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LEADING THROUGH CHANGE
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Enhancing patient safety by implementing a digital centralized dose management program within a large-scale healthcare organization across 13 countries and 120 CT scanners

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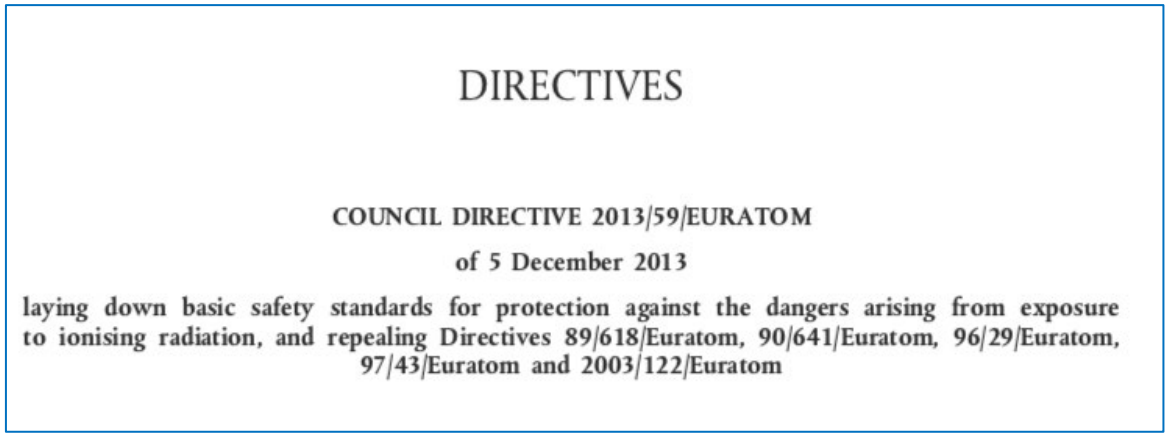
affidea

Introduction



DIRECTIVES

COUNCIL DIRECTIVE 2013/59/EURATOM

of 5 December 2013

laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom

- Dose Management
- Diagnostic Reference Levels (DRLs)
- Optimization of medical exposures
- Root cause analysis of high dose level examinations

Goal:

Adapt CT practice in order to perform examinations at the as low as reasonably achievable dose for the majority of clinical indications while maintaining diagnostic image quality.

The Dose Management Program

13
Countries

>75k
Scans Per Month

120
CT & PET/CT Systems Connected

Czech Republic
Croatia
Greece
Hungary
Ireland
Italy
Lithuania
Poland
Portugal
Romania
Spain
Switzerland
Turkey

Digital Centralized Dose Management Program

- Improve imaging procedures by unifying & standardizing practice
- Enhance patient safety by achieving optimum radiation dose while ensuring diagnostic confidence
- Ensure regulatory compliance

The Digital Dose Management Process

Standardized input

- Standardized Protocols by clinical indication and # of irradiations with DRLs
- Standard procedures

Radiation Dose Monitoring System

GE DoseWatch

- Records patient data, dose data, clinical data and more
- Flags high dose examinations

Dose Management & Optimization

- Culture of Dose Awareness
- Training
- Identify improvement actions
- Optimize protocols
- Monitor KPIs

Dose Excellence

BALANCED RADIOGRAPHY

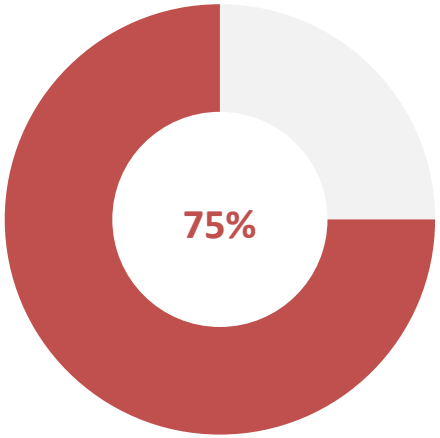
105 Standardized protocols per anatomical area & clinical indication

