

Bi-directional data transmission between mobile test instruments and tracking software by the example of newborn hearing and preschool screening

Böttcher Peter¹, Matulat Peter², Lepper Ingo³

¹PATH medical GmbH, Germany, ²Department for Phoniatics and Pedaudiology University Hospital Münster, ³Institute for Real-Time Computer Systems, TU Munich

Tracking procedures within public health care programs require the highest quality data available from all participating institutions. Redundant documentations as well as data transmission via subsystems has proven to be inadequate for tracking purposes as they increase error rates. In contrast, direct and bi-directional communication between a mobile measuring device and the tracking-server using wireless radio modem technology enables prompt transmission of information and results and facilitates tracking of positively tested infants and children.

In today's newborn and preschool hearing screening, modern mobile measuring devices exist which integrate physiological and psychoacoustic measurements for screening and follow up. The advantage lies in the potential of data being recorded at one site and being automatically and promptly transferred to other sites which enables immediate usage of the data.

The stored measurements, patient data and diagnostic findings are sent directly to a central database. A request function on the measuring device can be used to receive and display all previous results of a patient from the tracking center. Data transmission takes place via an external GRPS/UMTS radio modem. Each test result contributes to the status of the child. All results, including graphs, comments, patient documentation, reminder letters, and phone protocols are stored and processed in the software. Tools for quality and completeness control and verification of status completion are integrated. An integrated statistics module provides scientific evaluation and benchmarking. Finally, the software is prepared for online peer-reviewing of anonymised results as is increasingly important in the field of telemedicine.

This "out of the box"-solution enables a secure and direct data submission without reference to local IT-systems. In addition, it is particularly suitable for the use of mobile measuring devices irrespective of their location, making it a unique "site-independent" solution.