

Appraisal

Critically appraised paper: In adults with chronic obstructive pulmonary disease, long-term telerehabilitation and unsupervised home-based treadmill training reduced hospitalisations and emergency department presentations compared with usual care

Synopsis

Summary of: Zanaboni P, Dinesen B, Hoas H, Wootton R, Burge AT, Philp R, et al. Long-term telerehabilitation or unsupervised training at home for patients with chronic obstructive pulmonary disease: a randomized controlled trial. *Am J Respir Crit Care Med.* 2023;207:865–875.

Question: In patients with chronic obstructive pulmonary disease (COPD), what is the effect of long-term telerehabilitation or home-based unsupervised treadmill training on combined number of hospitalisations and emergency department presentations over 2 years when compared with usual care?

Design: Three-group randomised controlled trial with concealed allocation and blinded outcome assessment. **Setting:** Three sites across Norway, Australia and Denmark. **Participants:** Adults (40 to 80 years) with moderate to very severe (COPD) and at least one hospitalisation or emergency presentation in the past 12 months. Exclusion criteria were attendance to pulmonary rehabilitation in the past 6 months, presence of comorbidities that prevented participation in home-based exercise and an unsuitable home environment for use of equipment. Randomisation of 120 participants allocated 40 to telerehabilitation, 40 to home-based treadmill training and 40 to the control group. **Interventions:** Participants in the telerehabilitation group were offered home-based exercise training with telemonitoring. The telerehabilitation program included aerobic and resistance exercises, delivered three to five times a week for the first 8 weeks, and then once a month for the remaining 22 months. Unsupervised exercise was prescribed to supplement the monthly telerehabilitation sessions

after the initial 8 weeks. Participants in the unsupervised treadmill training group were provided with a treadmill, exercise booklet and exercise diary to record their sessions. The control group received usual care, which could include traditional pulmonary rehabilitation. **Outcome measure:** The primary outcome was the combined number of hospitalisations and emergency department presentations over 2 years reported as events/person-year. **Results:** A total of 115 participants completed the study. The incidence rate for the primary outcome was lower in both the telerehabilitation group (1.18 events/person-year, 95% CI 0.94 to 1.46) and the unsupervised treadmill group (1.14 events/person-year, 95% CI 0.92 to 1.41) compared with the control group (1.88 events/person-year, 95% CI 1.58 to 2.21). **Conclusion:** In adults with chronic obstructive pulmonary disease, both long-term telerehabilitation and unsupervised home-based treadmill training reduced combined number of hospitalisations and emergency department presentations.

Provenance: Invited. Not peer reviewed.

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Commentary

There is growing importance placed on offering patients choice in their health and care, and increasing interest in alternative models of rehabilitation,¹ both of which are addressed in this timely and complex trial, for which the authors should be congratulated.

Zanaboni and colleagues demonstrated significantly lower incidence rates of combined hospitalisations and emergency department visits amongst participants with chronic obstructive pulmonary disease who underwent 2 years of telerehabilitation or unsupervised rehabilitation compared with those receiving standard care.

The primary outcomes used in previous trials of long-term/maintenance rehabilitation programs have typically included rehabilitation-specific or disease-specific measures (eg, BODE index).² The use of healthcare resource utilisation data as the primary outcome in this trial was novel, meaningful to patients and highly relevant to healthcare funders.

The result of the primary analysis is impressive, but the rationale underpinning it is unclear, as the authors were unable to provide intervention fidelity data and did not undertake qualitative research to explore participants' experiences and healthcare-seeking behaviours. In addition, it would be informative to understand why the incidence rates were similar for resource-intensive telerehabilitation and unsupervised rehabilitation where participants were provided with a treadmill. This in conjunction with the health economic analysis could inform rehabilitation policy.

One of the purposes in offering choice in rehabilitation programs is to increase access to these services. However, 38% of adults did not meet the inclusion criteria because of their home environment. This reinforces the need for inclusive programs to ensure equity of access. Additionally, alternative programs require specific investment by healthcare funders and care must be taken to avoid further reducing the availability of gold-standard in-person rehabilitation. Further exploration of where alternative programs should be placed in care pathways and how patients are supported in choosing the most appropriate program is required.

Provenance: Invited. Not peer reviewed.

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References

1. Cox NS, et al. *Cochrane Database Syst Rev.* 2021;1:CD013040.
2. Guell M, et al. *Am J Respir Crit Care Med.* 2017;195:622–629.