REMOTE PATIENT MONITORING TECHNOLOGY

Decoding the Benefits of RPM & RTM
Services for Orthopedic Practices

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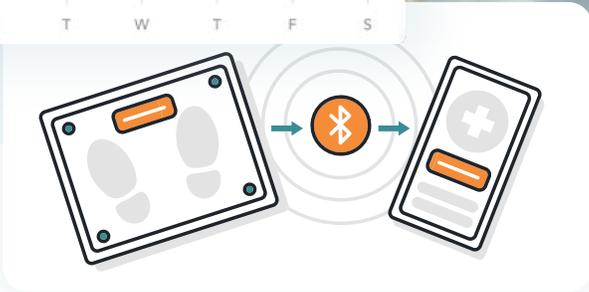
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EXECUTIVE SUMMARY

Digital health tools are growing in popularity as patients are drawn to the convenience and effectiveness of virtual healthcare.

The 2021 McKinsey Physician Survey[1] found that 63% of adults are interested in using digital health solutions, including virtual-first health plans. The report indicates patients are particularly curious about using virtual solutions to address behavioral health[2] needs, which involve lifestyle choices impacting overall well-being.

Thanks to Remote Patient Monitoring Technology, healthcare providers are well-equipped to offer virtual treatment plans to patients. The Centers for Medicare & Medicaid Services (CMS) recognizes the benefits of RPM and offers a simplified process to help providers bill for these services.

And according to a 2020 survey by Sony[3] of some 2,000 people managing chronic conditions or helping a loved one with a chronic condition, 88% percent say a "specialized remote health monitoring device" would help them manage their health at home.

This report is intended to guide provider strategies around the emerging field of Remote Patient Monitoring Technology.
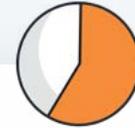
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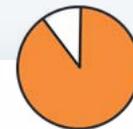
88%
say a "specialized remote health monitoring device" would help them manage their health at home

- Remote Patient Monitoring encompasses physiological (RPM) and non-physiological (RTM) digital data collection and tracking using medical devices, online tools, and other technologies.

- It is used by top medical institutions for real-time health tracking beyond in-person appointments.

- The majority of patients welcome the improved accessibility and health management that remote patient monitoring offers.

REMOTE PATIENT MONITORING TECHNOLOGY

Remote Patient Monitoring Technology, commonly known as Remote Monitoring, has two primary categories: Remote Physiologic Monitoring (RPM) and Remote Therapeutic Monitoring (RTM).

Remote Physiologic Monitoring

Remote Physiologic Monitoring refers to digital medical devices[4] that track biological metrics such as weight loss and weight gain, blood pressure, and blood oxygen levels. Data from the device is automatically uploaded to an online platform accessible by the care team. For example, a provider may equip a patient with a Bluetooth scale to track weight changes over time. Each time the patient steps on the scale, the result is saved and uploaded. This real-time data collection allows the provider to more closely monitor a patient's progress and detect changes sooner than if solely relying on in-person appointments.

Remote Therapeutic Monitoring
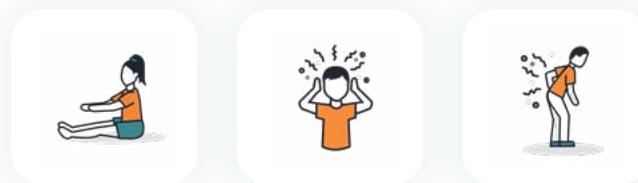
Remote Therapeutic Monitoring utilizes non-physiological measurements[5] to monitor how a patient is responding to a therapeutic regimen. Patients can self-report data, such as a pain assessment or how often they completed an assigned physical therapy exercise, via an app or platform that is accessible by the care team. Under CMS guidance[6], RTM applies only to the tracking of musculoskeletal and respiratory system status. RTM can also be used to monitor a patient's self-reported pain levels. (See page 9 for more information on CPT codes).

Benefits for Patients & Providers

RPM and RTM allow patients the option to track health conditions from the comfort of their own homes, reducing the amount of time spent in a medical facility. This is particularly beneficial for patients whose treatment programs require frequent touchpoints with their clinicians. Expanded accessibility also means providers can serve more patients, including those who live farther from the doctor's office or whose circumstances make in-person visits more challenging.

Remote Physiologic Monitoring devices are used by the most trusted medical institutions[7] including the Mayo Clinic[8], University Hospitals Cleveland Medical Center[9], UCLA Health[10], and New York-Presbyterian Hospital[11]. The most popular tools include body weight scales, pulse oximeters, blood glucose meters, blood pressure monitors, apnea monitors, breathing apparatuses, and specialized monitors for dementia and Parkinson's disease.

