HHS Public Access

Author manuscript

J Cardiopulm Rehabil Prev. Author manuscript; available in PMC 2024 July 01.

Published in final edited form as:

J Cardiopulm Rehabil Prev. 2023 July 01; 43(4): 301–303. doi:10.1097/HCR.0000000000000803.

Availability and Use of In-Person and Virtual Cardiac Rehabilitation Among US Medicare Beneficiaries: A Post-Pandemic Update

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New care models such as virtual or hybrid cardiac rehabilitation (CR) may increase access to CR,[1] particularly in settings where personal, health system, or neighborhood factors pose barriers to using in-person CR.[2] The Centers for Medicare and Medicaid Services began reimbursing for virtual CR during the COVID-19 pandemic, but may stop doing so after the pandemic-related national health emergency ends on May 11, 2023.[3] The potential impact of cessation of coverage for these models has not been evaluated. In order to inform ongoing policy discussions and decisions regarding CR, we sought to provide updated and timely

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Disclosures:
The remaining authors report no disclosures relevant to this work.

information about the current state of availability and use of in-person and virtual CR among Medicare fee-for-service (FFS) beneficiaries.

METHODS

We accessed Medicare FFS claims through the Centers for Medicare and Medicaid Services' Virtual Research Data Center. Claims for CR services between January 1, 2019 and September 31, 2022 were identified in outpatient files using Current Procedural Terminology codes 93797 and 93798. Virtual or hybrid CR sessions were identified by claims with "CR" or "DR" modifiers (indicating disaster or emergency-related claims). In order to assess the impact of the pandemic on CR availability and use, we compared the rate of participation and initiation of CR in the Medicare FFS population in two 6-mo study periods: September 2019 to February 2020 (pre-pandemic, period 1) and April 2022 to September 2022 (most recent data available, period 2). As in prior work,[4] we used a 12-mo lookback period to identify patients eligible for CR within each of the study periods: patients with claims for acute myocardial infarction, percutaneous coronary intervention, coronary artery bypass surgery, valve surgery, and heart transplant but no interval claims for CR were considered eligible for CR. We calculated the rate of total (in-person or virtual) and virtual CR sessions per 1000 person-yr; rate of CR initiation among eligible beneficiaries per 1000 person-yr; and number of available CR centers (defined as centers that had ≥1 claim for CR services of any type during each period).[4] Analyses were performed using SAS version 9.4 (SAS Institute). This study was deemed exempt from Institutional Review Board review per Beth Israel Deaconess Medical Center's Committee on Clinical Investigations.

RESULTS

Medicare FFS beneficiaries participated in 106.9 (95% CI: 106.8 – 107.0) CR sessions of all types per 1,000 person-yr in period 1 and 91.7 (95% CI: 91.6 – 91.8) sessions per 1,000 person-yr in period 2 (rate ratio for comparison of period 2 with period 1: 0.858, 95% CI: 0.857 – 0.859, $P<.001$). Of these sessions, 0 CR sessions per 1000 person-yr were delivered virtually in period 1 compared with 0.4 sessions per 1,000 person-yr in period 2; the remainder were delivered in person. Among CR-eligible patients, the rate of CR initiation declined from 379.5 per 1,000 person-yr in period 1 to 367 patients per 1,000 person-yr in period 2 (rate ratio: 0.967, 95% CI: 0.956 – 0.978, $P<.001$). Among CR-eligible patients, the rate of virtual CR initiation was 9 per 1,000 person-yr in period 2. A total of 2,709 centers provided CR services to Medicare FFS beneficiaries in period 1. Of these, 219 (8%) closed during the pandemic and 81 new centers opened, resulting in 2,571 CR centers in period 2. In period 2, 19 centers billed for virtual CR.

DISCUSSION

Use of CR declined during the pandemic and had not recovered to pre-pandemic levels by the end of September 2022. Although virtual CR sessions increased in this population since the start of the pandemic, 99.6% of CR sessions nationally were delivered in person in the 6 mo through September 2022. Persistent declines in CR initiation among eligible patients may be partially explained by the decline in the availability of in-person center-based CR

(which was already severely constrained before the pandemic[5,6]); specifically, we found that there were 138 fewer CR centers offering CR to Medicare beneficiaries in September 2022 compared with pre-pandemic levels.

We have previously reported that pandemic-related declines of in-person CR disproportionately affected low-income patients, patients residing in rural areas, and patients from the most socially vulnerable communities.[4] Novel care models can increase access to CR for these patients;[2] among rural patients, hybrid CR has demonstrated clinical benefits with improvement in exercise capacity.[7] The present study highlights a persistent 14% decline in CR use compared with pre-pandemic levels, and suggests that while expanding virtual CR may improve access to CR, adoption of virtual or hybrid CR has been slow thus far. A substantial acceleration in the uptake of these novel models of CR delivery will be necessary to offset the observed decline of in-person center-based CR participation during the pandemic. This decline coincided with an increased financial burden on in-person centers. Implementation of safety protocols was associated with a 13% increase in cost per participant.[8] Virtual CR delivery does not require these protocols for implementation. Adoption of virtual or hybrid CR at scale will require strategic investments in both technology and healthcare infrastructure,[9] but these investments are only likely to occur if CR programs are assured continued reimbursement of virtual CR after the end of the public health emergency. Reassuringly, a bill to continue reimbursement was recently introduced in the US Congress[10] and has garnered bipartisan support. Our findings can inform upcoming policy decisions regarding continued coverage for virtual and hybrid CR.

