PETERSON CENTER ON HEALTHCARE

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EVOLVING REMOTE MONITORING

An Evidence-Based Approach to Coverage and Payment

About the Peterson Center on Healthcare

The Peterson Center on Healthcare is a non-profit organization dedicated to making higher-quality, more affordable healthcare a reality for all Americans. The organization works to transform U.S. healthcare into a high-performance system by finding innovative solutions that improve quality and lower costs, and accelerating their adoption on a national scale. Established by the Peter G. Peterson Foundation, the organization collaborates with stakeholders across the healthcare system and engages in grant-making, partnerships and research.

EXECUTIVE SUMMARY

In recent years, the availability and adoption of remote monitoring technologies in healthcare have increased. These tools help providers track patients' health and manage their treatment between visits and outside of traditional care settings. For instance, connected blood pressure cuffs can transmit home blood pressure readings to clinicians, who use the data to assess hypertension control and adjust patients' medications. Such monitoring can improve chronic disease management, identify when patients need to seek medical attention, and inform providers about patients' self-management.

Remote monitoring includes remote physiologic monitoring (RPM), whereby a patient's physical data — such as their weight, blood glucose, or blood pressure measurements — are sent to a clinician for review and action, and remote therapeutic monitoring (RTM), where a patient's self-reported data — such as their pain or activity levels — are shared with and monitored by a provider.

Since 2019, Medicare has reimbursed providers using a series of RPM codes for setting up and educating patients on how to use connected devices, collecting patient data on an ongoing basis, and using the data to manage patients' care. The codes cover a range of devices — from weight scales to blood pressure cuffs — and permit providers to bill indefinitely for treatment management. These codes are reimbursed at the same rate for patients with a range of chronic conditions, regardless of what the evidence says about the clinical benefit. In 2022, Medicare expanded payment for a new set of RTM codes that enable providers to track patients' treatment progress, such as completing home exercise programs for musculoskeletal conditions. Many state Medicaid programs and commercial payers also cover RPM and RTM services.

In parallel, a multitude of companies have developed products to support providers in managing and billing remote monitoring codes. Enabled by these platforms, Traditional Medicare's expenditures for RPM have increased, from $6.8 million in 2019 to $194.5 million in 2023.[1] While still a relatively small proportion of Medicare spending, this steady increase has been fueled both by the number of beneficiaries receiving remote monitoring services, as well as by the duration of services. Several analyses found a small group of providers drove dramatic increases in RPM volume within Medicaid and the commercial market.[2,3] RTM codes — with two years of data available — show a similar pattern of growth, though duration is typically shorter than with RPM. In September of 2024, a government report raised concerns about possible fraud and abuse of RPM codes and pointed to numerous gaps in data collection, including not knowing what specific health data were being collected for patients, what devices were being used, or what provider was ordering the service.[4]

In this report, the Peterson Center on Healthcare synthesizes findings from the work of the Peterson Health Technology Institute (PHTI), including rigorous evaluations of applications of digital tools to treat diabetes, hypertension, and musculoskeletal disorders, as well as a novel RPM and RTM claims data analysis to draw new conclusions on the coverage and reimbursement of remote monitoring services. PHTI's three assessments cover the conditions associated with the most spending and utilization for remote monitoring services. In 2023, monitoring for diabetes and hypertension represented 73% of total RPM spending in Traditional Medicare. Monitoring of musculoskeletal disorders were the most common application for RTM — representing 59% of all RTM episodes and almost half of RTM spending.

Traditional Medicare's expenditures for RPM have increased, from **$6.8 million in 2019 to $194.5 million in 2023.**[1]

Digital solutions can play an important role in improving health outcomes, but only if patients adopt them and they make a difference in the treatment and management of conditions. After evaluating the clinical and economic impacts of remote monitoring services, this report outlines the following key policy recommendations to improve their use.

Align coverage and reimbursement for remote monitoring services to clinical value.

Evidence suggests that remote monitoring has the greatest impact on a patient's health when used by a healthcare provider for a focused period of active monitoring and management. For instance, providers may use RPM to track the blood pressure of patients with hypertension while they are adjusting medications; however, once patients stabilize on their new medication regimen and have lowered their blood pressure, ongoing monitoring becomes less valuable. This suggests that remote monitoring codes should be time-limited to the period where the evidence supports active management of a patient. Payers and policymakers should develop evidence-based, condition-specific remote monitoring duration limits and require an active redetermination of medical necessity to continue coverage for these services beyond those limits. In addition, payers and policymakers should tie coverage of remote monitoring and reimbursement rates to clinical effectiveness by condition, including through outcome-based payment models.

This report provides a first-time view into the duration of distinct RPM and RTM episodes by condition.

Ensure access to high-impact, remote monitoring services.

This means guaranteeing the presence of high-performing digital tools in the market and minimizing (or eliminating) the use of poorly performing digital applications. It also means that the patients who stand to benefit the most clinically have access to the right tools when they need them. Today, there is very little penetration in use of RPM or RTM in rural areas, where high-impact remote services need to play a central role in care for rural populations given higher rates of chronic disease, provider shortages, and longer distances to care.

Improve data collection of remote monitoring services.

To continue to make evidence-based coverage and reimbursement decisions for remote monitoring services, payers and policymakers need clear data. Currently, it is impossible to definitively know what health data are collected for patients and for the management of what conditions. Changes to provider coding requirements are critical to strengthen data collection for remote monitoring services. Payers and policymakers should require more specificity on remote monitoring claims and encounter submissions, including what digital solutions are used, what physiological data are being collected (e.g., blood pressure, blood glucose), what condition the RPM and RTM is being used to treat and monitor, and who the ordering provider is.

Given the rapid growth in federal and state spending on remote monitoring in the past five years and the significant potential for further expansion, the time is now to accelerate the necessary improvements to coding, coverage, and reimbursement of remote monitoring services to limit waste and encourage adoption of technologies that deliver strong clinical benefits.

INTRODUCTION

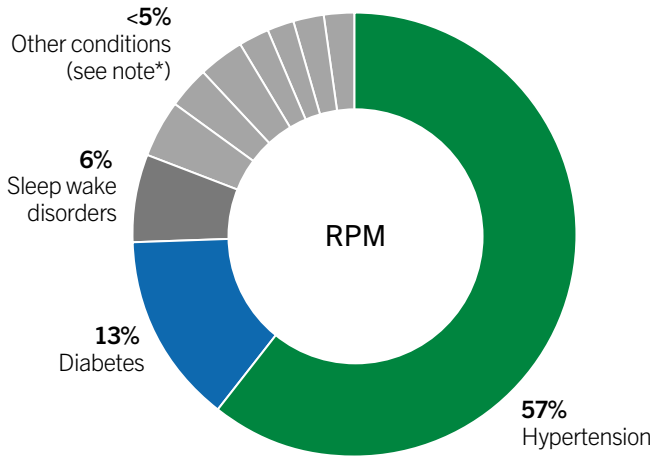
Today, patients living with a range of chronic and acute conditions can collect and asynchronously transmit measures of their health — such as weight, blood glucose, and blood pressure — to their providers. Using digital solutions holds great promise to improve patients' care and health outcomes. Providers can use the data these tools remit to track and remotely manage patients' health outside of traditional clinical settings and between in-person visits. The data can be used by providers to identify whether a patient's condition is worsening and requires follow-up. In addition, remote monitoring can improve access to care and treatment adherence, promote care coordination with their providers, and potentially reduce unnecessary visits — particularly for patients with difficulty accessing care.

