Reconsidering Design Aspects for Socio-Technical Health Care Based on Experiences with an Ethnographical Study of Intensive Home Care

Markus Jelonek and Thomas Herrmann

Ruhr University Bochum
Institute for Applied Work Science
Chair of Information- and Technology-Management

Overview

Introduction to intensive home care

Method & Results

Comparison

Socio-Technical design aspects

What has to be considered for socio-technical design in intensive home care?

How far can we rely on the literature for health care?

Introduction: The case of Bran

Bran, 26 years, male

- Diagnosed with Duchenne muscular dystrophy when he was 12 years old

- Life expectancy (physicians estimation): 20 years

- Is able to move his head and two fingers of his right hand

- Orders pizza and other junk food online

- Lives alone, gets 24/7 support by a care service provider

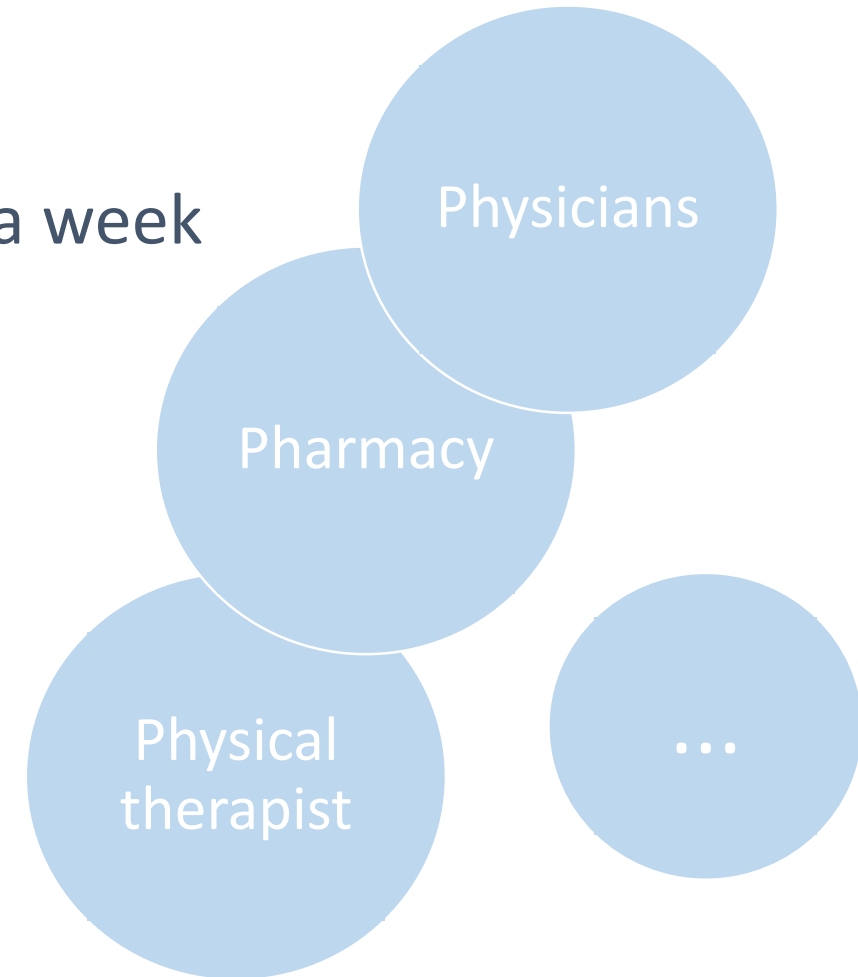- Loves hip hop music

- Raps, records songs

Characteristics of intensive home care
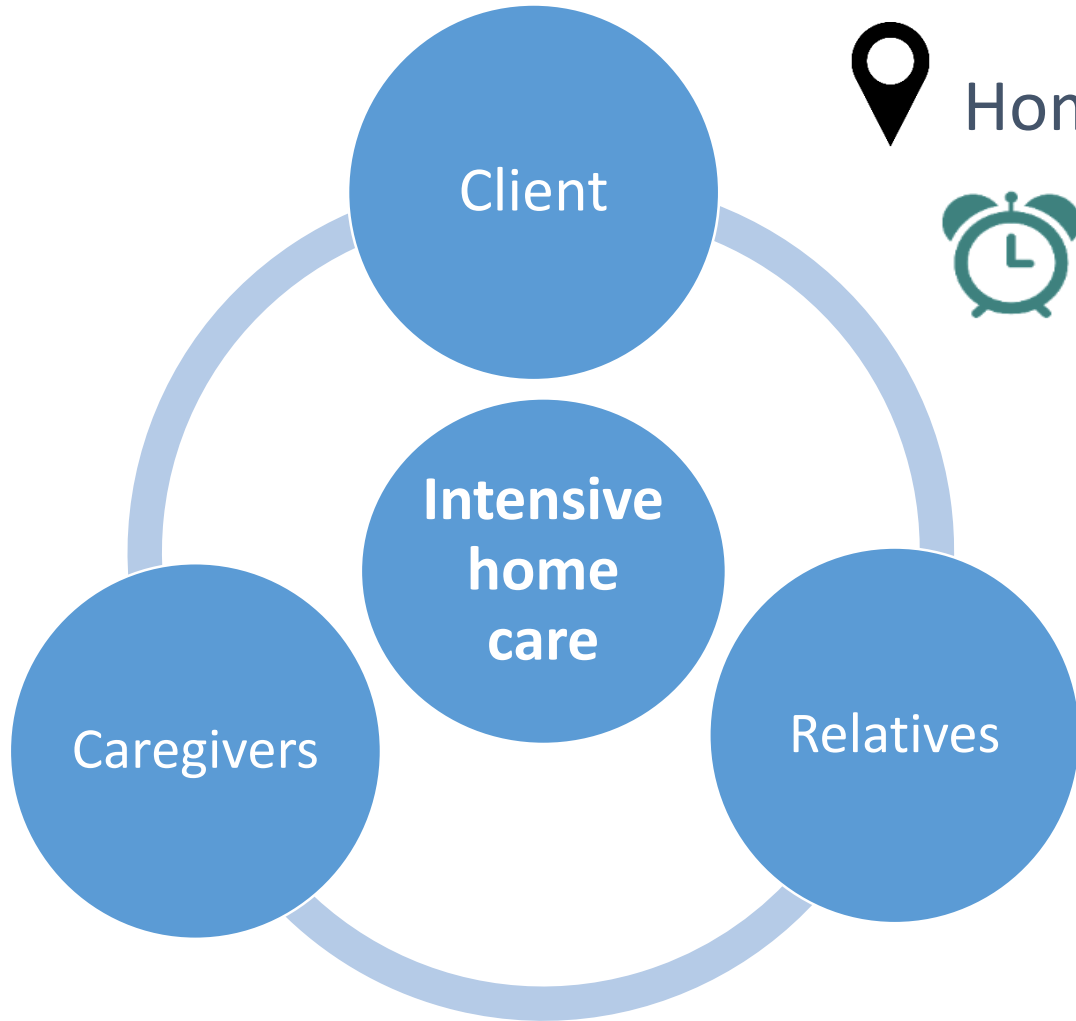

Homes of clients

24 hours / 7 days a week

Client

Intensive home care

Caregivers

Relatives

Physicians

Pharmacy

Physical therapist

…

Domain Exploration: Ethnographical Data acquisition

- Observations:
  - 10 caregivers in 5 different Intensive home care settings

- Interviews:
  - 17 caregivers of 3 different care service providers
  - 4 relatives from 4 different care settings

