The coronavirus pandemic has spurred significant growth in home-based cardiology care, facilitated by delivery and financing innovations. Since February 2020, the Centers for Medicare & Medicaid Services have issued 190 ambulatory care waivers, including allowing virtual cardiology visits. As a result, 25% to 34% of Medicare beneficiaries have received telehealth care during the pandemic, compared with less than 1% in 2016. On October 14, in an unprecedented move, the Centers for Medicare and Medicaid Services initiated reimbursements for virtual cardiac rehabilitation. Lessons learned from virtual delivery during the pandemic should inform delivery and payment reform for cardiac rehabilitation going forward.

Cardiac rehabilitation integrates patient education, behavior modification, and exercise. The traditional in-person, center-based cardiac rehabilitation model has been shown to reduce all-cause hospital readmissions by 31% and all-cause mortality by 24% over 1 to 3 years. For patients with a recent acute myocardial infarction, coronary revascularization, or acute heart failure exacerbation, cardiac rehabilitation reduces spending on future hospitalizations by approximately $900 per patient over 21 months. Yet uptake has been disappointing. Even before COVID-19, less than a third of eligible patients attended a single session. Supply-and-demand challenges have impeded uptake, and both must be addressed to expand this life-saving therapy.

Increasing the Supply of Cardiac Rehabilitation

Registered cardiac rehabilitation programs can serve only 37% of the 1.25 million US patients who are eligible every year. This constraint is exacerbated by a 10-fold regional variation, with few programs serving rural and low-income communities. Although most effective when promptly initiated after hospital discharge, shortages create a median wait of 42 days until the first appointment. Prolonged wait times reduce participation in and effectiveness of cardiac rehabilitation.

Increasing supply requires finding more qualified clinicians and physical facilities or relying on novel delivery channels. Although cardiac rehabilitation is typically delivered in inpatient or outpatient settings, home-based cardiac rehabilitation may be appropriate for some patients. In home-based cardiac rehabilitation, clinicians communicate with patients remotely, develop digital modules, and monitor vital signs such as heart rate and blood pressure with wearable devices. Randomized clinical trials have shown that home-based cardiac rehabilitation and center-based cardiac rehabilitation yield similar benefits for quality of life, all-cause readmissions, and cost. However, home-based cardiac rehabilitation is best for individuals at low to moderate risk who have a left ventricular ejection fraction of at least 35% and do not have clinically significant frailty, cognitive limitations, or implantable defibrillators. In this group, representing approximately 70% of all eligible patients, home-based cardiac rehabilitation is safe, with approximately 1 adverse event per 400 000 patient-hours of exercise.

Real-world evaluations of home-based cardiac rehabilitation have yielded promising results. In 2019, Kaiser Permanente piloted automatically referring eligible patients to home-based cardiac rehabilitation via electronic health record triggers. Patients were evaluated in-person and given symptom diaries, exercise regimens, and a smartwatch that continuously recorded data. For 7 weeks, patients exercised independently and received coaching via a smartphone application and weekly telephone calls with case managers. Compared with a historic, center-based cardiac rehabilitation
control program, Kaiser’s home-based program increased completion by 75%, reduced readmissions by 30%, and reduced cardiovascular mortality by 27%. Based on such studies, the American Heart Association and other societies endorsed home-based cardiac rehabilitation as an option for patients who are clinically stable and at low to moderate risk. Scaling such models could expand capacity while reserving spots in facilities for patients at higher risk.

While the recent telehealth expansion facilitates virtual delivery of cardiac rehabilitation, refining the payment model is essential to its long-term success. The current fee-for-service model generally requires that cardiac rehabilitation be provided at an outpatient center, with sessions lasting at least 31 minutes. Introducing a payment model with increased flexibility—such as a bundled prospective payment—would have 3 benefits. First, decoupling payments from session length would allow clinicians more frequent interactions with patients; an hour-long exercise session might be followed by a check-in days later. Second, moving beyond billing for individual sessions may provide flexibility to test strategies for increasing cardiac rehabilitation uptake, such as virtual group-exercise classes or home exercise kits. Third, a bundled payment covering both inpatient and subsequent outpatient cardiac rehabilitation would provide financial incentives for care coordination with a goal of reducing avoidable readmissions. To avoid gaming of bundled payments, payers could release milestone-based payments contingent on sustained program engagement.

Increasing the Demand for Cardiac Rehabilitation

Increasing referral rates requires addressing barriers to physician referrals and patient participation. Only 32% of eligible patients are referred for cardiac rehabilitation prior to discharge, and those who are referred face additional barriers. Out-of-pocket costs range from $20 to $50 per session. Transportation can also be an obstacle, particularly in rural areas. For prescribing physicians, key barriers include a lack of awareness of cardiac rehabilitation’s benefits and a cumbersome referral process. Educating physicians about its evidence base and implementing automatic referrals from electronic health records may increase referrals, while educating patients about the benefits of cardiac rehabilitation prior to discharge may improve engagement among patients who receive referrals. Adoption of home-based cardiac rehabilitation will reduce wait times, allow flexible participation schedules, and eliminate the need to travel. Reducing or eliminating copayments will also promote patient engagement and could be implemented as part of a bundled payment.

Expansion of home-based cardiac rehabilitation must be accompanied by close monitoring of program quality using standardized measures from center-based cardiac rehabilitation, including improvements in blood pressure level and functional capacity (defined by increases in peak metabolic equivalents or 6-Minute Walk Test distance). The association of outcomes of home-based cardiac rehabilitation with disparities must also be assessed. It may increase access when scarce local resources or burdensome out-of-pocket costs preclude center-based cardiac rehabilitation, but its adoption may be conditional on patients’ digital literacy and internet availability. Recent data suggest that most but not all older US adults are equipped to participate in telehealth.

Although cardiovascular disease accounts for one-sixth of healthcare spending and affects half of American adults, cardiac rehabilitation—an effective prevention strategy with strong evidence of safety, efficacy, and cost savings—remains underused. As the ongoing pandemic changes how cardiac care is delivered, it provides an unprecedented opportunity to reimagine how cardiac rehabilitation is prescribed, delivered, and financed.

ARTICLE INFORMATION

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Correction: This article was corrected on November 9, 2020, to fix an error in the Conflict of Interest Disclosures. Two authors were noted there as “Dr Vishwanath” and “Dr Beckman.” These authors’ names should instead have appeared with “Mr.”

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Conflict of Interest Disclosures: Mr Vishwanath reports previous employment at Mount Sinai Health System, Spring Health, and the Center for Medicare and Medicaid Innovation (not related to the focus of this article) and is a founder of Recora Inc, a company that develops home-based technology solutions for older adults with frailty.

Mr Beckman reports receiving consulting fees from Aledade and reports previous employment there (related to primary care accountable care organizations). No other disclosures were reported.

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