

# How to be successful in health care innovation by combining research and Hospital-Industrial collaboration

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## Content

1. Innovative digital health technologies at Odense University Hospital
2. Lessons learned from research in innovation
3. Conclusion: How can hospital research improve hospital-industrial collaboration?

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# Common challenges for European hospitals

- The demographic challenges – more patients with more chronic disease
- The staff challenge – lack of staff and staff burnout
- The economic challenge for public tax paid hospitals
- COVID-19 and the next pandemic
- Patients asking for involvement and empowerment
- Energy and environment....



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## Innovative digital solutions and technologies



Home monitoring – diabetic foot ulcer

Online ECG heart monitoring

Home monitoring of ICD pacemaker



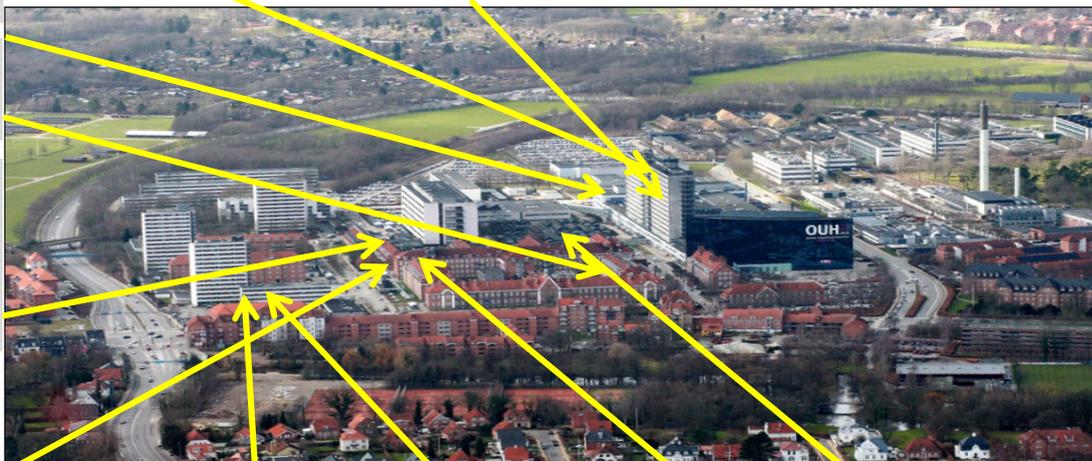
Home IV infusion of antibiotics

Home monitoring of premature infants

Home monitoring – diabetic foot ulcer

Online ECG heart monitoring

Home monitoring of ICD pacemaker



Home IV infusion of antibiotics

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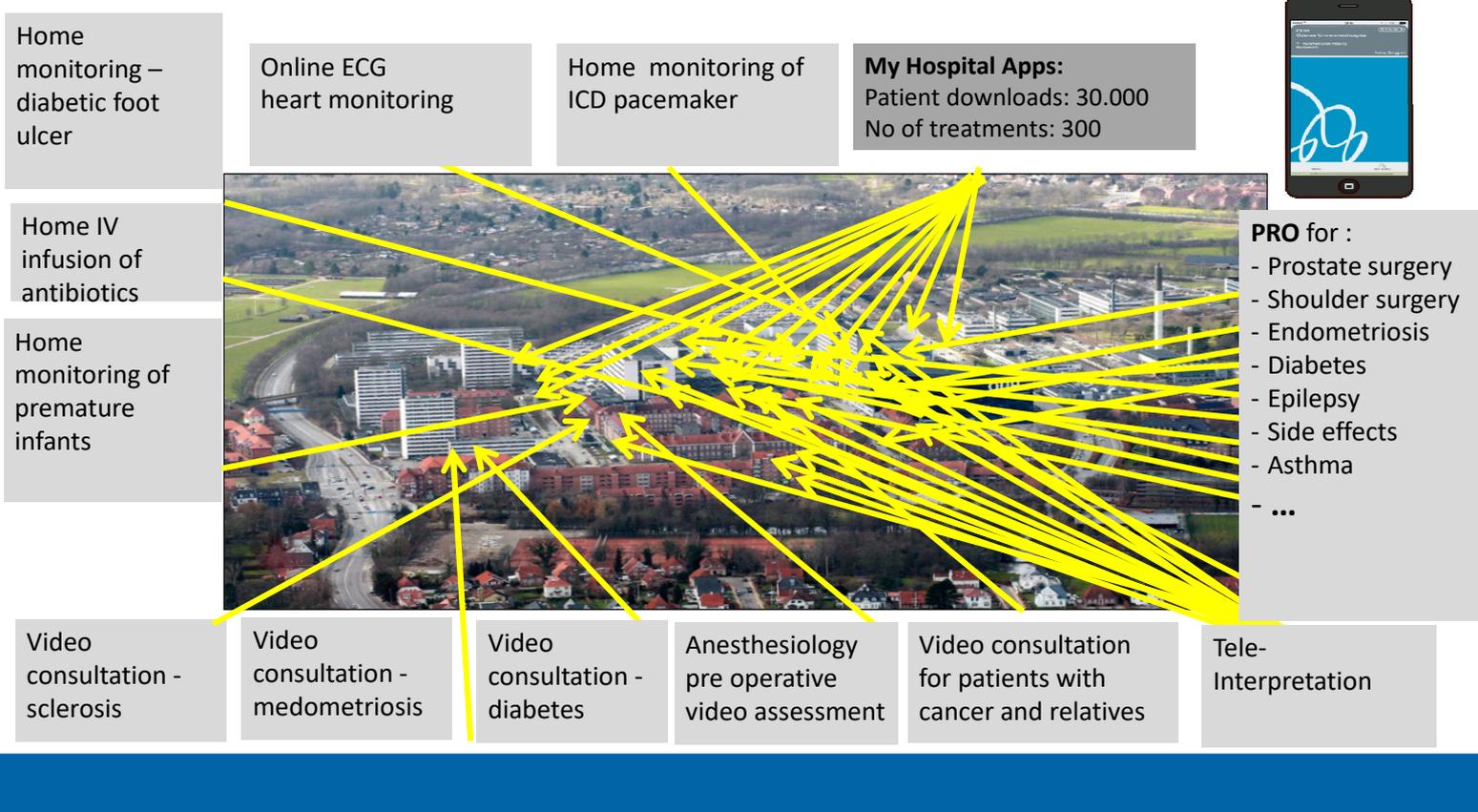
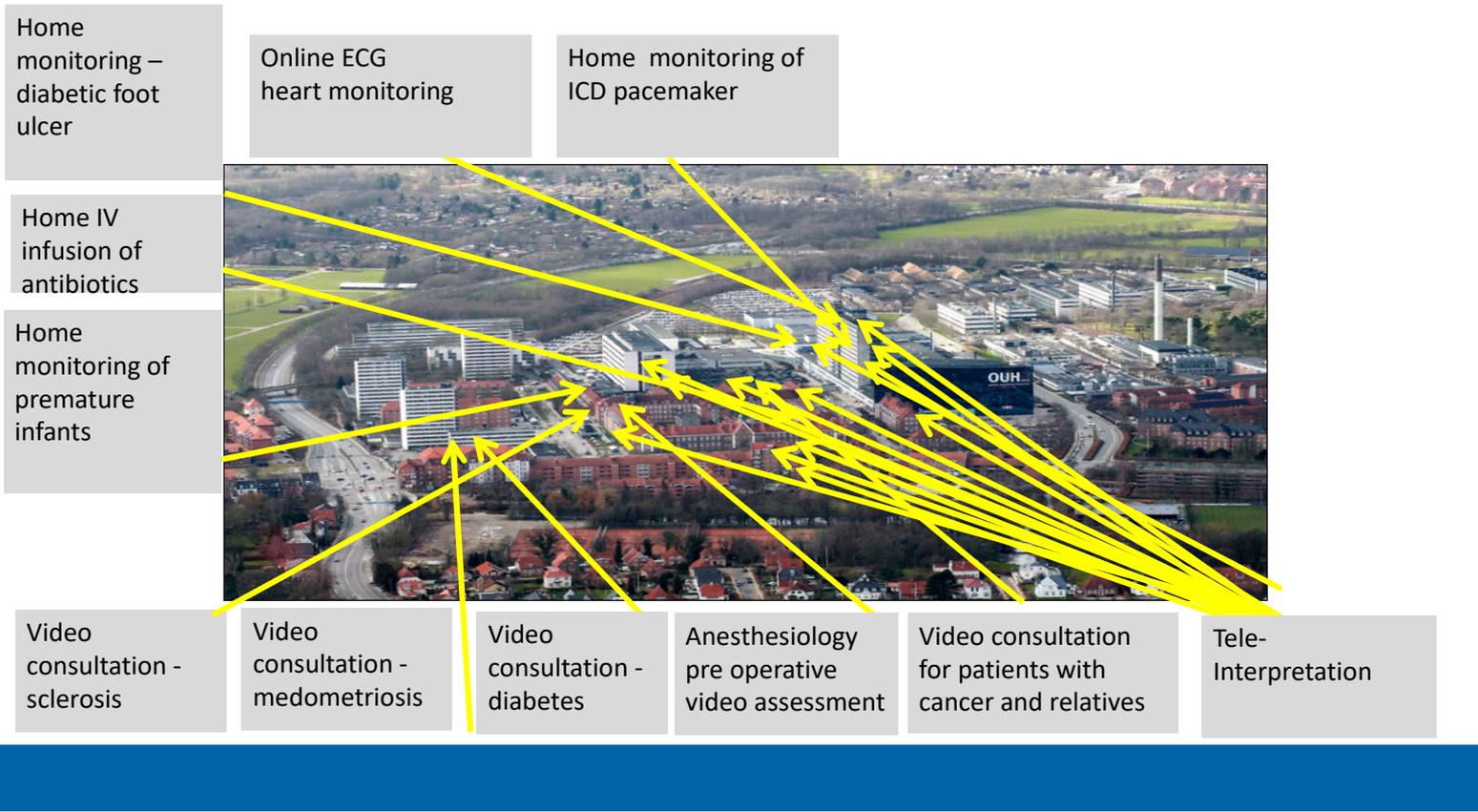
Video consultation - sclerosis