RSNA Informatics RadLex® Playbook

Affidea Standardized Adult CT Protocol List and Radlex Mapping v.3.0												
ANATOMIC AREA	PROTOCOL NAME = CLINICAL INDICATION	MAIN CLINICAL INDICATION	MAIN DIAGNOSTIC TASK	SCANNING MODE/SLICE THICKNESS	EXAM DESCRIPTION	NUMBER OF SERIES	RPID	DRL p75 CTDIvol (mGy)	DRL p75 DLP per seires (mGy.cm)	DRL p75 DLP per study (mGy.cm)	DRL p50 CTDIvol (mGy)	Standard Scan Length
CHEST	General Chest	Staging, Tumor evaluation, Dyspnea, Unclear chest symptoms, First examination	Parenchyma, mediastinum, airways, mediastinal vessels	helical, recommended acquisition 2.5mm thickness + reconstruction 1.5 mm with bone filter (parenchymal)	First series, chest scan without contrast. Second series, with contrast.	max 2	17	10.0	300		6	
CHEST	Pulmonary Artery (Embolism)	Thrombus detection	Vessels, parenchyma	helical, recommended acquisition 0.625mm ; + reconstruction 1.5 mm with bone filter (parenchymal)	First series, w/o contrast in inspiraiton low dose; CTA pulomnary arteires with contrast	max 2	336	7.5	225		6	
CHEST	Lung Parenchyma (HR)	infections, nodules, Interstitial lung disease, bronchiectasis	Parenchyma, mediastinum, airways,	reconstruction slice thickness is the same (1-1.5 mm -). Reconstruction of 1.5 mm with bone filter (parenchymal) for the series wihtout contrast. Mediastinum	Without contrast. One series in inspiratory apnea **OR** two series in inspiratory, expiratory apnea or prone position	max 2	280	7.5	225		7	

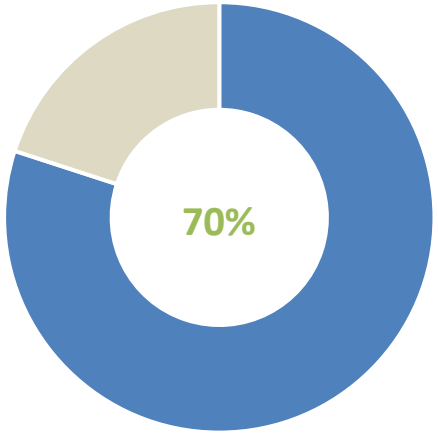
- standard number of series
- established Group DRLs

