Chronic Obstructive Pulmonary Diseases:
Journal of the COPD Foundation®

Letter to the Editor

Initial Results Do Not Support That Fully Virtual Pulmonary Rehabilitation Widens Reach to Underserved Patients With COPD

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Abbreviations:

SVI=Social Vulnerability Index; **VPR**=virtual pulmonary rehabilitation

Funding Support:

not applicable

Citation:

Moy ML, Casaburi R, Nici L. Initial results do not support that fully virtual pulmonary rehabilitation widens reach to underserved patients with COPD. *Chronic Obstr Pulm Dis.* 2026;13(5):433-435. doi: https://doi.org/10.15326/jcopdf.2026.0877

Publication Dates:

Date of Acceptance: August 17, 2026
Published Online Date: September ??, 2026

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Keywords:

pulmonary rehabilitation; socioeconomic status; chronic airways obstruction; virtual; telemedicine

Dear Editor:

We read with interest the article by Schultz and colleagues, "Who Enrolls After Referral to Virtual Pulmonary Rehabilitation? A Descriptive Comparison."[1] We appreciate its value as one of the first to report results of fully virtual pulmonary rehabilitation (VPR) provided by a commercial provider in the United States. The authors performed a retrospective cohort study at a single academic center (Stanford Health) to describe characteristics of patients with COPD referred to the Kivo Health program, specifically comparing characteristics of those who enrolled (n=65) to those who failed to enroll (n=215). They reported no differences in Social Vulnerability Index (SVI), distance to a PR center, language, or race between the 2 groups.

It is unclear from this report how adoption of this fully virtual program has changed PR care for patients at Stanford. Without comparison to a center-based PR cohort (contemporaneous or historical), it is not possible to address the stated aims of determining whether VPR programs, like Kivo Health, increase enrollment, improve patient access, and engage socially vulnerable populations.

Answers to several questions are needed to interpret the results. How many of the 63 total active or completed patients were completers, contributing to results in Tables 3 and 4, and Figure 2? Who are the 107 (38.5%) patients with "enrollment pending" listed in Table 1? In both groups, what were COPD disease severity characteristics such as lung function, oxygen use, and exacerbation history that might influence VPR enrollment? Of those who declined VPR, a reason was ascertained from only 24 of 45 patients. Interestingly, the authors highlight out-of-network insurance payment as a barrier for 8 participants, concluding that "insurance coverage is widening the care delivery gap." Would insurance have covered these patients if they attended an in-person PR program? There was an equal number (n=8) who were "not qualified and unwilling to pay" raising the question of what criteria were used to qualify patients. Given that no professional society has published selection criteria for VPR, this information would fill a knowledge gap.

Several findings deserve comparison to published literature. First, the average distance of 12.6 miles to an in-person PR center for those who enrolled in VPR is about the same as the average of 12.4 miles found in 10,376,949 Medicare beneficiaries with COPD who enrolled in center-based PR[2] in 2018, suggesting that this VPR program did not widen reach of PR availability. These results may be specific to one area of the United States, as persons in the greater Boston area who lived a median of 12 miles (average 53-minute drive time) from a center-based program attended in-person, while those who lived a median of 31 miles (average 85-minute drive time) chose to attend VPR.[3] Concern that center-based sites closed after the COVID-19 pandemic, giving rationale for the urgent need for commercial products to fill the gap, is not substantiated by these distance data.

Further, the small number of patients (n=42 or 15%) in the most disadvantaged SVI group does not support that this VPR program reached under-resourced populations. These results may even suggest that need for technology capabilities contributes to a "digital divide," reaching only the most socially advantaged. Taken together, this study's distance and SVI results do not support the premise that remotely delivered PR will reach rural, underserved patients.

Finally, the number of referrals (n=278) to Kivo Health over 2 years (i.e., average 11.5 referrals/month) was surprisingly low despite integration into Stanford's electronic medical record. This VPR referral number appears similar to that of typical center-based programs and does not support that this remotely delivered program markedly increased PR delivery. Completion numbers can also be compared to the literature. In this study, there were 63 patients (23%) who were active or completed over 2 years (average 2.6 patients/month). In comparison, in a study of 253 patients with COPD referred to a center-based program, 46% completed the program.[4] Importantly, low referral and completion numbers highlight the need to educate providers and patients about indications for and benefits of PR. Knowledge about PR, not access alone, is a major barrier to taking part in PR.[5] Understanding historical referral and completion rates for Stanford's center-based program would be highly informative.

The cornerstone of PR is aerobic exercise training. International guidelines consider an initial face-to-face assessment essential, providing a validated exercise test to establish safety and from which an individualized exercise prescription can be formulated.[6,7] There is no evidence to support substitution of simple functional tests that are supervised remotely.[6] In this study, the measure of function was 1-minute sit-to-stand, assessed virtually, which is arguably a measure of frailty rather than exercise capacity.[8] It would be important to understand how Kivo Health developed exercise prescriptions and progressed exercise. It would also be informative to know how many patients performed an in-person exercise test outside of the VPR program before starting the program. International guidelines also recommend, "every eligible individual referred for PR should have the opportunity to access directly supervised, centre-based PR…"[6] It would add to the current limited knowledge about VPR if the authors had provided information on how many of the 278 patients were advised to attend a center-based PR program and the reasons they declined.

Tele-PR has great promise to improve access beyond center-based PR. However, it is critical to ensure that virtual programs deliver standard-of-care PR. Virtual PR programs delivered alongside center-based programs use technology as a platform to deliver PR, with the potential to maintain fidelity to the essential components. Completely virtual, stand-alone programs independent of center-based programs are new interventions that should be rigorously tested before implementation.[7] The authors call for randomized controlled trials to study the efficacy of Kivo Health to improve functional and patient-centered outcomes. Ironically, Stanford closed its evidence-based, center-based PR program and adopted Kivo Health without these efficacy data.[9] We agree that it is highly problematic to treat patients with a new intervention without proof of effectiveness. Patients deserve evidence-based PR with the expected improvements in exercise capacity, dyspnea, health-related quality of life, and reductions in risk for hospitalizations and death.[10,11]

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