Video consultation - medometriosis

Video consultation - diabetes

Anesthesiology pre operative video assessment

Video consultation for patients with cancer and relatives



# Lessons learned from research - Many disappointments ...

**Anne Sorknæs et al. (2013):**

- Home monitoring - COPD
- RCT (n = 266)
- No impact on admissions
- No impact on mortality
- High increase in costs

**Anna Leena Vuorinen (2015)**

- Home monitoring – CHF and diabetes
- RCT (n = 517)
- No impact on QALY
- No impact on clinical outcomes



**Isabelle Manrey (2017)**

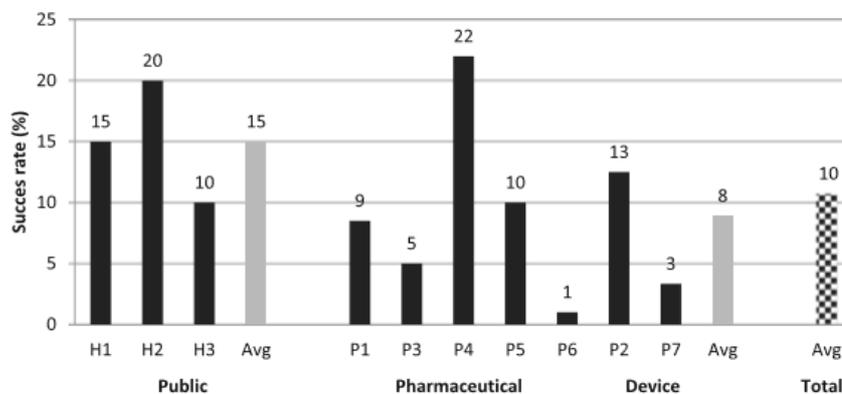
- Home monitoring - diabetes, COPD, CHF
- RCT (n = 302)
- No impact on QALY
- High increase in costs

**Sabrina S Sørensen (2017)**

- Case management and home monitoring – COPD
- RCT (n = 150)
- No impact on QALY
- Increase in costs

# Experiences from research - Many disappointments ...

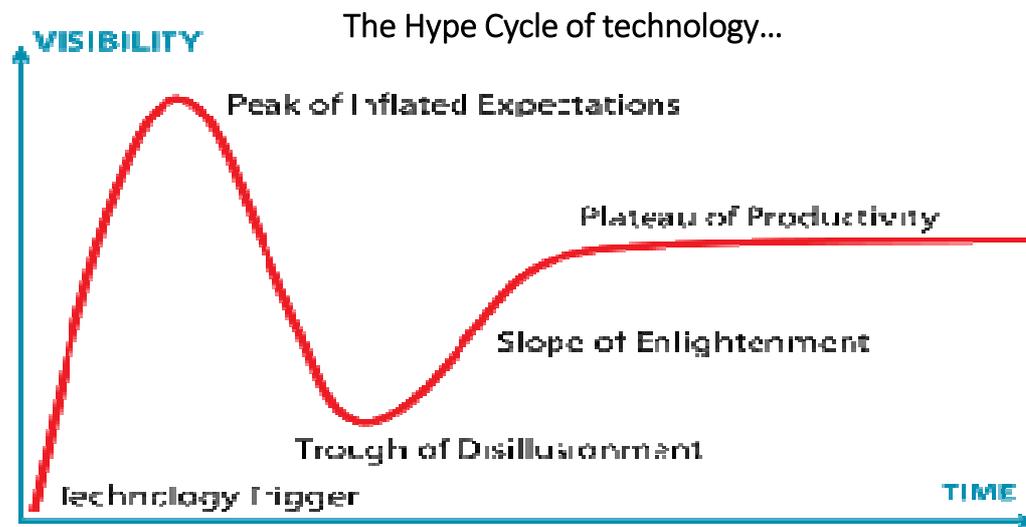
**By sector: Proportion of R&D product portfolio in routine use/commercialised ("success rate")**



