Applying NFC to self-reported electronic data capture. A chance for patients with impaired fine motor skills

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Motivation

• Deficiencies in information logistics – lack of information relevant for treatment
• Self-reporting patient data are valuable feedback for medical treatment and care
• Paper-based surveys are time- and cost-consuming
• Electronic-based questionnaires allow aggregation and automated processing of data
• Patients with impaired fine motor skills face problems with the use of paper-based questionnaires
Approach

• User-centered design approach for requirement analysis, developing and usability testing
• Two focus groups with patients (amyotrophic lateral sclerosis), physicians and nurses
• Three prototype tests with patients, relatives and physicians
Design Goals

• Providing a very efficient and intuitive way of interaction
• Heighten emotional user experience
• Improving the information logistics problem between physicians, home care nurses and patients
• Interaction concept suited to patients with impaired fine motor skills
The inSERT prototype – smartposter
The inSERT prototype – rating process

- Primary user interface is on the smart poster
- Mobile devices give audible, haptic and visual feedback to the user
The inSERT prototype – backend
The inSERT prototype – architecture
First evaluation results

- 20 patients with impaired fine motor skills (amyotrophic lateral sclerosis)
- Duration: three months with weekly rating, 95 % have rated weekly
- Error rate of 3 % (through double rating or missing data point)
- Two patients left the test (death & usage problems)
- High acceptance of the prototype
Benefits and potentials

- Low technological barriers of and costs for integration in hospital information systems (HIS)
- Potential to apply NFC-enabled EDC to other data, e.g., nutrition, heart rate, care quality, medication
- The use of inSERT is almost as simple as to fill out a paper-based questionnaire
- Improved data quality
- New treatment opportunities by improved data density & quality
Our next steps and future ideas

• Next step
  – Analysis of technology acceptance and usability of the application
  – NFC-based nutrition management

• Future idea
  – Comparison of different interaction concepts (e.g. iPhone, iPad and PC)
  – Integration of NFC to social networks for elderly
The inSERT prototype

• inSERT is an NFC-based self reporting questionnaire
• consisting of a mobile device and a smartposter
• for the efficient and usable IT-support of capture, documentation and analysis of well-being data for patients with impaired fine motor skills
inSERT – an NFC-based Self Reporting Questionnaire for Patients with impaired fine motor skills

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