- Data exploration with Grounded Theory Method
  1. In vivo coding
  2. Axial coding
  3. Core concepts
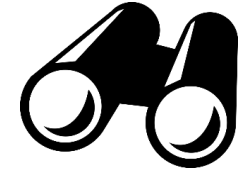
Results: 8 final categories („Core concepts")

1   Activities in intensive home care

2   Interpersonal Interaction

3   Documentation

4   Qualification

5   Interaction with technology

6   Client autonomy

7   History of medical records

8   Feedback on intensive home care by relatives and caregivers

Examples for this presentation

1   Activities in intensive home care

2   **Interpersonal Interaction**

3   **Documentation**

4   Qualification

5   **Interaction with technology**

6   Client autonomy

7   History of medical records

8   Feedback on intensive home care by relatives and caregivers

Intensive Home Care and Health Care

- We compared our findings with concluding design aspects of 10 case studies in health care presented in:

> Herrmann, T., Ackerman, M.S., Goggins, S.P., Stary, C., Prilla, M.: Designing Health Care That Works—Socio-technical Conclusions. In: Ackerman, M.S., Goggins, S.P., Herrmann, T., Prilla, M., and Stary, C. (eds.): Designing Healthcare That Works. pp. 187–203. Elsevier (2018).

- Especially
  - The extended view of socio-technical perspective
  - Consequence for design
 - Challenges and problems

Comparison: Interpersonal interaction

- Socio-Technical Conclusions:
  - Health care involves complex social arrangements
  - Health care is network based -> cases of family caregivers or home-helpers

- Our study:
  - Relatives consider caregivers as a relief
  - Relatives might have misleading expectations about caregivers' role -> Conflicts
  - Illness of caregivers might have to be compensated by a external caregiver –> No information about social environment

Comparison: Documentation

- Socio-Technical Conclusions:
  - Idea of tracking health-related data, log vital parameters automatically
  - Physicians build a holistic view over patients health conditions

- Our study:
  - Caregivers document paper based
  - Trust: Relatives and clients have a right to look into the documentation map
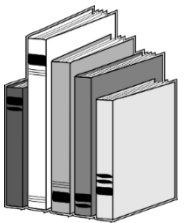
Comparison: Documentation

- Socio-Technical Conclusions:
  - Idea of tracking health-related data, log vital parameters automatically
  - Physicians build a holistic view over patients health conditions

- Our study:
  - Workarounds: Photo capture of ventilation machine displays or memorizing values, to document vital parameters after focusing on other tasks
  - Caregivers skipped technology-related tasks like maintenance of oxygen bottles or wheelchairs

Comparison: Technology Usage

- ST:
    - Lack of willingness to use new systems
    - Mistrust concerning design of technical system and also lack of transparency

- Our study:
    - Mostly only medical machines and systems in care setting

    - Smartphones for data capturing (documentation) and instant messaging apps as communication channel among caregivers and among caregivers and relatives
    - One Laptop per care setting, mostly for organizational work (e.g. planning shifts)

Design Aspects: Interpersonal Interaction

- An information system has to mirror and document social arrangements

- An information system should mirror handling formal information exchange and informal interactions
    - Formal: e.g. documentation
    - Informal: e.g. agreements between caregivers and relatives

Design Aspects: Documentation

- Information system should incorporate existing workarounds for data capturing
  - Using interfaces of far reaching documentation support?
  - Automatically documentations might reduce interaction and disturbances

- Respect data privacy

- Give workflow-oriented guidance for documentation tasks (even if it is used only in the beginning)

Design Aspects: Technology Usage

- Support communication channels between roles, even if using their private smartphones (data privacy)

- Allow transparency of data for relatives, clients and professionals

- Allow data exchange from medical machines by applying proper interfaces to use this data in other applications

Conclusions

Requirements for information system support in intensive home care

- Higher density of social interactions
  - Functioning social environment needed for good and trust-based home care setting

- Activities (in IH) are related to care and everyday life

- Transparency to gain trust

- Gap between theoretically possible data integration and practical reality, but also "self-established technical support"