Both the number of patients receiving remote monitoring and the duration of monitoring are increasing steadily across payers. Today, the proportion of patients receiving these services remains low: In 2023, approximately 1% of Traditional Medicare beneficiaries received remote monitoring services, most commonly for people with hypertension, diabetes, and musculoskeletal conditions **(see Exhibit 1).** However, use of remote monitoring could continue to grow significantly, given the high prevalence of these conditions — 65% of Traditional Medicare beneficiaries have a diagnosis of hypertension, 25% have diabetes,[5, 6] and more than one in three Americans experience musculoskeletal disorders.[7]

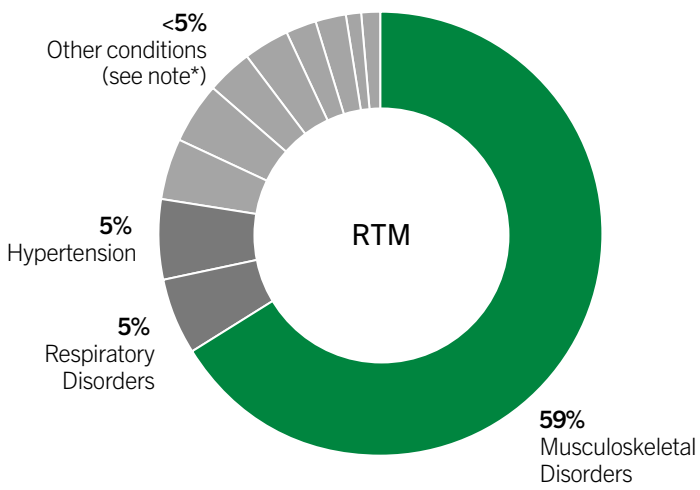
To ensure that providers and patients are adopting high-value, remote monitoring services, it is important to understand which remote treatment and monitoring solutions work — for whom, in which clinical scenarios, and over what duration. Coverage and payment policies should be aligned with this evidence to encourage adoption of solutions that deliver clinical benefits and limit payment for monitoring that is not driving meaningful clinical improvements.

Exhibit 1

RPM AND RTM BY PRIMARY DIAGNOSIS TRADITIONAL MEDICARE, 2023



* Note: See Exhibit 6 for other conditions with <5% share of beneficiaries.
RPM = Remote Physiologic Monitoring.



* Note: See Exhibit 7 for other conditions with <5% share of beneficiaries.
RTM = Remote Therapeutic Monitoring.

COVERAGE AND REIMBURSEMENT OF REMOTE MONITORING

Medicare began reimbursing for RPM services (such as those tracking patients' blood glucose and blood pressure levels) in 2019.[8] Coverage of RPM in Medicaid varies by state: As of September 2024, 42 states had Medicaid RPM policies with varying restrictions, such as only offering reimbursement to home health agencies or restricting the clinical conditions that may be monitored using the codes.[9] While commercial payers often follow Medicare's coverage and reimbursement decisions, adoption of remote monitoring is inconsistent across commercial payers and utilization data are limited. Several commercial payers have taken a more prescriptive approach by narrowing the set of conditions for which remote monitoring is covered.[10]

Today, providers in Medicare can be reimbursed for three components of RPM:

1. **Supplying the remote monitoring device to the patient and collecting data**
2. **Educating the patient on how to use the device**
3. **Time spent by the provider to review the data and manage treatment**

To qualify for reimbursement, a patient receiving RPM must have an established treatment relationship with a provider, have a chronic or acute condition that requires monitoring, use a device that digitally uploads data and meets the U.S. Food and Drug Administration's definition of a medical device, and collect data for at least 16 days out of every 30-day period, and their provider must review that data for 20 minutes per month at minimum.[11]

In 2022, the Centers for Medicare and Medicaid Services (CMS) began reimbursement of codes for RTM, which enables providers to monitor therapeutic data, including musculoskeletal system status, respiratory system status, therapy adherence, and therapy response. These codes are commonly used for monitoring of home exercise or physical therapy programs. In 2023, CMS expanded this code family to include cognitive behavioral therapy. RTM codes have the same three components of monitoring as RPM codes: device supply, device set-up and education, and treatment management. An important difference in the RPM and RTM codes is the specificity of the language in the RTM codes in describing the specific treatment or monitoring conducted (for respiratory care, musculoskeletal care, or behavioral health care). Coverage of RTM by commercial payers is not well documented.[12]

Billing Remote Monitoring Services During the COVID-19 Pandemic

During the COVID-19 federal public health emergency, which lasted from January 31, 2020, to May 11, 2023, CMS temporarily eased remote monitoring requirements. This included allowing RPM and RTM services to be delivered to patients who did not already have an established in-person relationship with a provider, as well as requiring only two days (instead of 16) of data collection over a 30-day period. This allowed for easier billing of remote monitoring services and likely contributed to the growth in utilization over this time.

Building on this flexibility, the American Medical Association Current Procedural Terminology Editorial Panel — the group responsible for maintaining and updating the code set used for medical billing — voted to revise existing codes.[13] PHTI supported these changes because coverage and reimbursement should be based on clinical value and requiring 16 days of data from patients per month is arbitrary, burdensome, and not reflective of the amount of data needed to make clinically meaningful treatment decisions, which can vary by condition. To better align coverage and reimbursement to clinical benefit, providers also need the flexibility to engage in shorter patient consultations.

Both RPM and RTM codes are paid by Medicare at a similar rate, regardless of the patient's condition and which patient data are being monitored **(see Appendix A for a complete list of RPM and RTM billing codes).** As with other clinical services, CMS adjusts reimbursement of remote monitoring codes by geography to reflect variation in regional practice costs. CMS does not allow concurrent billing for RPM and RTM codes. While a provider may bill the set-up code only once per patient per episode of care,[a] there is no limit to the duration of billing for the treatment and management codes.