The KPIs



STANDARDIZATION

% of examinations performed with **STANDARD** (mapped) protocols



OPTIMIZATION

% of examinations performed with standard protocol **WITHIN DRLs**

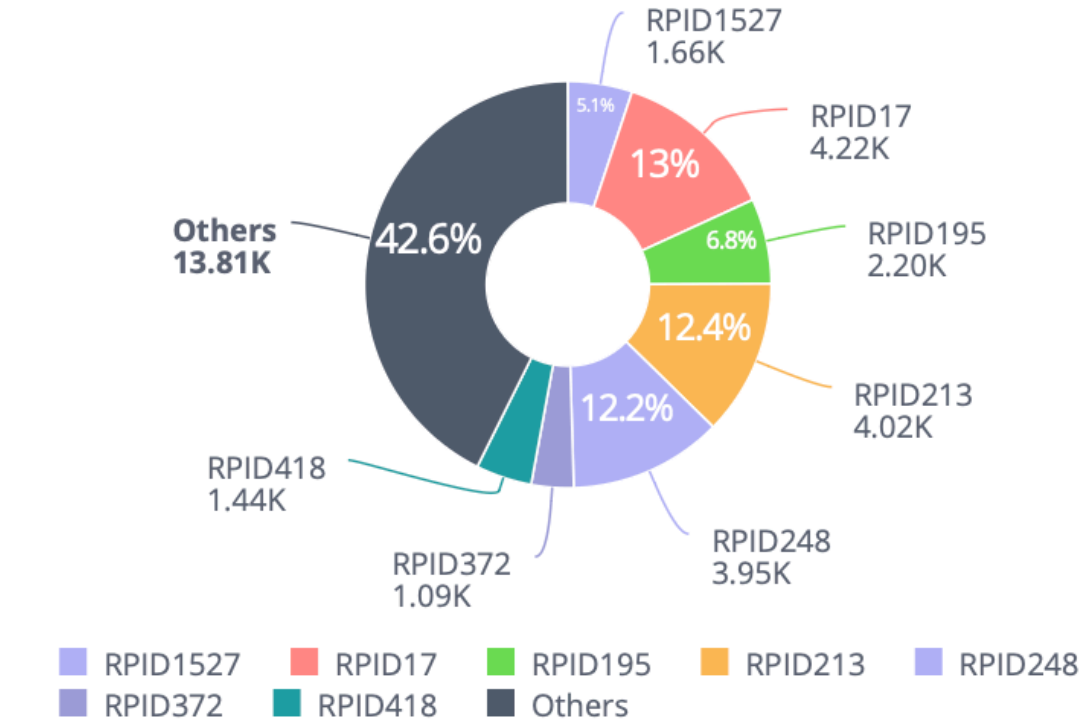
Centralized Data Collection

exams performed

78,686

Monthly volume

RPID Activity overview



RPID Activity overview

rpid
RPID17
RPID213
RPID248
RPID195
RPID1527
RPID418
RPID372
RPID196
RPID21
Unmapped_protocol
RPID324
RPID1057
RPID18

« ‹ 1 2 3 4 › »

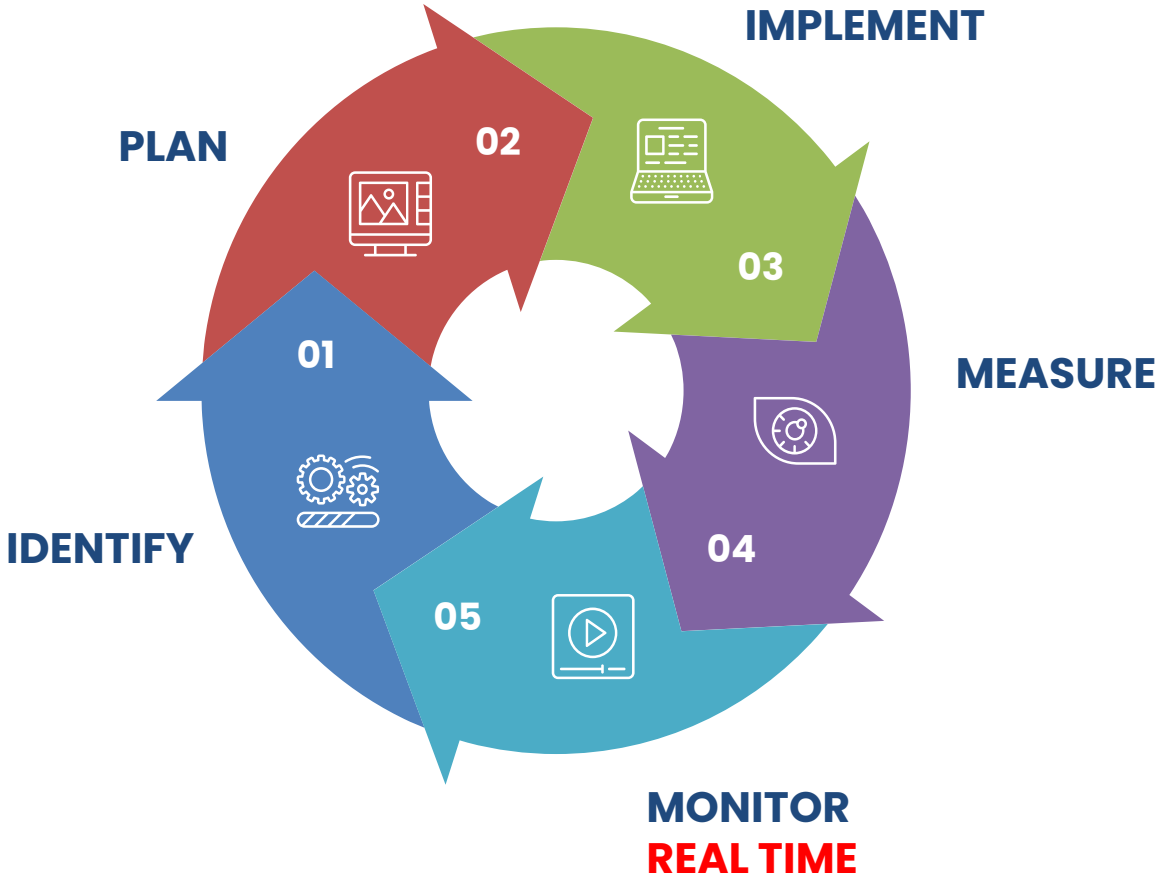
Digital Dose Management

Centralized data collection

- Data analysis at Group, Country and Center level
- Ability for targeted actions per CT protocol, centre and CT technology
- Quicker optimization per volume and not per site
- Real time progress monitoring
- Compliance with EURATOM Directive transposition across Europe

