

TeleCare North Trial — COPD Home Monitoring, North Denmark Region

Implementation Process

- Steps Taken: Patients meeting eligibility (COPD diagnosis, previous exacerbations) were enrolled; monitoring equipment delivered; staff trained; data flows established to health teams; follow-up conducted over 12 months or more.
- Stakeholders Involved: Patients, municipal health services, hospital/region COPD teams, academic researchers, technology providers.
- Timeframe: The trial covered 12-month follow-up for clusters of patients.

Impact and Results

- Quantitative Results: The main results indicated that telehealthcare was unlikely to be cost-effective overall for the entire group (incremental cost-effectiveness ratio above willingness-to-pay thresholds) though subgroup analyses suggested younger patients or those with severe COPD may benefit more.
- Qualitative Outcomes: Although quality of life changes were modest, the study emphasised the complexity of implementing home-monitoring at scale and the importance of heterogeneity in outcomes.

The TeleCare North Trial was a large-scale cluster-randomised telehealth intervention for patients with chronic obstructive pulmonary disease (COPD) in the North Denmark Region (1,225 patients). It aimed to support self-monitoring and care coordination via home equipment and data transmission, with the long-term objective of reducing hospital admissions and improving quality of life.

Description of Technology or System

- Technology: The intervention provided patients with home monitoring devices (e.g., weight, oxygen, symptoms tracking), data transmission to health professionals, and platform support for remote monitoring.
- Use & Objectives: Enable frequent monitoring of high-risk COPD patients, enabling earlier interventions or support, improving self-management and reducing hospital utilisation.

Country	Denmark
Institution/Organisation	Aalborg University (Department of Health Science & Technology) in collaboration with regional municipalities and the North Denmark Region health services.
Type of setting	Home-based remote monitoring for chronic patients, integrated across municipality and hospital sectors for patients with COPD.
National Context	Denmark has a high level of digital health maturity with national telehealth initiatives. The trial builds on the national action plan to disseminate telemedicine. The TeleCare North initiative tests home-monitoring in the routine care flow for COPD patients.

Success Factors

- Large sample size; inter-sector cooperation; real-world setting across municipalities; rigorous economic evaluation.

Challenges and Barriers

- Digital literacy of older patients; variation in local implementation and workflow; cost-effectiveness not always clear.

Resources and Funding

- Funded via research grants associated with Aalborg University and regional health services.
- Resources: home-monitoring kits, remote data infrastructure, staff training, data management.

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Key Lessons Learned

- Home-monitoring for COPD can be implemented at large scale but may require careful targeting of patients most likely to benefit.
- Heterogeneity in patient baseline status and local implementation influences outcomes strongly.
- Integration with existing care pathways and strong stakeholder engagement are critical.
- Economic evaluation is essential; clinical benefit alone may not guarantee cost-effectiveness.

Recommendations

- Focus on high-risk subgroups (severe COPD, younger age) for remote-monitoring interventions.
- Ensure digital support (training, onboarding) for patients in remote programmes.
- Monitor implementation fidelity and adapt local workflows rather than assume one-size-fits-all.
- Include economic modelling early and plan for variable uptake and outcomes.

Integration in Education Settings

- Use this case for modules on chronic care, remote monitoring, digital health evaluation, and health economics.
- Good for teaching about implementation science: why some digital interventions succeed and others face barriers.

Specific Environment and Limitations

- The Danish healthcare infrastructure is very digitally mature; other countries may have less readiness.
- The trial's cost-effectiveness findings were negative for some groups, so scalability must consider budget impact.
- Self-monitoring technology alone may not change outcomes without accompanying behavioural and care-flow changes.

Supporting Materials

- Udsen F W, Lilholt PH, Hejlesen O, Ehlers LH. Cost-effectiveness of telehealthcare to patients with chronic obstructive pulmonary disease: results from the Danish 'TeleCare North' cluster-randomised trial.
- Healthcare Denmark. "A tele-health nation". (Denmark case-overview)