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Video Telehealth and Pulmonary Rehabilitation: Need for a Better Understanding

To the Editor:

We read with great interest the recent article by Bhatt and colleagues (1). As mentioned by the authors, there is clearly a pressing need for a solution to the high rate of 30-day readmissions after hospitalization for an acute exacerbation of chronic obstructive pulmonary disease (AECOPD). Despite the effectiveness demonstrated by early pulmonary rehabilitation (PR) after AECOPD, there have been poor uptake, adherence, and completion rates for various reasons (2–4).

In this context, telehealth medicine has been proposed as an interesting solution, with the potential to broaden and facilitate access to PR, thereby possibly resulting in lower overall rates of hospital readmission after AECOPD. To address this question, Bhatt and colleagues compared a prospective group of patients participating in a video telehealth PR program (administered via smartphone) with

a retrospective contemporaneous cohort who received comprehensive bundled care after hospital discharge. The primary outcome was the 30-day all-cause readmission rate. The results are impressive, with a 30-day absolute reduction in all-cause and AECOPD readmissions of 11.9% and 8.1%, respectively. These results are very appealing, but they should be interpreted with caution. First, the authors do not include patient acceptance or refusal data or overall patient participation rates. Another limitation of this study is related to the design, as this was not a randomized clinical trial. Despite efforts made to match the two groups, the significantly higher proportion of patients on domiciliary oxygen in the intervention group is concerning. This difference may have contributed to the observed improvement in the treatment group if, for example, more attention and closer follow-up was provided to these patients.

Furthermore, the methodological description of the video telehealth PR intervention was insufficient. Information on supervising roles and personnel during the telehealth sessions, or in personalizing exercise prescriptions during individual sessions, is critical to understanding this intervention. From a knowledge translation perspective, replication and wider dissemination of this intervention will require a more detailed description of its content and how it was administered.

Another aspect to question is the speed at which PR could realistically impact the 30-day hospital admission rate. Patients who received the intervention only started the telehealth PR program at the follow-up visit, which was 10 ± 2 days after discharge. Consequently, the effect of the intervention, evaluated at 30 days after discharge, would be measured after a maximal period of 22 days of active intervention.

Beyond the physical training component, support by healthcare professionals and behavioral change could have also had a significant impact on patient outcomes. To better understand the intervention, it would be important to know about the content and the delivery of the educational sessions and if patients had integrated specific behaviors or coping strategies into their daily life. The production of an effective new behavioral change intervention involves a progressive and meticulous process, such as that suggested by the ORBIT (Obesity-Related Behavioral Intervention Trials) model (5). This model was created after the negative results of a large-scale trial evaluating behavioral intervention, the Look AHEAD (Action for Health in Diabetes) trial (6). Just like in pharmaceutical development, behavioral change intervention development should evolve through a phase process that includes, among others, design, defining and refining the intervention, proof-of-concept, and pilot study. This process encourages a rigorous translation from idea to practice and avoids large expenses in inefficient interventions.

The results reported by Bhatt and colleagues (1) are surely interesting, and video telehealth could well be an acceptable, efficient, and effective way of delivering PR in the future. However, until we are better able to define the specific components and delivery of this intervention and its effect on patient coping strategies, the role of PR via video telehealth remains to be answered. ■

Author disclosures are available with the text of this letter at www.atsjournals.org.

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Reply to Gagnon *et al*.

From the Authors:

We thank Dr. Gagnon and colleagues for their interest and comments. Because of the constraints of a research letter, we were not able to provide all the details of the telehealth intervention. Briefly, each video session was designed to mimic the components of center-based pulmonary rehabilitation (PR) and lasted 45 to 60 minutes. The sessions included stretching and breathing exercises for approximately 10 minutes; aerobic exercises using a foot peddler or walking for 10 and 20 minutes in those with low and high baseline functional capacity, respectively; and strength training with stretch bands for 10 minutes. Educational sessions were interspersed between these exercise periods. We agree with Dr. Gagnon and colleagues that the interval between the initiation of PR and 30 days is short, and thus we may not see meaningful changes in functional capacity. The 30-day time point was chosen based on our primary outcome of hospital

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readmission (1). We disagree that the higher proportion of patients on domiciliary oxygen in the group exposed to PR may have contributed to improved outcomes, as this suggests more severe and perhaps less-responsive disease. We acknowledge that the study was not randomized and that we did not collect data on the number of patients approached and reasons for patient refusal to participate. These limitations in part underlie our call for well-conducted randomized trials to test the efficacy of our intervention. They also make a case that behavioral changes could have had a significant impact. Although we did not systematically study this in both groups, the emotional guardedness domain of the psychosocial risk factor survey did improve with telehealth PR (2). ■

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The Controversies and Difficulties of Diagnosing Primary Ciliary Dyskinesia

To the Editor:

We welcome the correspondence from Lavie and Amirav (1), highlighting the difficulties diagnosing primary ciliary dyskinesia (PCD) and the role of high-speed video analysis (HSVA). As members of the European Respiratory Society (ERS) PCD Diagnostic Task Force (2) and/or large PCD Centres, we agree that HSVA has an important role that is not recognized by the American Thoracic Society (ATS) PCD Diagnostic Guideline (3). This risks a large

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