More than half of respondents said they would even consider switching doctors if their current physician did not offer remote monitoring services.

62%
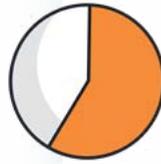
of patients would prefer to use a virtual platform accessible from home.

Patient Enthusiasm

National surveys indicate substantial patient enthusiasm for RPM and RTM solutions. The Accenture 2020 Digital Health Consumer Survey[12] found that, when participating in a health and wellness advisory program, 62% of patients would prefer to use a virtual platform accessible from home. And 57% indicated they would be open to using at-home monitoring devices to track chronic health conditions. In addition, the survey found a majority of patients would be more comfortable using virtual services when they are offered by traditional healthcare providers.

In a study from Sony's mSafety Wearable Platform Division[13], nearly 9 in 10 patients said a "specialized remote health monitoring device" would enable them to better control chronic health issues. Three-quarters of those surveyed said they were more likely to use such a device if their doctor prescribed it to them. And more than half of respondents said they would even consider switching doctors if their current physician did not offer remote monitoring services.

Patients with obesity may feel embarrassed[14] about discussing treatment in person. RPM and RTM technologies can help these patients better manage their weight at home by giving them a more discreet platform for communicating with healthcare providers.

- Higher BMI increases a patient's risk for serious, non-orthopedic complications before and after surgery.

- Remote Patient Monitoring technologies offer a solution, both preparing patients for successful surgeries and enhancing their ability to recover afterward.

*Nearly **42%** of adults over age 20 in the U.S. are considered obese and more than **9%** are severely obese.*

RPM AND RTM ARE VALUABLE FOR ORTHOPEDIC PROVIDERS

Orthopedic providers have a unique opportunity to help patients achieve better outcomes and improve their quality of life. By utilizing remote monitoring technologies in their practices, orthopedic specialists can guide patients to a healthier weight and, ultimately, increase their odds of successfully recovering after surgery.

Orthobesity™ is a Growing Problem in the U.S.

Nearly 42% of adults over age 20 in the U.S. are considered obese and more than 9% are severely obese, according to data from the Centers for Disease Control and Prevention[15]. Research from the Harvard T.H. Chan School of Public Health[16] predicts those numbers will grow significantly by the end of the decade. By 2030, about half of U.S. adults will be obese and approximately 25% will be severely obese.

Research suggests that excess weight can exacerbate musculoskeletal issues and increase the risk of adverse health complications. In fact, obese patients are presenting to orthopedic practices for MSK conditions at such high frequencies that a crisis of Orthobesity™ [17] is on the rise. A 2013 study published in BMC Musculoskeletal Disorders[18] followed tens of thousands of workers over 12 months. It found that employees with a higher body mass index (BMI) were more likely to develop musculoskeletal symptoms, especially pain in their lower extremities. A 2015 study in The Journal of Pain Research[19] found that heavier weight is often associated with chronic pain due to joint strain. Veritas Health[20] reports that losing weight reduces the risk of developing osteoarthritis pain in the knees by relieving pressure from the knee joint.

The American Academy of Orthopaedic Surgeons[21] notes that a higher BMI increases a patient's risk for serious, non-orthopedic complications before and after surgery. Morbidly obese patients with BMIs above 40 are more likely to have comorbidities such as heart disease, diabetes, and sleep apnea. A study at the University of Michigan[22] concluded that diabetic patients are 50% more likely than non-diabetics to experience an infection after any type of surgery. NYU Langone Health[23] found that patients with heart failure have a nearly 5% risk of dying in the hospital after having an unrelated surgery, including orthopedic procedures.
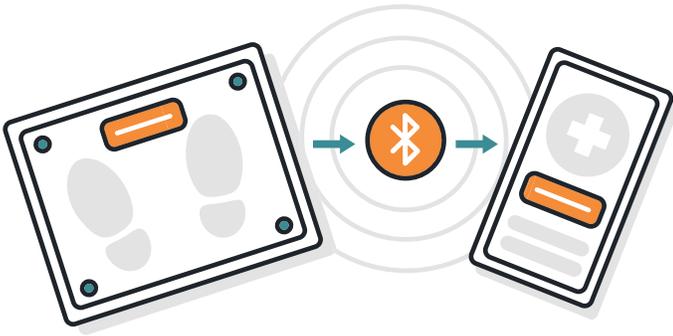
Using RPM and RTM to Guide Patients to a Healthier Weight

Remote Patient Monitoring technologies offer a solution for orthopedic specialists seeking to address obesity and improve patient outcomes. Rather than simply advising patients to "exercise more" and "eat better"—then hoping they follow the advice—providers can use RPM to actively guide patients toward healthier lifestyles through behavioral treatment.

