafe Action Topic 5.

Discussion inside PIER has been initiated in 2018, as also communication with other relevant groups inside ESR. It is obvious, that the development of KPIs will be a challenging task, especially considering the high heterogeneity of hospitals, health systems and radiation protection culture throughout Europe. However, it seems that PIER is an appropriate platform to develop and propose such KPIs, considering the interdisciplinary representation.
Description of activity and work performed

As part of this task, many different aspects should be considered, e.g. dose recording systems, personalized feedback, mapping of examination protocols, equipment and maintenance plans, trigger levels, education&training, numbers of repeated examinations, causes and errors including procedures to wrong patients, wrong side or region, radiation protection devices, appropriateness etc..

Based on the Council Directive 2013/59/EURATOM (EU-BSS) art. 63 and 96, several requirements have to be transformed into national law including reporting criteria for "significant events", which includes overexposures and also unintended radiation exposures.

The development of such reporting systems is an ongoing process in many countries.

Proposing criteria as KPIs based on so many different items has to consider different criteria, esp. for handling, usability, automatization, stability, reproducibility, availability of informations, impact, consistency, evidence and consensus based items, etc..

Actually, there is a preliminary concept as a proposal for further discussions and developments. It is proposed to have three different levels,

- Basic KPIs, with e.g. standards as accordance to clinical DRLs or number of significant events

- Regular KPIs, with e.g. basic KPIs plus level of appropriateness (using CDS), near misses or unintended exposures

- Advanced KPIs, regular KPIs plus accordance with different ESR recommendations, e.g. renewal and maintenance of equipment.

Additionally, the development of descriptions and definitions of KPIs should be added and templates for documentation&communication of KPIs will be planned.
Conclusion and recommendations

Developing KPIs for radiation protection management is a challenging task, especially considering the high heterogeneity of hospitals, health systems and radiation protection culture throughout Europe. A preliminary concept has been proposed by PIER. Several ESR position papers and recommendations, as also contributions from other experts inside ESR will be part of further work-up (2-4). It is intended to present results while the next ECR.
Personal/organisational information

This work is an ongoing process of discussion and development of the ESR Subcommittee of Professional Issues and Economics in Radiology (PIER).

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References

1. www.eurosafeimaging.org/