Limitations of this study include the use of claims data to identify CR use, which precluded assessment of CR referrals. Our assessment of virtual CR may have been affected by incomplete coding of “CR” or “DR” modifiers by providers. Our analysis was limited to Medicare FFS beneficiaries; the impact of the pandemic on CR use among patients covered by other public or private insurance may differ.

CONCLUSION

The COVID-19 pandemic is associated with persistent declines in CR use among Medicare FFS beneficiaries, which may be partly explained by a reduction in the number of available CR centers. Accelerating the uptake of novel models of CR delivery will require policies to ensure continued insurance coverage after the end of the public health emergency, coupled with evaluations of the real-world scalability and cost-effectiveness of these care models in diverse populations.

Sources of Funding:

This work was supported by a post-doctoral fellowship from the American Heart Association (grant #899763) to Dr. Varghese, a grant from the National Heart, Lung, and Blood Institute to Dr. Yeh and Dr. Kazi (R01HL157530), and by the Richard A and Susan F Smith Center for Outcomes Research.

Dr. Beatty was formerly employed by (2018–2019) and held stock in (2019–2021) Apple Inc, receives consulting fees from AHRQ-funded projects related to cardiac rehabilitation, and receives grant funding from PCORI (IHS-2021C3-24147). Dr. Fonarow reports consulting for Abbott, Amgen, AstraZeneca, Bayer, Cytokinetics, Eli Lilly, Janssen, Medtronic, Merck, Novartis, and Pfizer.

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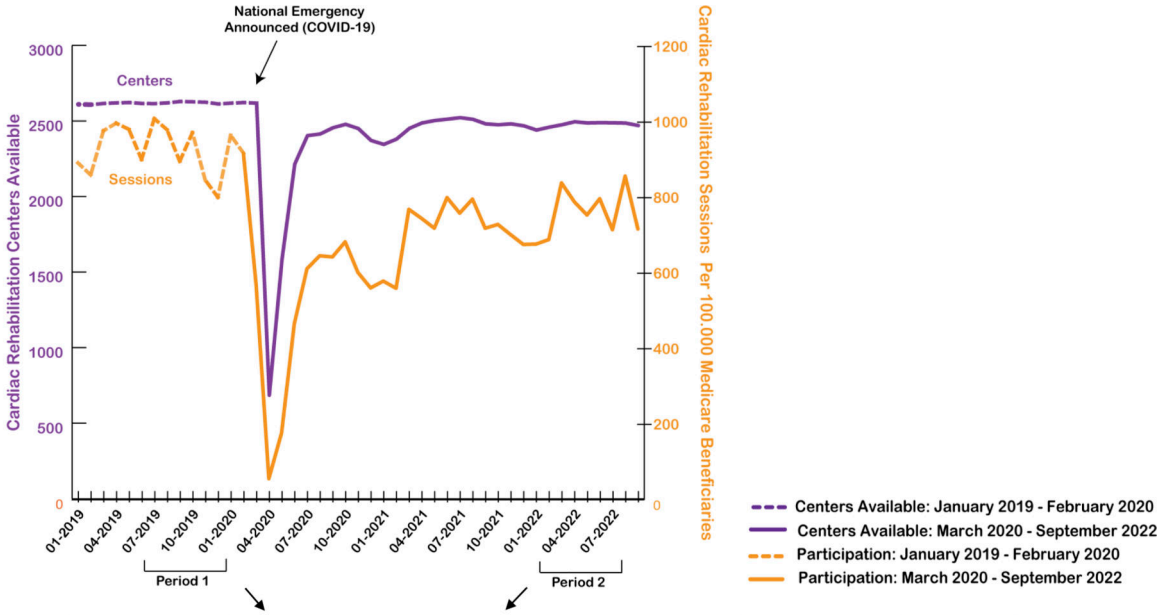

	Period 1	Period 2	Rate Ratio if applicable (Period 2 vs. Period 1)	P-value
CR sessions of all types, number per 1,000 person-years (95% CI)	106.9 (106.8, 107.0)	91.7(91.6, 91.8)	0.858 (0.857, 0.859)	<.001
Virtual CR sessions, number per 1,000 person-years (95% CI)	0	0.4(0.4, 0.4)	—	—
Initiation of CR among CR-eligible patients, number per 1,000 person-years (95% CI)	379.5 (376.6, 382.4)	367.0 (363.9, 370.1)	0.967 (0.956,0.978)	<.001
CR Centers, number	2,709	2,571	—	—

Cardiac Rehabilitation Participation and Center Availability among Medicare Fee-for-Service Beneficiaries (January 2019-September 2022)

The COVID-19 pandemic initially produced a large reduction in the number of monthly cardiac rehabilitation (CR) sessions of all types administered to Medicare fee-for-service beneficiaries (orange). Recovery has been incomplete – CR participation had not recovered to pre-pandemic levels by the end of the study period (September 2022). Although virtual CR sessions increased, they accounted for < 1% of CR sessions delivered in the period between April 2022 to September 2022. Similarly, the rate of CR initiation among eligible patients has declined since the start of the pandemic (purple). These declines may, in part, be attributable to CR center closures with 138 fewer centers open by September 2022