Physicians, other qualified healthcare professionals, and clinical staff under the general supervision of a physician can bill for RPM and RTM services. Advanced practice providers are reimbursed 85% of the Medicare rate. For RTM, CMS established modifier codes to adjust payment rates for therapy services furnished by occupational therapy assistants and physical therapist assistants to approximately 85% of the Medicare rate, as well.[14]

Concurrent with the growth of remote monitoring in Medicare, health technology companies launched a multitude of solutions that enable providers to bill for remote monitoring services. A recent search identified more than 180 companies now supporting RPM or RTM billing in the United States.[15] Such platforms help providers adhere to the requirements for remote monitoring, including reviewing monitoring data and alerting providers to patients whose data suggests they may require follow-up. These solutions also aim to increase provider payments, with marketing messages that promise to increase revenue and maximize return on investment. A provider can earn more than $1,100 per patient per year billing remote monitoring services in Medicare.[b]

[a] CMS defines an episode of care as "beginning when the remote physiologic monitoring service is initiated and [ending] with the attainment of the targeted treatment goals." Source: CMS 2021 Physician Fee Schedule.

[b] Based on the reimbursement rate for CPT 99453 and 12 months of CPT 99454 and CPT 99457.

CLINICAL BENEFITS OF REMOTE MONITORING

As the marketplace for RPM and RTM matures, the body of evidence about the clinical benefits of remote monitoring solutions is increasing. In 2024, PHTI evaluated remote monitoring solutions for the management of type 2 diabetes,[16] musculoskeletal conditions,[17] and hypertension.[18] PHTI's evaluations demonstrate how remote monitoring technologies can improve outcomes and reduce spending — but also that clinical effectiveness and duration of benefit vary significantly by condition.

The Peterson Health Technology Institute (PHTI) provides independent evaluations of innovative healthcare technologies to improve health and lower costs. Through its rigorous, evidence-based research, PHTI analyzes the clinical benefits and economic impact of digital health solutions. These evaluations inform decisions for providers, patients, payers, and investors, accelerating the adoption of high-value technology in healthcare. PHTI was founded in 2023 by the Peterson Center on Healthcare.

Clinical effectiveness by condition

HYPERTENSION

One of the highest-impact use cases is leveraging RPM to on-board, adjust, and stabilize patients with high blood pressure to their medication regimen. In Traditional Medicare, 57% of all RPM episodes were for hypertension. Some RPM solutions for the management of hypertension integrate dedicated virtual care teams to monitor patients' blood pressure and adjust medications quickly, which helps achieve faster blood pressure control than usual care.[c] RPM solutions focused on medication management were found to reduce systolic blood pressure by an average of 7.1 mm Hg and to produce the largest reductions in systolic blood pressure within the first three months of care and the most reductions within six months. By comparison, usual care was slower to achieve a similar improvement in systolic blood pressure.[19]

MUSCULOSKELETAL CONDITIONS

For the treatment of common musculoskeletal conditions, there is promising evidence that patients who use RTM solutions experience greater improvements in pain and function than those who receive only in-person physical therapy. These improvements are likely because RTM users have better adherence and complete more-frequent exercise sessions. Fifty-nine percent of all RTM episodes in Traditional Medicare were used to treat musculoskeletal conditions.

Importantly, most musculoskeletal conditions are treated as episodes that benefit from targeted physical therapy over 2–4 months.[20] On average, patients complete eight in-person physical therapy sessions, and physical therapists track improvements using validated measures of pain and function until symptoms reduce.[21] The evidence suggests that the addition of RTM to a defined period of usual care can improve patient outcomes; however, ongoing use of RTM for most musculoskeletal conditions is not supported by the evidence.

DIABETES

The second most common condition for people receiving RPM services is diabetes. For adult patients with type 2 diabetes, noncontinuous RPM may offer small, short-term reductions in HbA1c, but most patients do not experience clinically meaningful benefits from RPM use. The evidence suggests that RPM for diabetes may be most effective when targeting patients with the highest starting HbA1c levels and those who are at critical transition points in their care plan (e.g., for patients newly starting insulin). However, there is no evidence that the incremental benefits to HbA1c from remote

[c] Usual care is defined as a heterogeneous set of clinical treatments, which may include home blood pressure monitoring and patient education, in addition to traditional in-office care.

monitoring are durable beyond six months. In fact, the few longer-term studies of remote monitoring suggest that clinical benefits erode over time — especially as patients experience reminder fatigue, lack of habit formation, and lack of integration with other tools used to manage their care.

Clinical effectiveness by product

Not all remote monitoring tools perform equally, even if targeted to the same condition. Products vary in their underlying model of care, including what additional services are embedded in a platform, how the services are organized and targeted, and who is responsible for delivering them (e.g., what type of clinician). From how a tool is designed to how it is deployed in a care setting, these differences can drive significant variations in clinical outcomes. For example, PHTI's clinical evaluation of digital hypertension management solutions showed that tools outperformed the alternatives when they embedded medication management services. A higher-performing product in the musculoskeletal space concentrated on delivering shorter duration virtual physical therapy episodes. An enhanced understanding of what works and why can promote more evidence-driven innovation and product design.

These clinical findings suggest that reimbursement for remote monitoring solutions should reflect effectiveness and vary by duration. CMS and other payers should consider developing condition-specific billing guidelines that match the periods of highest effectiveness as evidenced by clinical benefit for each condition. This also highlights the need for more-detailed evidence on how providers are typically billing RPM and RTM codes and how variations in the duration and intensity of remote treatment and monitoring may impact healthcare spending.

> Patients should have confidence that the digital tools offered to them are making a difference in the management of their condition, and that the time they invest in using them is worth it.

KEY TAKEAWAYS: A CLINICAL REVIEW OF THE EVIDENCE

1 The clinical impact of remote monitoring varies by condition.

- Patients who use physical therapy RTM solutions experience greater improvements in pain and function than those who receive only in-person physical therapy.
- For adults with type 2 diabetes, noncontinuous RPM does not result in clinically meaningful reductions in HbA1c.

2 Clinical benefits from remote monitoring depend on the provider engaging with the data and their ability to act on that information to improve patient outcomes.

- Leveraging RPM to monitor blood pressure during periods of active medication management allows providers to quickly adjust patients' hypertension medications, resulting in rapid improvements in blood pressure outcomes.

3 The duration of clinical effectiveness for remote monitoring is condition-specific and time-limited.

- RPM use in patients with hypertension is most valuable within the first six months, when active management of medications for blood pressure occurs.
- RTM improves outcomes for people with musculoskeletal conditions during targeted physical therapy episodes that last 2–4 months.
- RPM for diabetes may be most effective when targeting patients with the highest starting HbA1c levels and those who are at critical transition points in their care plan (e.g., for patients newly starting insulin).

