Feasibility and design of an electronic surgical safety checklist in a teaching hospital: A user-based approach

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Background

The SSC is the »state-of-the-art« process supporting tool in the operating room (OR) to avoid complications and errors before, during and after operations1,3. The low acceptance of the SSC leads to compliance problems (compliance varies between 12% and 100%4,8). Especially the Sign Out (SO) and Team Time Out (TTO) were not duly completed5,7. New digital approaches of a SSC showed promising improvements11-14.

Aim

To investigate how a digitalization of the SSC could be implemented in a teaching hospital. Based on the identified user requirements we designed a first user interface (UI).

Method

We performed a literature review concerning electronic SSC.

12 semi-structured interviews with the OR staff were conducted.

Interview partners were from five different professions and nine different departments.

A standardized questionnaire was filled out by the participants after the interview.

Subsequently a first prototype of a UI was designed.

Results

Literature Review

Seven different electronic SSC were identified.

Benefits of the identified SSC3,6,8,9,10,11,12,13:

- Increased patient safety
- Increased compliance
- Consistency of checklist questions and staff attention
- Improved workflow efficiency
- Improved time saving
- Improved communication

Questionnaire & Interview

The majority of interview participants (7 out of 12) were satisfied with the current use of the SSC but stated that a modification is necessary.

Nearly all had a positive attitude towards a digital SSC (figure 1).

75% of interview participants preferred a connection to the hospital information system, more than half desired a tablet-based solution (figure 2).

Collected feature requirements of the digital SSC

- Images/diagnostics/patient data should be displayed
- Automatically retrieving and filling required data (by scanning of the patients’ wristband)
- Scan function of material barcodes for documentation
- Free-text fields for postoperative orders
- Auto-populating information/warning signals/reminders (for allergies, antibiotic prophylaxis and incompleteness of the checklist)
- Monitor projection in the OR

Design of a new UI (figure 3) based on:

- Requirements from interviews
- Iterative design process

Conclusion

Results of the literature review showed that there were improvements achieved by implementing an electronic SSC.

5 out of 12 interview participants are unsatisfied with the current usage of the SSC.

A digitalization of the SSC for process support is desired.

The preferred solution of the interview participants for a future implementation was a tablet-based client-server system with a connection to the hospital information system.

References