

Purpose:

ECCK (Electronic Chart ChecKing) is a clinical computer system (software and database) designed to improve quality, efficiency, and frequency of patient chart checking. The goal is to use computer programs to automatically review patient treatment data and to highlight discrepancies and potential concerns through color-coded reports and email messages.

Methods:

ECCK contains a dedicated PC workstation, a separate database server and a data storage server. It integrates many different technologies, including SQL database, data structure design, DICOM, PACS, dynamic HTML, javascript, MATLAB, C++ and image processing. ECCK contains 200+ MATLAB programs, many C++ programs, DHTML design templates, style sheets, javascript programs and design documents.

Most ECCK programs run on the ECCK workstation. Patient data are obtained from the treatment planning system and oncology information system (OIS) server in both native format and DICOM format, and analyzed according to pre-defined rules with logical conditions. Reports, generated in DHTML format, are stored on the storage server and indexed in database. A standalone report-browser program is run by users on any computer in the department. Other features include OIS database querying and offline document browsing.

Results:

ECCK functionality is purpose dependent and varies for therapists, physicians, and physicists. For physics, ECCK checks patient prescriptions, beam parameters, setup parameters, fractionation schedules, treatment calendar, treatment records, beam delivery history, existing of mandatory documents and images, etc.

Conclusions:

ECCK is useful to reduce the repetitive routine work of users, and to improve the speed and accuracy of chart checking. ECCK enables increased frequency of patient chart audits, and allows verification tasks which are not easily performed by humans. While human is the ultimate expert, ECCK ensures a consistent amount of quality in the chart checking process which is otherwise impossible to maintain.