REMOTE MONITORING BILLING IN MEDICARE AND MEDICAID

As a complement to the clinical review of evidence, this report examines billing patterns for remote monitoring (RPM and RTM) across Traditional Medicare, Medicare Advantage, and Medicaid to reveal how these services are being used and reimbursed, including the frequency and duration. The data analysis examines administrative enrollment claims and encounter data using Medicare claims from 2019 through 2023, Medicare Advantage encounter data from 2019 through 2021, and Medicaid claims from 2019 through 2022. These date ranges represent the most recent full years of utilization data available. Beneficiaries were included in the analysis if they had at least one claim with any RPM or RTM service. The analysis was conducted by NORC at the University of Chicago. For the complete methodology, see the Remote Monitoring Methods and Data Supplement.[22]

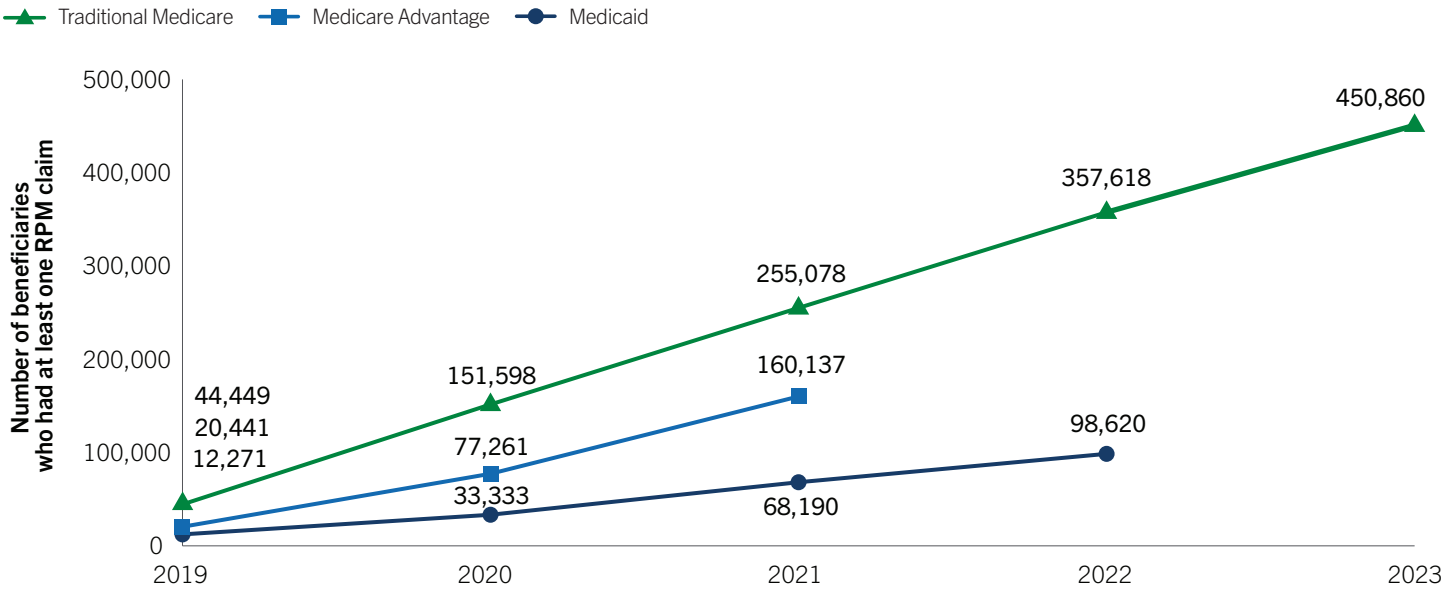
RPM and RTM utilization and spending

RPM UTILIZATION AND SPENDING

Since 2019, the number of patients using RPM grew substantially across Traditional Medicare, Medicare Advantage, and Medicaid **(see Exhibit 2).** From 2019 to 2023, Traditional Medicare saw a more than 10-fold increase in the number of beneficiaries using RPM services; similar growth occurred across Medicare Advantage and Medicaid.

Exhibit 2

RPM USERS BY PAYER, 2019–2023



Source: Traditional Medicare claims 2019–2023; Medicare Advantage Encounter data 2019–2021; Medicaid T-MSIS data 2019–2022.

Providers are also billing for RPM services over longer periods of time. On average, the length of time patients engaged in continuous RPM use[d] increased steadily from 1.7 months in 2019 to 5.2 months in 2023 in Traditional Medicare **(see Exhibit 3).** In Medicare Advantage, average RPM duration rose from 1.5 months to 4.5 months from 2019 through 2021. Medicaid utilization shows a similar pattern, with average episodes increasing from 1.5 months in 2019 to 4.6 months in 2022.

As patients use remote monitoring for increasing lengths of time, the proportion of long-term RPM episodes — those that continue for longer than nine consecutive months — is also growing. In Traditional Medicare, the proportion of long-term RPM episodes rose from 4% in 2019 to 22% by 2023 **(see Exhibit 4).**

Exhibit 3

RPM EPISODE DURATION BY PAYER, 2019–2023

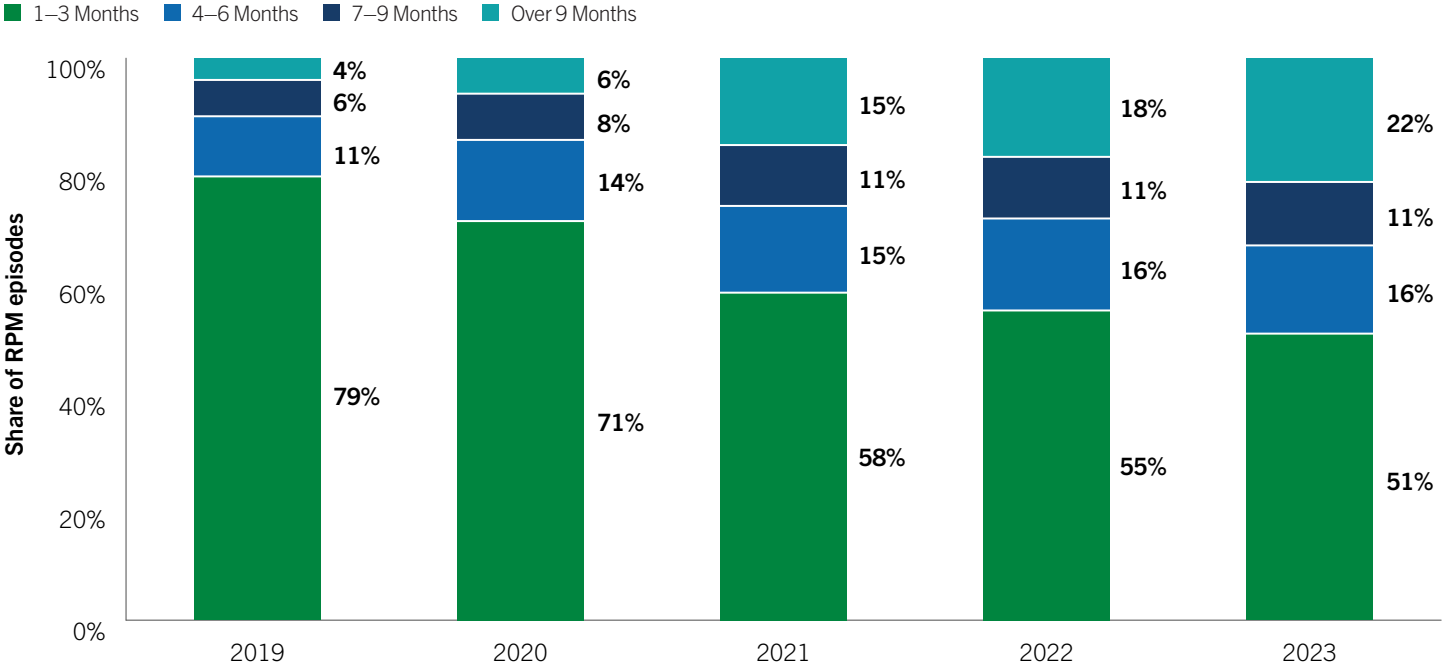
	Average RPM duration (months)		
	Traditional Medicare	Medicare Advantage	Medicaid
2019	1.7	1.5	1.5
2020	2.2	2.1	1.9
2021	3.8	4.5	2.9
2022	4.3	N/A	4.6
2023	5.2	N/A	N/A

Note: N/A = not available.

