Integration of Remote Monitoring Data into the Hospital Electronic Health Record System: Implementation Based on International Standards

ET van der Velde(*), H Foeken, T Witteman, L van Erven, M Schalij
Leiden University Medical Center, Leiden, the Netherlands

Remote follow-up of implanted pacemakers or ICD's offers a solution to the problem of overcrowded clinics, and brings considerable convenience to the patients. All major device companies have developed a remote follow-up solution. Data from the remote follow-up are stored in a central database system, operated by the device company. The physician can log into a secure website and check the data from the remote follow-up for each patient. However, the problem now arises that part of the patient's clinical information is stored in the local electronic health record (EHR) system in the hospital, while another part is only available in the remote monitoring database of the device company.

IHE (Integrating the Healthcare Enterprise) is an initiative by healthcare professionals and industry to improve the way computer systems in healthcare share information. Systems that support IHE Integration Profiles work together better, are easier to implement, and help care providers use information more effectively. The goal is efficient delivery of optimal patient care. To address the requirement of integrating remote monitoring data in the local EHR, the IHE Implantable Device Cardiac Observation (IDCO) Profile defines a standards based transfer of device interrogation information from the interrogation system to the information management system. Strong device vendor participation in the IDCO profile development is an acknowledgement of this importance.

In our hospital, we have implemented the IHE-IDCO profile to import data from the remote databases from two device vendors into our self-developed Cardiology Information System (EPD-Vision). Data is exchanged via a HL7/XML communication protocol, as defined in the IHE-IDCO profile. Variables from the remote database were mapped to the corresponding values in the EPD-Vision database. Remote follow-up data is visible in EPD-Vision in the same manner as the data from the in-house follow-up. Combined data from in-house and remote follow-up can also be viewed as a graph, where blue dots represent the in-house FU and red dots the remote FU (see figure).