Experiences integrating RIS/PACS into personal electronic health records

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Abstract and Objective

The University Hospital Heidelberg is implementing a personal electronic health record (PEHR), to improve the information exchange between other hospitals, primary care givers and the patient itself. This article describes the concept of the automated transfer of clinical imaging data to the PEHR. On the basis of an ideal conceptual model a goal model was developed considering the local conditions. The common basis is a centralized pull model. Local primary systems are connected via HL7 and DICOM interfaces to the record. This integration concept is characterized by a highly complex message interaction involving several components and depends exceedingly on the local conditions. Thus, the solution is not as generic as originally intended. Not only the connection of additional partners can be complex and difficult but also a loss of functionality has to be taken. Nevertheless the integration of workflows can be supported better than traditional teleradiology may do. As a result pictures can be directly transferred into the record referenced to the case and to the patient.

Keywords:

RIS, PACS, PHR, EHR, eHealth

Introduction

The University Hospital Heidelberg is implementing a personal electronic health record (PEHR) to improve the information exchange with partner hospitals, primary care centers and patients in the region [1]. In addition to medical reports and findings also medical imaging data should be shared. Internal solutions for the integration of RIS/PACS into localized electronic medical records do exist [2] as well as common teleradiology implementations using DICOM Email. Solutions integrating RIS/PACS into PEHR do not exist in Germany at all. This article presents concepts and implementation experiences of an automated integration of clinical imaging data into a PEHR.

Methods

A generic concept (GC) was outlined, based on IHE profiles and literature e.g. [3-6]. For implementation this generic model was compared to the features and capabilities of the information system in place and adapted resulting in an implementation concept (IC).

Results

The GC could not be implemented as intended due to a lacking support of IHE profiles by existing IT systems and the IC substantially differed from the GC. The final IC was designed employing HL7 and DICOM messaging. As common basis a centralized pull model was used and the IC was finally characterized by a highly complex message interaction involving all components. However, proprietary elements, a loss of functionality, restrictions for the inclusion of additional partners had to be accepted. At the moment the IC is under development.

Conclusion

As for today the integration of imaging into PEHR cannot be solved satisfactory. Vendors of the involved IT systems have to build standard based solutions to implement generic concepts. On the other hand a direct integration of RIS/PACS with PEHR demonstrated substantial benefits to traditional teleradiology since clinical workflows can be supported much better. For example pictures can be directly transferred into the record referenced to the case and to the patient.

References

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