Source: Traditional Medicare claims 2019–2023; Medicare Advantage Encounter data 2019–2021; Medicaid T-MSIS data 2019–2022.

Exhibit 4

DISTRIBUTION OF RPM EPISODE DURATION, TRADITIONAL MEDICARE, 2019–2023

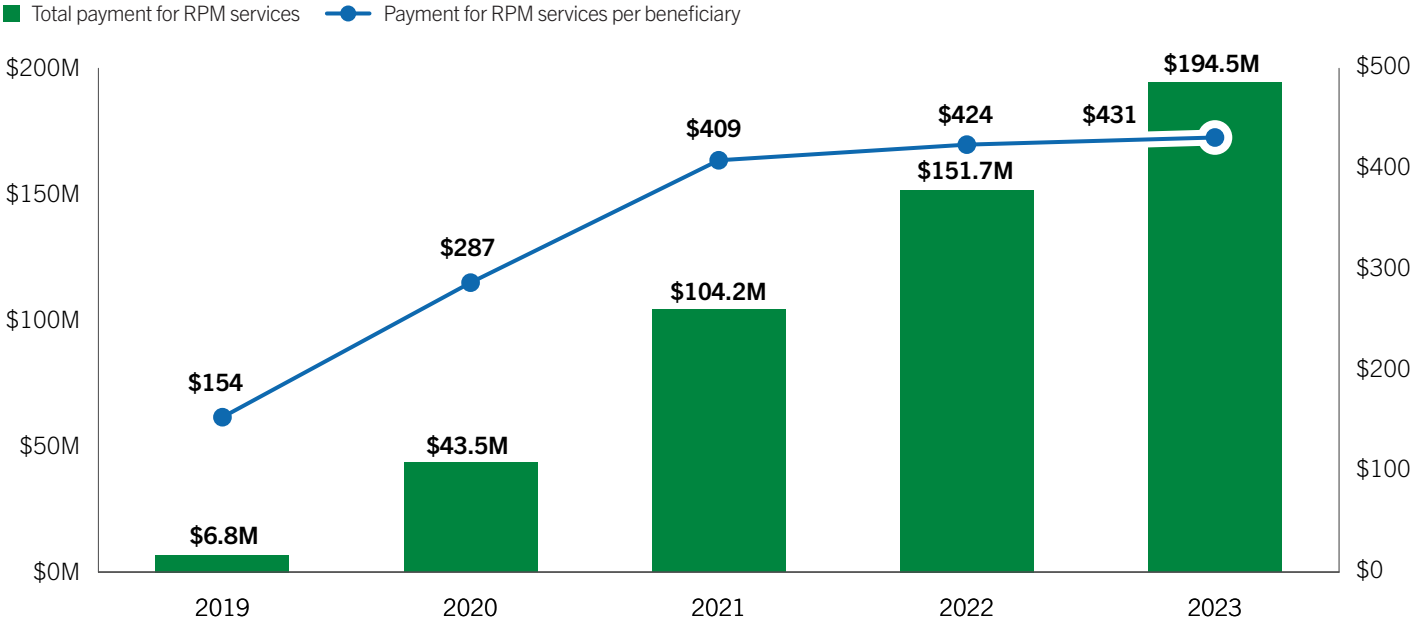


Source: Traditional Medicare claims, 2019–2023.

[d] For this analysis, periods of continuous RPM use (or episodes) were defined as the number of consecutive months a beneficiary received at least one RPM service, with no gap between services over 37 days. Duration was estimated for each episode in the year in which the episode ended (for additional details, see the Remote Monitoring Methods and Data Supplement).

Exhibit 5

RPM SPENDING, TRADITIONAL MEDICARE, 2019–2023



Source: Traditional Medicare claims, 2019–2023.

Spending for RPM services has grown substantially as more beneficiaries use RPM services, and for longer periods of time. Total Traditional Medicare claim payments for RPM totaled $194.5 million in 2023 **(see Exhibit 5).** Spending for RPM services per beneficiary who received RPM increased from $154 in 2019 to $431 in 2023. This spending growth also occurred in Medicare Advantage and Medicaid.

It is important to note that spending on RPM would have been even higher; however, from 2019 to 2025, the payment rate decreased for almost every RPM code. For example, for 20 minutes of time spent adjusting a patient's treatment based on RPM data, a provider's reimbursement fell from $51.54 in 2019 to $47.87 in 2025.[24] Similarly, reimbursement for collection of RPM data and review fell from $64.15 to $43.02.[25] Both opportunities are billable every 30 days.

Overall, RPM use was highest for older, nonwhite, and more medically complex beneficiaries, including those dually eligible for Medicare and Medicaid. Slightly fewer Traditional Medicare beneficiaries living in rural areas received RPM services versus urban areas **(see Appendix B)**. The demographic distributions were similar in Medicare Advantage and Medicaid.

RTM UTILIZATION AND SPENDING

Remote therapeutic monitoring codes are more nascent than RPM — introduced in 2022 for musculoskeletal and respiratory conditions and in 2023 for cognitive behavioral therapy. RTM use is very low: less than 0.2% of Traditional Medicare beneficiaries in 2023 received RTM services (approximately 52,500). The length of use was relatively short, with an average duration of 2.1 months and 74% of RTM uses ending within the first three months. In Medicaid, available data indicate that about 2,600 beneficiaries used RTM services in 2022, and the average episode duration was 1.4 months. The average duration of RTM episodes is more aligned with the clinical evidence, which supports shorter episodes of 2–4 months for people with musculoskeletal conditions during targeted physical therapy.

From 2022 to 2023, spending for RTM in Traditional Medicare rose from $2.2 to $10.4 million. Interestingly, about 46% of Traditional Medicare beneficiaries who received RTM services had them delivered by a provider assistant. These cases accounted for only 25% of total spending for RTM services. These services were furnished by physical and occupational therapist assistants and reimbursed at a lower rate. The average duration of RTM episodes was lower when delivered by provider assistants, at 1.1 months compared with 2.8 months for therapists (average amount billed was $64 vs. $156).

