



# **Nationwide Telemedical Programme:**

## **Evaluation of Telemedical outcomes**

**- clinical, patient-experienced, economic**

**BY PROFESSOR LARS HOLGER EHLERS**

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# About me

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24 publications about telemedicine

# Agenda

- The research results behind the political decision to roll out telemedicine to patients with COPD in 2020.
- The national evaluation plan
  - Main track – The Danish Health Data Authority
  - Research track – Aalborg University

# Background: Health-IT in Denmark

- Denmark is among the most digital countries in Europe
- National strategies for Health IT (since 1996)
- Large investments in Internet, common platforms & services, databases/registers
- Know national success stories:
  - eSundhed.dk (patient has access to own electronic patient record),
  - Shared Medication Record (FMK in Danish)
  - Next: Telemedicine

# What is TeleCare Nord?

- Patient is referred by physician in primary or secondary sector
- The municipality trains the patient in the use of tele-care-kit and handling of disease.
- Nurse in municipality/hospital sees and evaluate tele data and intervenes if necessary.



# The period 2010-14: The heyday of Telemedicine in Denmark

- National action plan 2012, national strategy, lot of small initiatives
- Early Danish study: TeleKat 2010-12, (Dinesen et al., 2012).
  - A total of 111 patients randomized: 60 patients intervention and 51 patients usual care (3 lost to follow-up)
  - Significant reduction in hospital admission (0.49 per patient per 10 months compared to 1.17 (P=0.041))
  - Cost-effectiveness analysis showed dominance
- Launch of Danish large-scale trial (TeleCareNord) in 2014
- In 2015:
  - National decision on the rollout of Telemedicine to COPD patients in Denmark
- In 2020:
  - Implemented in financial agreements (Local Government Denmark - KL, Danish Regions, Government)

# The results from the large-scale trial came in 2017

- TeleCare Nord KOL (COPD) (Udsen et al, 2017 & Lilholt, 2017)
  - A total of 1.225 patients randomized: 578 patients intervention og 647 usual care
  - Small insignificant difference in PCS and MCS between the groups after 12 months at resp. 0.1 (95% CI -1.4 to 1.7) and 0.4 (95% CI -1.7 to 2.4).
  - Small insignificant difference in QALY of 0.0132 (95% CI -0.0083 to 0.0346).
  - The difference in total costs was €728 (95% CI -754 til 2211)
  - ICER was € 55.327 pr. QALY
- Subgroup analyzes:
  - Patients with severe COPD (GOLD 3-klassifikation) were probably the most cost-effective group.
  - For the GOLD 3 subgroup Telemedicine was dominant.
  - CEAC 68-70% cost-effectiveness at a threshold of £ 25.000-40.000 / QALY

# International studies on Telemedicine for COPD patients in 2017-20

- Research is primarily done as RCT based on a clinical research tradition.
- Systematic review of the COPD area:
  - Gregersen et al. 2018 (review)
    - Only limited effect on quality of life.
  - Pedone et al. 2017 (review)
    - Only limited effect on admissions and outpatient visits.
- Since the start of the large-scale trial:
  - Prices of equipment dropped a lot.
  - The operations talks about benefits after a longer term than one year.
  - Positive trials with Telemedicine from other disease area.





## **NATIONAL DECISION TO ROLL OUT**

*A national financial agreement (Finance Act) between the Danish Government, the regions and the municipalities in Denmark that the rest of the country by the end of 2020 should deliver ...(TeleCare North)... for patients with severe COPD*

*A national agreement between Danish Government, the regions and the municipalities to continue the work with ...(TeleCare North)... for heart failure patients under the auspices of the national board of health-IT.*

# Why do we think Telemedicine can provide more health and savings?

- Empowerment
- Safety/security
- Better data than health professionals can act on
- Substitution effect

## Why is it important to understand the "cause" of health and savings?

- Optimization of operations
- Help others to achieve the same savings
- Assist research and development of Telemedicine interventions for other patients groups

# A complex intervention in a complex system

- TeleCare Nord is a complex health intervention in a complex health system.
- Complex interventions are usually described as interventions that contain multiple interacting components.
  - a) prevention and lifestyle intervention (b) chronic disease management (c) early signs / arrhythmia detection (d) tele rehabilitation.
- A complex system is a system where there are many interacting parts / stakeholders.
  - (a) the patient and the relatives (b) the hospitals (c) municipalities (d) general practitioners.

# The thoughts behind the evaluation plan (2020->)

- Main track: The Danish Health and Medicines Authority is developing a national monitoring model
  - Ongoing follow-up on realization of expected gains based on CPR number and merging of register data.
  - Data are generated from a before- and after cohort study design in order to compare key figures before and after the introduction of Telemedicine
    - Activity indicators (e.g. number of admissions)
    - The production value of selected activity indicators (e.g. costs of admissions)
- Research track:
  - Professional sparring and input in connection with preparation of the national monitoring model.
  - Selected hypotheses and analyzes that include supplementary data that go beyond the gain indicators in the national monitoring.

# Main elements in Research track

- Is there inequality in the uptake of Telemedicine?
- Does Telemedicine affect the quality of the rest of the treatment?
- Does Telemedicine affect quality of life, safety/security, empowerment?
- Is a national rollout of telemedicine for COPD patients cost-effective?



**THANK YOU FOR YOUR TIME**