Diagnostic Imaging Industry calls on Healthcare IT Vendors to support IHE[i] dose reporting workflow for CT[ii]

Background

Media reports, the public, and governmental authorities have placed ionizing radiation exposure and dose reduction measures in medical imaging high on the public health agenda. This increases the awareness among the various stakeholders, such as clinical professionals, equipment manufacturers, regulators, hospital managers, patients, etc.

New requirements and the implementation of future workflow concepts on dose management and dose reporting are currently being considered around the world.

The creation of an automated dose reporting workflow for medical CT procedures is an important element in the holistic approach to the subject. It enables clinicians and regulators to track and analyze the exposure dose, for example per patient, per imaging procedure, etc. Monitoring results can contribute to Quality Assurance programs of the clinic or enterprise, or help professional communities to establish reference dose levels either at national or regional levels.

Together with the diagnostic imaging modalities, the clinical and administrative IT systems used in hospitals (HIS), imaging departments (PACS, RIS or standalone dose workstations), and imaging based treatment wards (e.g. oncology, neurology, cardiology, etc.) are critical elements for completing the dose reporting workflow during imaging procedures.

Diagnostic Imaging Industry Recommendation:

Ionizing radiation exposure dose reporting is an important process for patient safety. Successful digital implementation in hospitals requires a coherent product implementation across diagnostic imaging and healthcare IT systems.

The Diagnostic Imaging Industry recommends the DICOM Dose SR communication protocol and IHE REM (Radiation Exposure Monitoring) Integration Profile as the preferred interoperability approach to create a comprehensive and automated dose reporting workflow.

This paper is a specific call on healthcare IT software manufacturers, asking them to feature their products with IHE REM Profile compliant interfaces, in the near future, as this will keep their products' features in sync with current interface harmonization developments on diagnostic imaging CT products.
Dose reporting workflow for X-ray devices, other than CT, also needs to be studied.

Detailed Briefing

Concept
Automating exposure dose reporting requires, on the input side, the standardized registration of radiation exposure for each CT procedure. On the output side, added value is generated for example by giving managers and regulators access to anonymous statistics on the evolution of CT dose exposure of the population over a period of time.

All major CT manufacturers have agreed to harmonize the digital communication of dose metrics from CT scanners by using the new standard DICOM SR[iii] template for dose in compliance with the IHE REM Profile. This harmonization will provide imaging departments and hospitals the means to implement dose monitoring workflow as described in the IHE REM[iv] Profile. REM workflow facilitates the collection and distribution of dose metrics resulting from imaging procedures, and is based on the international standard for Digital Imaging Communications in Medicine (DICOM) / ISO 12052.

Recommendation for Healthcare IT Software Manufacturers
Both organizations, DICOM and IHE, are global contributors to interoperability for medical imaging and healthcare IT environments and are recognized as neutral and accessible to all market participants. IHE provides to manufacturers annual test events with realistic test cases, called Connectathons (www.ihe.net/connectathon) that allow interoperability testing with products from other vendors. Vendors who pass the tests are listed on the publicly accessible web site connectathon-results.ihe.net. This supportive implementation concept has enabled reliable interoperability for IHE compliant products.

IHE REM support is already available on a number of CT scanners and is scheduled to become available on most CT scanners. The Diagnostic Imaging Industry recommends that software manufacturers of RIS, PACS and other Clinical IT Systems include support in their products for the DICOM Dose SR communication as defined in the IHE REM Profile, to further enable our mutual customers a full automated exposure dose monitoring and reporting workflow.

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[i] *Integrating the Healthcare Enterprise*
ii Computed Tomography
[iii] *DICOM SR for communicating estimated exposure dose is a recent addition to the DICOM Standard (Digital Imaging and Communications in Medicine) http://dicom.nema.org*
[iv] *Radiation Exposure Monitoring (REM) is a recent workflow profile defined by Integrating the Healthcare Enterprise (IHE) http://www.ihe.net/Technical_Framework/upload/IHE_RAD_Suppl_REM_Rev2-1_TI_2010-11-16.pdf*