RTM use was highest for older and more medically complex beneficiaries. A similar pattern of slightly higher use in urban areas versus rural areas was also found. Unlike RPM, however, RTM was used more frequently by white patients and women **(see Appendix B).**

Condition-specific billing patterns in RPM and RTM

RPM USE BY CONDITION

In Traditional Medicare, the most common primary diagnosis among those who used RPM for more than one month was hypertension (57%), followed by diabetes (13%) and then sleep-wake disorders (6%).[e] Average duration of use varied by the patient's primary diagnosis. In Traditional Medicare, RPM for hypertension lasted an average of 6.6 months, while sleep-wake disorder monitoring lasted 3.1 months **(see Exhibit 6).** Medicare Advantage and Medicaid showed similar trends with RPM use for hypertension as the primary diagnosis having the longest episode durations compared with other conditions. It is important to note that RPM codes are not condition-specific and can be used to monitor physiologic data for any chronic or acute condition deemed appropriate by a provider.

New Insights: Remote Monitoring "Episode" Duration Analysis

To gain a better understanding of how remote monitoring services are used, this analysis provides a first-time view into the duration of distinct RPM and RTM "episodes" by condition. Defined as periods of continuous RPM or RTM use, episodes are the number of consecutive months a beneficiary received at least one remote monitoring service, with no gap between services over 37 days. All remote monitoring billing codes **(see Appendix A)** were counted as part of an episode's spending. All episodes in this analysis are shown in the year in which they were completed. Analyzing remote monitoring utilization as episodes shows how RPM and RTM service duration varies by condition and is increasing over time.

Exhibit 6

DISTRIBUTION OF RPM EPISODES BY PRIMARY DIAGNOSIS, TRADITIONAL MEDICARE, 2023

Condition	Share of beneficiaries with an RPM episode	Average RPM episode duration (months)	Episode duration distribution			
			1–3 months	4–6 months	7–9 months	Over 9 months
All	100%	5.2	51%	16%	11%	22%
Hypertension	57%	6.6	42%	17%	13%	29%
Diabetes	13%	4.9	50%	16%	12%	21%
Sleep-wake disorders	6%	3.1	65%	12%	13%	11%
Disorders of lipid metabolism	4%	5.0	51%	15%	11%	23%
Heart failure	3%	3.5	64%	14%	8%	14%
Chronic obstructive pulmonary disease and bronchiectasis	3%	4.5	56%	15%	10%	19%
Obesity	2%	4.5	52%	19%	12%	17%
Cardiac dysrhythmias	2%	4.0	59%	14%	11%	16%
Chronic kidney disease	2%	4.0	56%	18%	11%	15%
Coronary atherosclerosis and other heart disease	2%	3.9	60%	15%	10%	15%

Notes: Episodes are grouped by Clinical Condition Software Revised (CCSR) found on RPM claim, derived from the ICD-10 diagnosis. See the Remote Monitoring Methods and Data Supplement for conditions that aggregate into hypertension and diabetes.

Source: Traditional Medicare claims, 2023.

[e] Condition is determined by the primary diagnosis ICD-10 code on the claim. This analysis assumes the primary diagnosis on the claim represents the reason for the service; however, there are no available data on the type of physiologic data collected (for more detail, see the Remote Monitoring Methods and Data Supplement).

RTM USE BY CONDITION

RTM codes are specific to tracking symptoms and therapeutic responses related to the respiratory system or the musculoskeletal system, or monitoring cognitive behavioral therapy response (**see Appendix A).** In Traditional Medicare, the vast majority of beneficiaries received RTM to monitor musculoskeletal disorders (59%). Only 5% of RTM episodes monitored respiratory disorders and 1% monitored mental and behavioral health disorders.[f] Average duration was longest for respiratory disorders and heart failure **(see Exhibit 7).** Medicaid had similar trends in RTM, with utilization highest in musculoskeletal disorders. Medicare Advantage data were unavailable for RTM codes.

Exhibit 7

DISTRIBUTION OF RTM EPISODES BY PRIMARY DIAGNOSIS, TRADITIONAL MEDICARE, 2023

Condition	Share of beneficiaries with an RTM episode	Average RTM episode duration (months)	Episode duration distribution			
			1–3 months	4–6 months	7–9 months	Over 9 months
All	100%	2.1	74%	12%	7%	7%
Musculoskeletal disorders	59%	1.7	79%	10%	5%	5%
Respiratory disorders	5%	4.0	50%	15%	15%	19%
Hypertension	5%	2.2	65%	20%	9%	6%
Sleep-wake disorders	4%	3.1	60%	14%	13%	13%
Nervous system signs and symptoms	4%	1.3	85%	9%	4%	2%
Nervous system pain and pain syndromes	3%	2.3	71%	14%	10%	6%
Diabetes	3%	3.6	53%	18%	13%	16%
Implant, device or graft related encounter	2%	1.2	86%	11%	2%	2%
Heart failure	2%	4.3	49%	13%	16%	22%
Sequela of cerebral infarction and other cerebrovascular disease	1%	2.6	72%	10%	12%	7%
Mental and behavioral health disorders	1%	2.1	66%	20%	11%	3%

Notes: Episodes are grouped by Clinical Condition Software Revised (CCSR) found on RPM claim, derived from the ICD-10 diagnosis. See the Remote Monitoring Methods and Data Supplement for conditions that aggregate into musculoskeletal disorders, respiratory disorders, and mental and behavioral health disorders.

Source: Traditional Medicare claims, 2023.

[f] CY2023 was the first year RTM monitoring was introduced for cognitive behavioral therapy.

KEY TAKEAWAYS: A REVIEW OF REMOTE MONITORING UTILIZATION DATA

1 Remote monitoring is used by a small percentage of Medicare and Medicaid beneficiaries — but is growing quickly.

- One percent of Traditional Medicare beneficiaries use RPM today; they tend to be older, nonwhite, urban, more medically complex, and dually eligible for Medicare and Medicaid.
- In 2023, 451,000 patients in Traditional Medicare used RPM services, up from 44,500 in 2019.
- In Medicare Advantage, use increased 14-fold between 2019 and 2022.[26]
- Fewer than 0.2% of Traditional Medicare beneficiaries received RTM services in 2023 (approximately 52,500); they were more likely to be older, white, women, living in urban areas.

2 Providers are billing remote monitoring services for longer periods of time.

- The duration of continuous RPM use in Traditional Medicare rose, on average, from 1.7 to 5.2 months between 2019 and 2023.
- Twenty-two percent of RPM episodes now last more than nine months in Traditional Medicare.

3 Hypertension is the most frequent primary diagnosis for Medicare beneficiaries using RPM and is monitored longer than other conditions.

- Hypertension is the primary diagnosis for 57% of all beneficiaries with an RPM episode.
- The average RPM episode for hypertension lasts 6.6 months.

4 Musculoskeletal disorders are the most frequent primary diagnoses for those using RTM, and episode duration is targeted and relatively short.