**Fasterholdt et al. (2018)**

A qualitative exploration of early assessment of innovative medical technologies. Health Services Research.

## Experiences from research - Many disappointments ...



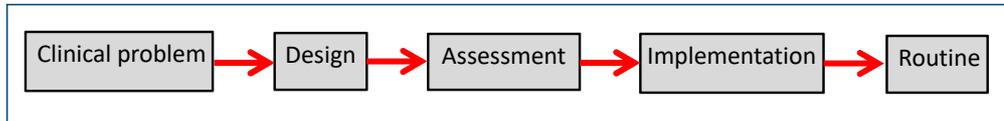
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### Lesson no. 1: Consider the whole innovation process

Assessment

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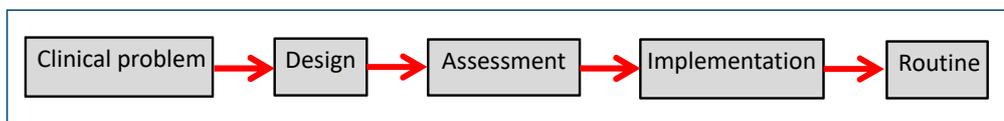
## Lesson no. 1: Consider the whole innovation process



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## Lesson no. 1: Consider the whole innovation process

Case: Home monitoring of premature infants – Kristina Garne Holm



RESEARCH/Original Article

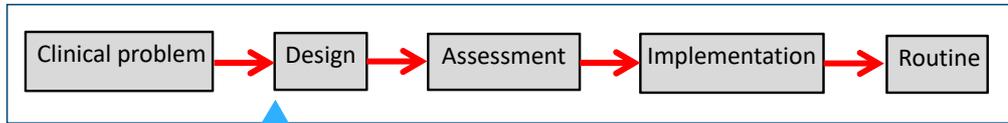
**Cost analysis of neonatal tele-homecare for preterm infants compared to hospital-based care**

Maja K Rasmussen<sup>1</sup>, Jane Clemensen<sup>1,2,3</sup>, Gitte Zachariassen<sup>2,3</sup>, Kristian Kidholm<sup>1</sup>, Anne Brødsgaard<sup>4,5</sup>, Anthony C Smith<sup>1,6</sup> and Kristina G Holm<sup>1,2,3</sup>



## Lesson no. 1: Consider the whole innovation process

Case: Home monitoring of premature infants – Kristina Garne Holm



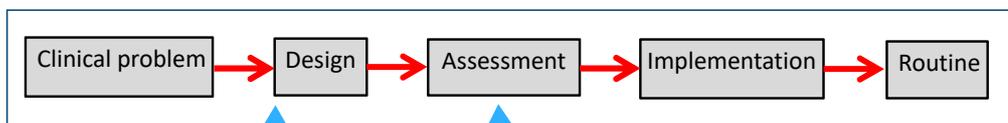
### Participatory Design:

- Interview with parents
- Focus group with parents
- Focus group with staff
- Workshops with parents and staff



