Improving hand hygiene compliance in hospitals by design

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Case: hand hygiene

Framework of collaboration
Department of Public Health – Erasmus University Medical Centre
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Case: hand hygiene

How to enhance the compliance to hand hygiene of medical staff?

Problem: only 20% of the medical staff wash their hands properly (Erasmus et al., 2009)

Some issues: time, skin problems, availability of materials, behavior, role models, not aware of the right protocols, poor design (Erasmus et al., 2009)
Improving hand hygiene compliance in hospitals by design – M.Melles et al.
Case: hand hygiene

Medisign approach:

How to enhance compliance to hand hygiene of medical staff by product design.

Elective: 8 groups of 4 master students, 7 weeks
Graduation project: 1 student, 20 weeks

Focus: intensive care nurses & intensivists
Design research approach

Participatory design research

Data collection: observations & interviews at the ICU
  Requirements & possible design directions
  Idea generation

1st Evaluation with ICU nurses: rough prototypes
  Concept development

2nd Evaluation with ICU nurses: functional prototype
  Further development / design recommendations
Examples of data collection techniques for design research

Aim
To gain insight into the real working patterns of ICU nurses
To collect design leads: e.g., contextual requirements, design directions and product ideas
Focusgroup interviews
(10 participants, 20 minutes)
Context mapping

mapping the workflow
Building the ideal product

users build their ideal product from pre-made parts (based on first design directions) and explain their choices
Pool writing / brain writing

users react & associate on different (sub-)problems or solutions
Cognitive walk-through using storyboards and rough prototypes (focus on product use in context)
Play-acting, using scenarios and rough prototypes (in context)
Play-acting, using scenarios and functional prototypes (in context)
Improving hand hygiene by design: six product proposals

Based on six different starting points:
- Raising awareness of the **number** of hand hygiene moments
- Raising awareness of the **quality** of hand hygiene routines
- Providing **knowledge** (real-time) on protocol
- Social **control** by colleagues and visitors
- **Enforced** use
- A cleaner **work environment**
Product proposal 1: **SUSI – See it, USE It**

Raising **awareness** about the **number** of hand hygiene moments

**time frame 15 min.**
Product proposal 2: **Wash & check**

Raising **awareness** about the **quality** of hand washing routines

**Usage**

1. Angela Puts her hands under the dispenser
2. An infrared sensor detects her hands
3. The dispenser automatically dispenses the correct amount of alcohol
4. UV light is turned on to ensure alcohol is applied
5. At the end of the wash, Angela checks if her hands are clean

**Notes:**
- Hand stretches are checked to ensure thorough cleaning.
- The system ensures compliance with hand hygiene guidelines.
Product proposal 3: *Dispenser with animation*

Providing **knowledge** (real-time) on protocol
Product proposal 4: **unclean-super clean**

**Social control** by colleagues and visitors
Product proposal 5: **SprayToGo**

**Enforced use**
Product proposal 5: *SprayToGo*

**Enforced use**
Product proposal 6: **The Wiper**
A cleaner *working environment*
Future work

Compare the different proposals in user tests at different departments resulting in prioritisation and implications for future design / further development

Location study to determine the best location and amount of dispensers per room