- Nearly 60% of beneficiaries with an RTM episode have a primary diagnosis of a musculoskeletal disorder.
- The average RTM episode for a musculoskeletal disorder lasts 1.7 months.

5 As more beneficiaries use remote monitoring, and for longer periods of time, future spending potential is enormous.

- In 2023, Traditional Medicare spent $194.5 million on RPM and $10.4 million on RTM.
- Spending for RPM services per Traditional Medicare beneficiary who received RPM increased from $154 in 2019 to $431 in 2023.
- Remote monitoring utilization and duration is growing at a similar rate across Traditional Medicare, Medicare Advantage, and Medicaid.

THE POLICY OPPORTUNITY

While remote monitoring solutions are currently used by a small subset of Medicare and Medicaid beneficiaries, their use — and the duration of their use — is growing rapidly. With the millions of patients whose treatment plan could include these services and reimbursement structures that allow perpetual billing, spending on remote monitoring will continue to grow, potentially exponentially. Current payment incentives must evolve to better target payment for these solutions to the patients, conditions, and durations of use in which they deliver the most clinical benefit.

Align coverage and reimbursement for remote monitoring services to clinical value

Today, Medicare, Medicaid, and other payers reimburse for RPM and RTM services in perpetuity and at the same rate for all conditions and types of monitoring. To better align coverage and reimbursement to clinical benefits for patients, payers and policymakers should:

Develop Evidence-Based, Condition-Specific Remote Monitoring Duration Limits.

Evidence suggests remote monitoring has the greatest impact on a patient's health when used for a focused period of active monitoring and management by the healthcare provider; however, payments can continue in perpetuity. Payment models for remote monitoring services should be limited on the basis of evidence about their duration of benefit.

For example, the available clinical evidence supports monitoring the blood pressure of patients with hypertension for up to an initial six months. During this time, a provider can use RPM to monitor and adjust (and readjust) medications as needed for blood pressure control. After medications are adjusted and patients are stabilized on a regimen that improves their blood pressure control, regular RPM billing should cease. Similar clinically relevant time limits can be defined for other remote monitoring services, such as virtual physical therapy.

Once an evidence-based time limit for remote monitoring services is reached, continued coverage of these services should require additional clinical justification. Medical necessity is already a standard in Medicare and Medicaid; this would be a step toward defining medical necessity criteria for remote monitoring technologies.

Tie Coverage of Remote Monitoring and Reimbursement Rates to Clinical Effectiveness by Condition.

As shown in **Exhibits 6 and 7,** providers are using remote monitoring for patients with a wide variety of conditions, despite varying evidence about the benefit of RPM and RTM to treat and monitor different diseases. As evidence about the value of these services grows, payers should consider restricting coverage to those conditions that demonstrate clinical value, as some private payers are already doing. Reimbursement for remote monitoring could be constructed as an outcome-based payment depending on the impact to a patient's health.

Ensure access to high-impact remote monitoring services

The growing availability of digital tools can make it challenging for payers, providers, and patients to determine which tools are most beneficial and worth their time and investment. Driving the adoption of high-impact applications of digital technology means both ensuring the presence of high-performing digital tools in the market, minimizing (or eliminating) the use of poorly performing digital applications, and ensuring that the patients who stand to benefit the most have access to the right tools when they need them. Payers and policymakers should:

Evaluate Strategies to Improve Access to High-Impact Remote Monitoring Tools, Especially in Rural Areas.

While adoption of remote monitoring tools is growing, overall utilization is still driven by a small number of primary care providers.[27, 28] This has implications for the distribution of digital solutions: For example, although this analysis found increased rates of use by more medically complex patients, including dually eligible beneficiaries, it also showed slightly fewer Medicare beneficiaries living in rural America received remote monitoring services than those living in urban areas.[29] Given that rural residents face higher rates of chronic disease, experience more provider shortages, and often travel twice as far to receive care, the availability of high-impact remote monitoring services may be even more important for rural populations.[30, 31] While CMS's geographic variation for reimbursement helps align payment with local costs of living, it may dissuade national companies from offering digital tools in rural and lower-cost areas.

Improve data collection of remote monitoring services

Policymakers play a critically important role in setting the standards for data collection. To continue to make evidence-based coverage and reimbursement decisions for remote monitoring services, payers and policymakers need clear data. Currently, it is impossible to definitively know what health data are collected for patients and for the management of what conditions. To strengthen data collection for remote monitoring services, payers should:

Require More Specificity on Remote Monitoring Claims and Encounter Submissions.

CMS and state Medicaid agencies should require remote monitoring claims and encounter submissions to communicate what digital solutions are used, what physiological data are being collected (e.g., blood pressure, blood glucose), what condition the RPM and RTM is being used to treat and monitor, and who the ordering provider is. Such data enable payers to evaluate the use of these solutions and help manage their distribution to patients.

To encourage the development and adoption of high-value remote treatment and monitoring, coverage and payment decisions for these solutions must evolve. Where evidence demonstrates clinical effectiveness, policymakers should rapidly work to advance adoption and use through all tools at their disposal. Where the evidence does not support adoption or the duration of clinical impact is time-limited, policymakers should act to limit coverage and payment for these solutions.

There is currently no limit to the duration of remote monitoring reimbursement. A clinician can be reimbursed for collecting and reviewing data on a monthly basis in perpetuity for anyone with a diagnosed chronic condition, even if they are already well-managed.

CONCLUSION

The number of patients receiving remote monitoring services and the duration of monitoring are increasing steadily across payers. Given the rapid growth, and the significant potential for further expansion, especially in Medicare, now is the time for payers and policymakers to engage in a critical policy reset.

This can be achieved in three ways:

1 **By better aligning coverage and reimbursement to actual clinical value**

2 **By promoting the adoption of high-impact remote monitoring services and minimizing or eliminating the use of poorly performing digital applications**

3 **By improving data collection for remote monitoring services so that payers and policymakers can have the information needed to make evidence-based coverage and reimbursement decisions**

APPENDIX A

DESCRIPTION AND PAYMENT RATES OF REMOTE MONITORING BILLING CODES

Code Family	HCPCS Code	Description	Frequency	2025 Medicare PFS Payment Rate[a]
Remote Physiologic Monitoring	99453	RPM initial setup and patient education on use of equipment	One-time payment	$19.73
	99454	Supply of RPM device and collection of data	Every 30 days (if patient reports ≥16 readings)	$43.02
	99457	First 20 minutes of RPM treatment management services (patient interaction to adjust treatment)	Every 30 days	$47.87
	99458	Additional 20 minutes of RPM treatment management services (patient interaction to adjust treatment)	Can be billed multiple times in a 30-day period	$38.49
	99091	Collection and interpretation of physiologic data for ≥30 minutes	Every 30 days	$51.75
Remote Therapeutic Monitoring	98975	RTM initial setup and patient education on use of equipment	One-time payment	$19.73
	98976	Supply of RTM device to monitor respiratory system and collection of data	Every 30 days (if patient reports ≥16 readings)	$43.02
	98977	RTM device to monitor musculoskeletal system and collection of data	Every 30 days (if patient reports ≥16 readings)	$43.02
	98978	RTM device to monitor cognitive behavioral therapy and collection of data	Every 30 days (if patient reports ≥16 readings)	Contractor-priced[b]
	98980	First 20 minutes of RTM treatment management services (requires patient interaction)	Every 30 days	$50.14
	98981	Additional 20 minutes of RTM treatment management services (requires patient interaction)	Can be billed multiple times in 30-day period	$39.14

Notes: HCPCS = Healthcare Common Procedure Coding System. PFS = Physician Fee Schedule. RPM = Remote Physiologic Monitoring. RTM = Remote Therapeutic Monitoring.

