

A Customized Medical Database for a Cyberknife Center

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Abstract

Objective A customized database system connecting different subsystems referring to all aspects of the radiosurgical process was developed to support quality control and research in a dedicated CyberKnife center. **Methods** Given the requirements of a user-friendly database system the medical practice management system (MPMS), a picture archiving and communication system (PACS), and the Accuray network including the SGI and the Multiplan workstations were to be integrated. **Results** A commercial database system (FileMaker Pro 8.5®) was used as a basic platform. Five major relations were implemented: basic patient data, medical patient data, technical treatment parameters, clinical follow-up data, and image documentation of treatment planning. Patient information from the MPMS is updated by automated import on a daily basis. Medical patient data is entered manually by trained medical assistants. The XML files containing the treatment parameters are transferred from the Accuray workstations to the database using a customized transforming (XSLT) script. Up to date the described database integrates 4700 basic patient datasets, 1900 medical plus 4300 technical datasets, 3500 follow-up datasets, and 9800 treatment plan screenshots. User-defined layouts allow simple and fast data access. Automated query scripts provide data overviews and summaries. Customized requests generate specific datasets to be submitted to statistical analysis for scientific purposes. **Conclusion** Correct data entry and the adoption into daily workflows were crucial. The here described data base system has proven to be a useful tool for clinical QA and scientific data analysis of Cyberknife procedures.

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