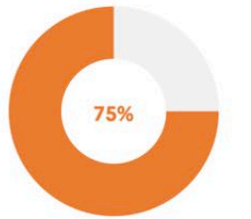
Quality & Safety

- Real time detection of discrepancies in radiation exposure
- Real time monitoring of standardization of practice



Results

Standardization



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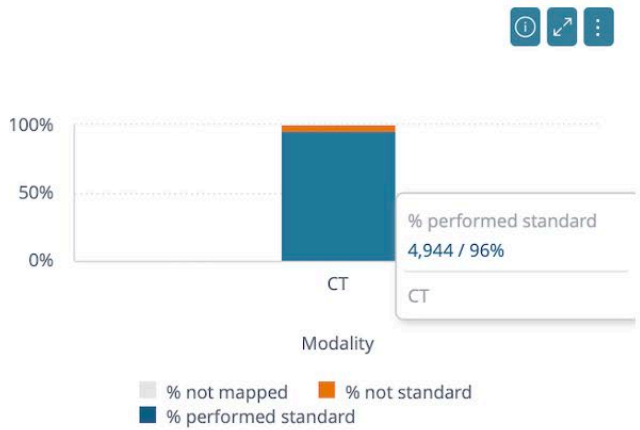
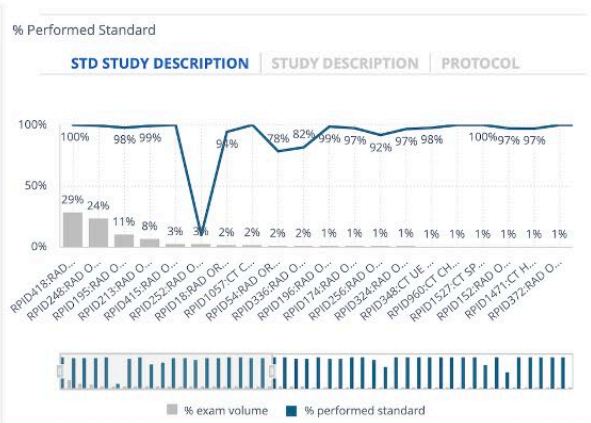
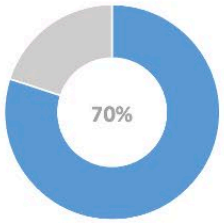


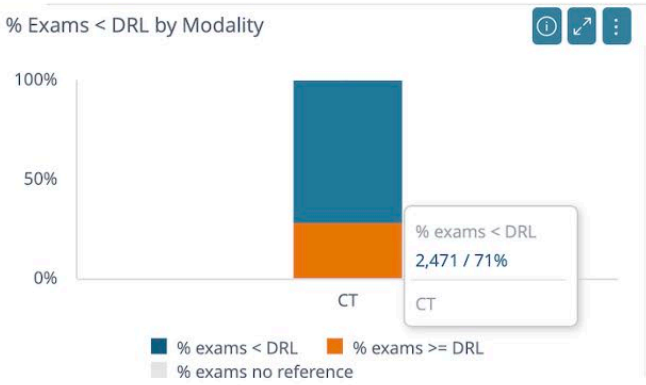


Optimization



OPTIMIZATION

% of examinations performed with standard protocol **WITHIN DRLs**



Discussion

- A Dose Management Program within a large-scale organization allows
  - practice unification
  - best practice sharing
  - optimized dose across countries
- Improvement initiatives
  - training on Dose Management
  - optimization of CT protocol parameters
- Knowledge, experience, and image quality feedback is shared between different countries to achieve optimum results to enhance patient safety