[a] Prices listed are the 2025 Medicare fee-for-service National Non-Facility Price.

[b] In the 2023 Medicare PFS final rule, CMS established that code 98978 would be contractor-priced, as there were no invoices for devices specific to Cognitive Behavioral Therapy monitoring services and indicated they would work with Medicare Administrative Contractors to understand the kinds of devices and device costs being billed for the code. CMS uses inconsistent nomenclature when referring to remote monitoring codes as being eligible for billing every "30-days" versus "every calendar month"; for simplification, the codes are described as eligible for billing "every 30-days."

Source: CMS Physician Fee Schedule final rules, 2024–2025. Price data from the CMS Physician Fee Schedule Look-Up Tool.

APPENDIX B

REMOTE MONITORING DATA ANALYSIS DEMOGRAPHIC DATA

RPM Patient Demographics

CHARACTERISTICS OF TRADITIONAL MEDICARE BENEFICIARIES WITH AN RPM EPISODE IN 2023								
	Number of beneficiaries with an RPM episode	Beneficiaries with an RPM episode as a share of all beneficiaries	Rate of beneficiaries with an RPM episode per 100,000 beneficiaries	Average RPM episode duration (months)	Episode duration distribution			
Characteristic					1–3 months	4–6 months	7–9 months	Over 9 months
All	306,394	0.8%	773	5.2	51%	16%	11%	22%
Age								
<65	26,047	0.6%	606	4.5	55%	16%	10%	19%
65–74	117,210	0.6%	572	5.0	51%	16%	11%	21%
75–84	111,327	1.1%	1,063	5.5	49%	16%	11%	24%
85+	51,436	1.2%	1,185	5.3	52%	15%	11%	23%
Dual eligible status								
Not dually eligible	227,457	0.7%	670	5.3	56%	16%	10%	18%
Dually eligible	78,563	1.4%	1,387	4.7	48%	16%	12%	24%
Complexity								
0–4 chronic conditions	67,843	0.3%	264	4.5	56%	16%	10%	18%
5–7 chronic conditions	108,605	1.2%	1,229	5.5	48%	16%	12%	24%
8+ chronic conditions	129,588	2.6%	2,605	5.2	51%	15%	11%	22%
Rurality								
Nonrural	253,881	0.8%	842	5.2	51%	16%	11%	22%
Rural	52,139	0.6%	551	5.1	51%	16%	12%	21%
Sex								
Male	131,523	0.7%	702	5.3	51%	16%	11%	23%
Female	174,497	0.8%	836	5.1	51%	16%	11%	22%
Race/ethnicity								
Non-Hispanic White	211,119	0.7%	704	5.1	51%	16%	11%	22%
Black	42,903	1.3%	1,262	5.0	51%	16%	11%	21%
Hispanic	27,185	0.9%	887	5.4	50%	16%	11%	23%
Asian/Pacific Islander	15,300	1.1%	1,062	6.2	46%	16%	12%	26%
American Indian/ Alaska Native	767	0.5%	455	4.4	58%	14%	9%	19%
Unknown	5,906	0.5%	522	5.3	50%	16%	12%	22%
Other	2,840	0.7%	680	5.5	49%	15%	11%	24%

Note: RPM = Remote Physiological Monitoring. Episode duration is calculated by the number of consecutive months a beneficiary received at least one RPM service, with no gap between services over 37 days. Beneficiary episodes are counted in the year in which they end; the duration is retrospective to that point.

Source: Traditional Medicare claims, 2023.

REMOTE MONITORING DATA ANALYSIS DEMOGRAPHIC DATA

RTM Patient Demographics

CHARACTERISTICS OF TRADITIONAL MEDICARE BENEFICIARIES WITH AN RTM EPISODE IN 2023								
	Number of beneficiaries with an RTM episode	Beneficiaries with an RTM episode as a share of all beneficiaries	Rate of beneficiaries with an RTM episode per 100,000 beneficiaries	Average RTM episode duration (months)	Episode duration distribution			
Characteristic					1–3 months	4–6 months	7–9 months	Over 9 months
All	47,597	0.12%	120	2.1	74%	12%	7%	7%
Age								
<65	4,985	0.12%	116	2.8	64%	16%	10%	11%
65–74	21,885	0.11%	107	2.0	77%	11%	6%	7%
75–84	15,214	0.15%	145	1.9	76%	11%	6%	6%
85+	5,469	0.13%	126	2.2	72%	12%	10%	6%
Dual eligible status								
Not dually eligible	38,655	0.11%	114	2.0	76%	11%	6%	7%
Dually eligible	8,898	0.16%	157	2.5	67%	16%	11%	7%
Complexity								
0–4 chronic conditions	14,742	0.06%	57	1.6	81%	10%	4%	4%
5–7 chronic conditions	16,831	0.19%	190	2.0	75%	12%	7%	7%
8+ chronic conditions	15,988	0.32%	321	2.5	69%	13%	9%	9%
Rurality								
Nonrural	40,429	0.13%	134	2.0	75%	11%	7%	6%
Rural	7,124	0.08%	75	2.5	69%	13%	8%	10%
Sex								
Male	18,065	0.10%	96	2.1	74%	11%	7%	7%
Female	29,488	0.14%	141	2.1	74%	12%	7%	7%
Race/ethnicity								
Non-Hispanic White	38,994	0.13%	130	2.0	75%	11%	7%	7%
Black	3,362	0.10%	99	2.5	68%	14%	10%	8%
Hispanic	2,274	0.07%	74	2.2	71%	15%	9%	6%
Asian/Pacific Islander	1,230	0.09%	85	2.0	75%	11%	8%	6%
American Indian/ Alaska Native	131	0.08%	78	2.3	74%	12%	8%	7%
Unknown	1,171	0.10%	104	1.8	78%	11%	5%	5%
Other	391	0.09%	94	1.7	77%	13%	6%	5%

Note: RTM = Remote Therapeutic Monitoring. Episode duration is calculated by the number of consecutive months a beneficiary received at least one RTM service, with no gap between services over 37 days. Beneficiary episodes are counted in the year in which they end; the duration is retrospective to that point.

Source: Traditional Medicare claims, 2023.

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