A National Database Solution for Radiotherapy Quality Registries and Clinical Studies

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Objectives

Many radiotherapy (RT) databases are generated in the clinics in treatment planning systems (TPS) and oncology information systems (OIS). So far, much of the work to retrieve and coordinate RT-data has been done manually. Swedish quality registries for cancer are presently diagnosis specific with very sparse and varying information on RT. Access to structured RT-databases and quality registries containing relevant quality parameters is necessary for efficient research, clinical evaluation and reporting.

Methods

An IT-solution designed to facilitate a national quality registry for radiotherapy is implemented. The solution consists of a local storage of DICOM RT data in a structured database, Medical Information for Quality Assessment (MIQA), and an application for recalculation of the data from the 4D representation to dose-volume parameters for each fraction. These parameters are then sent with the software MIQA2INCA (M2I) to a new national quality registry for RT within the platform for Swedish cancer quality registries, Information Network for Cancer Care (INCA).

MIQA provides data to the RT-registry and is also a local quality database and research database. MIQA includes functionality to monitor the treatment status for patients and only data sets for complete treatment courses are stored. It also includes functionality to map structure names to a national standard naming convention for RT.

The primary use of the national quality registry for RT is regular comparison between different clinics. These comparisons include both dose-volume parameters and volumes of targets and organs at risk. The aim in a longer perspective is to achieve an increased consistency in radiotherapy on a national level. The quality registry will also be open for research, provided ethical permit for the study.

Results

A national Swedish naming convention for RT has been published. The convention is adapted to international standards and is now implemented in most of the Swedish RT clinics.

The technical infrastructure has been verified.

The installations of MIQA in Sweden are underway and will be finished at all university hospitals during the first half of 2015.

A national quality registry for RT has been established and will collect quality parameters from most Swedish RT-clinics.

Conclusion

A national IT solution for a structured registration of RT-data is a powerful tool for research, clinical evaluation and reporting.

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