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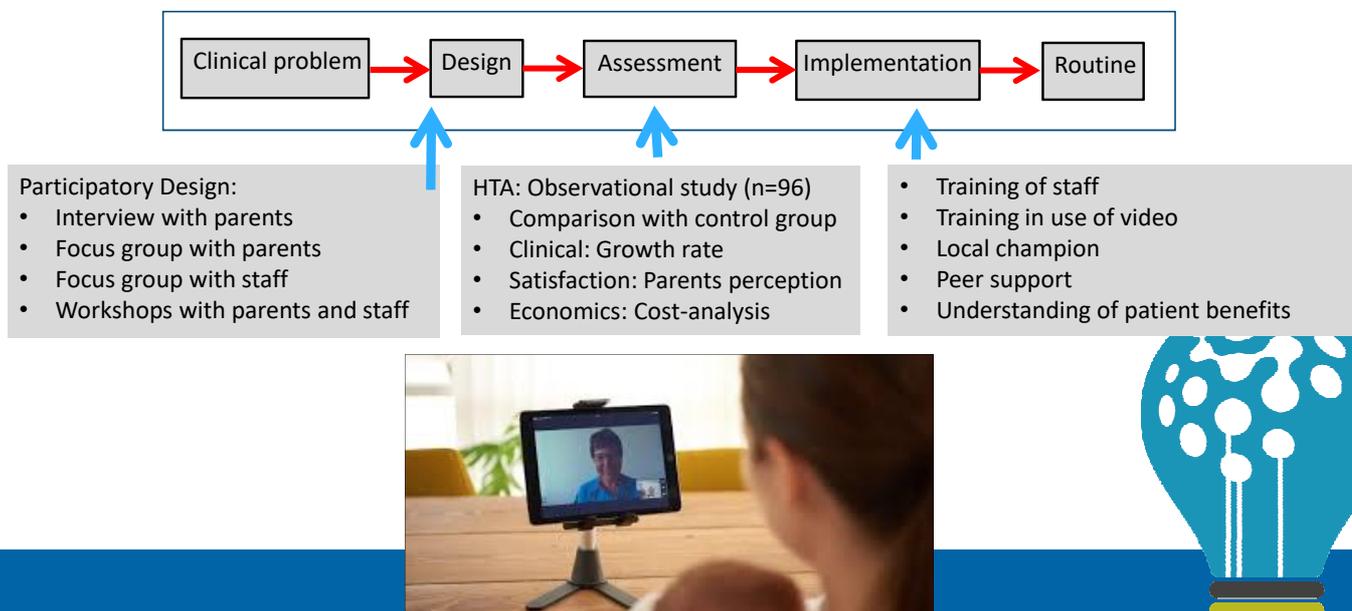
### HTA: Observational study (n=96)

- Comparison with control group
- Clinical: Growth rate
- Satisfaction: Parents perception
- Economics: Cost-analysis



## Lesson no. 1: Consider the whole innovation process

Case: Home monitoring of premature infants – Kristina Garne Holm



## Lesson no. 2: Be comprehensive in defining the value

### Multidisciplinary assessment (domains):

1. Health problem and characteristics of the application
2. Safety
3. Clinical effectiveness
4. Patient perspectives
5. Economic aspects
6. Organisational aspects
7. Socio-cultural, ethical and legal aspects

RESEARCH/Methods

### The Model for Assessment of Telemedicine (MAST): A scoping review of empirical studies

Kristian Kidholm<sup>1</sup>, Jane Clemensen<sup>1</sup>, Liam J Caffery<sup>2</sup> and Anthony C Smith<sup>2</sup>

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### 1. Include more than clinical outcomes

- Organisational impact?
- Economic impact?
- Patient perception?

### 2. Should patient perspectives be the primary outcome?

- Improved empowerment?
- Improved self-efficacy?
- Changing the doctor-patient relation?

RESEARCH/Methods

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## Lesson no 3. What research design is needed?

### Cohort study

Patients after implementation

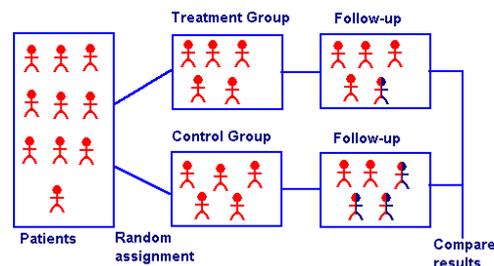
### Observational study

Patients before implementation

Patients after implementation

→ TIME

### Randomised Controlled Trial



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### Lesson no 3. What research design is needed?



Liu and Wyatt. "The case for RCTs to assess the impact of clinical information systems." *Journal of the American Medical Informatics Association* 18.2 (2011): 173-180.

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## Conclusion:

### How can hospital research improve hospital-industrial collaboration?

1. **By recruiting of patients for design of innovative technologies**
2. **By improving the value proposition**
  - What is the value to patients and relatives?
  - What is the value to hospitals and health insurance systems?
3. **By ensuring scientific quality of:**
  - Design studies
  - Cost-effectiveness studies

**Danke schön!**

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