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Telerehabilitation programme:
lessons learned from the TELEKAT project

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Agenda

1. Background and aim of the study
2. Presentation of the TELEKAT-project
3. Methods
4. Results/findings

The aim with the presentation is to present an overview of the main results/findings in the project
Background (1)

- Over 400,000 Danes have chronic obstructive pulmonary lungedisease (COPD)

- Rehospitalisation
  - After 1 month 14%
  - After 1 year 46%

- Prognose
  - Death during hospitalisation 9%
  - Death after 1 year 36%

(Eriksen et al: Ugeskrift for Læger 2003; 165: 3499-502)
Background (2)

- COPD patients often live with
  - Reduced physical functionality
  - Frustrations
  - Social isolation
  - Reduced quality of life
- Medical treatment can only ease the symptoms to a certain degree
Aims of the Telekat project

- To prevent readmissions of COPD patients by promoting homebased rehabilitation
- To develop new methods and concepts for COPD patients to monitor themselves at home by the use of telehomecare technology across sectors
Target group

Patients with server and very server COPD
User driven innovation
The programme of telerehabilitation
Patients at home

Healthcare professionals
The telerehabilitation programme

• The patients have the telehealth technology for 4 months
• A doctor prescribe how often the patients have to measure values fx blood pressure, spiometry, etc.
• Individual instruction from a physiotherapist
• Patients use Stepcounter, Wii console
• The patients can see their data and communicate with the healthcare professionals via the portal
Methods

- Case study (Yin 2009) as the overall strategy
- Randomised study (n=111)
- Triangulation of data collection techniques:
  - Documentary materials
  - Participant-observation (total hours: 163 hours)
  - Qualitative interviews:
    - Healthcare professionals: GPs (n=6), nurses and doctors at hospital (n=6), nurses at the healthcare center (n=6), district nurses (n=11), management district nursing (n=4), management healthcare center (n=1), management hospital (n=4), IT and administration municipality (n=3)
    - COPD patients (n=22) in the intervention group were interviewed three times while doing home monitoring (n=64 interviews; drop out of two) interviews.

- Analysis perspectives
  - Clinical; economical; organizational and patient perspective
Total number COPD patients screened (n=122)

Excluded (n=1)
- Not meeting inclusion criteria (n=8)
- Declined participation (n=3)

Suitable for inclusion and consented to be randomized (n=111)

Allocated to intervention (n=60)
- Received allocated intervention (n=59)

Lost to follow-up (n=3)
- Declined participation

Tele-rehabilitation group (n=57)
4 months of tele-rehabilitation

Allocated to intervention (n=51)

Lost to follow-up (n=3)
- Declined participation

Control group (n=48)
4 months of conventional rehabilitation
<table>
<thead>
<tr>
<th>Variable</th>
<th>Telerehabilitation group (n=57)</th>
<th>Control group (n=48)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Number</td>
<td>23</td>
<td>33</td>
</tr>
<tr>
<td>Age in years, interquartile range (IQR)</td>
<td>69.6 (53.20; 82.30)</td>
<td>67.20 (44.60; 81.10)</td>
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<td>Forced expiratory volume in 1 second, in litres (IQR)</td>
<td>1.10 (0.62; 2.09)</td>
<td>0.75 (0.26; 1.49)</td>
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<tr>
<td>Weight in kg (IQR)</td>
<td>79.61 (45.00; 116.00)</td>
<td>67.53 (39.00; 118.00)</td>
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<tr>
<td>Body mass index in kg/m² (IQR)</td>
<td>25.74 (17.00; 35.70)</td>
<td>25.31 (16.00; 41.00)</td>
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<tr>
<td>Oxygen saturation (% on ambient air)</td>
<td>93.3 (90.00; 97.00)</td>
<td>93.6 (89.00; 99.00)</td>
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<tr>
<td>Blood pressure in mmHg (IQR)</td>
<td>137/79 (107/62; 180/90)</td>
<td>136/82 (97/52; 179/126)</td>
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<tr>
<td>Heart rate in minutes (IQR)</td>
<td>77 (57; 106)</td>
<td>85 (61; 111)</td>
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<tr>
<td>MRC dyspnea score (IQR)</td>
<td>3.5 (2; 5)</td>
<td>3.6 (3; 5)</td>
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Findings (1)

**COPD patients**

- Become more aware of development of own symptoms
- Contact the GP early on in order to start treatment plans
- Sharing data between hospital and GP promoted dialogue and learning about the disease among both patients and healthcare professionals.
- Avoid admission to hospitals
- Measured values that were accessible and visualised through graphics gave the patients an overview of their disease.
- Integrate and maintain changes of lifestyle in their everyday life
Findings (2)

COPD patients’ attitudes towards tele-rehabilitation
Findings (3)

*Healthcare professionals*

- Healthcare professionals have adapted new approaches for empowering COPD patients and a more integrated collaboration across sectors.
- Home monitoring leads to more *individual* counselling to the COPD patients compared to traditional counselling on rehabilitation.
- Interaction between healthcare professionals and COPD patients has moved from an authority relationship to a more equal dialogue.
- Healthcare professionals state that they learn more about the everyday life of the COPD patients.
Findings (4)

Economical

- Readmission rate decrease with over 50 % for the intervention group
- Preventive telerehabilitation seems cost-effective
Future

There is a need for larger scale randomized studies also in multicenter setting in order to have more solid evidence for implementation of the telerehabilitation for this group of patients.
The project is sponsored by

• The Danish Enterprise and Construction Authority
  – *The National Program for User driven Innovation*

• Center for Healthcare Technology, Aalborg University

• All partners

Total budget 9 million kroners (1.3 million Euro)
Thank you for your attention

For further informations please contact:

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See www.telecat.eu