Behavioral treatment is an established method for helping patients shed excess weight and/or maintain a healthy weight. Research published in Psychiatric Clinics of North America[24] in 2012 concluded that lifestyle interventions, such as training patients how to self-monitor their diets, helped patients achieve longer-lasting results compared to strategies used in primary care settings and in community groups. At the time, the authors acknowledged that intensive behavioral treatment could be expensive and difficult for many patients to access because it often took place on-site at academic medical centers. Since then, telemedicine, Remote Monitoring Technology, and virtual-connected care interventions have dramatically changed the equation.

A 2021 study published in Current Cardiovascular Risk Reports[25] analyzed how telehealth services offered after the onset of the COVID-19 pandemic helped patients with weight loss. The authors looked at weight loss intervention programs that utilized

video coaching sessions with healthcare professionals as well as remote devices like activity trackers and digital scales. They found that regular video conferencing sessions with coaches or other trusted advisors provided substantial benefits, including clinically meaningful weight loss. Patients who had the ability to discuss their progress and ask questions about diet and exercise on a weekly basis tended to lose a greater percentage of their excess weight.

The study also reaffirmed that self-monitoring skills are important to leading a healthier lifestyle. The authors found that in successful weight loss programs, patients were encouraged to record their weight, steps walked, and diet. Patients either self-reported this information by writing it down or utilized digital tools and apps to automatically upload the data to a platform accessible by their healthcare provider in real-time. The study also concluded that patients who participated in videoconferencing appointments monitored their weight and physical activity metrics more frequently, and ultimately lost more weight, than patients who only texted with their provider,

> *Patients who had the ability to discuss their progress and ask questions about diet and exercise on a weekly basis tended to lose **a greater percentage** of their excess weight.*

The authors of the Journal of Pain Research[26] study acknowledged that helping patients lose weight is just the first step. Encouraging patients to continue living their healthy lifestyles is the second, more challenging step. RPM and RTM technologies can go a long way in helping patients make sustainable lifestyle changes that will improve their quality of life.

Remote Patient Monitoring as a Supplementary Orthopedic Treatment Option

Excess weight increases pressure on knee and hip joints and can lead to osteoarthritis, as noted in a Cleveland Clinic report[27]. Interventions using RPM and RTM can help patients experiencing joint pain or mobility problems alleviate these issues.

The American Academy of Orthopaedic Surgeons[28] reinforces the finding that excess weight increases the likelihood of surgical intervention: "Obesity frequently contributes to soft tissue damage and osteoarthritis—a progressive wear-and-tear disease of the joints." As such, "individuals with obesity are

*A higher BMI is also associated with **greater risk** of surgical complications including blood clots, infections, and dislocation of replacement joints.*

20 times more likely to need a knee replacement than those who are not overweight."

Tulsa Bone & Joint[29] further notes that obesity can contribute to degenerative arthritis and other painful conditions. If losing weight decreases pain levels, then surgery may be avoided.

Help Patients Reduce the Risks of Surgical Complications

RPM and RTM programs are proven to prepare orthopedic patients for surgery. By helping their patients lose weight, orthopedic specialists dramatically improve the odds of successful patient outcomes while reducing recovery time.

Research published in Medicine[30] noted that acute kidney injuries occur in 3% to 21% of orthopedic surgeries. The authors reported that obesity increased the risk that a patient will suffer a postoperative acute kidney injury by 82%. A higher BMI is also associated with greater risk of surgical complications including blood clots, infections, and dislocation of replacement joints, Advent Health Tampa reported[31].

In addition, RPM and RTM interventions help patients prepare for unexpected orthopedic surgeries. In an analysis of hip surgeries performed on do-not-resuscitate (DNR) status patients between 2007 and 2013, Geriatric Orthopaedic Surgery & Rehabilitation[32] reported that 31.4% of the procedures were emergencies rather than planned.

The CDC reports[33] that more than 300,000 people aged 65 and older are hospitalized for hip fractures each year. In hip fracture cases, surgery is generally recommended within 24 hours of the injury. In these emergency situations, patients have lost the ability to proactively optimize their health before surgery.

Proactive interventions can also help orthopedic patients avoid readmission after surgery. According to the Journal for Healthcare Quality[34], 3.8% of patients who undergo elective orthopedic procedures—knee, hip and shoulder replacements, posterior lumbar fusion, and anterior cervical discectomy and fusion—are readmitted to the hospital within 30 days of surgery due to complications. With more than 4.8 million elective orthopedic surgeries in the U.S. in 2017, according to International Orthopaedics[35], there are at least 182,000 patients who experience readmission every year.

Individuals with obesity are

20 TIMES

more likely to need a knee replacement than those who are not overweight

- The Centers for Medicare and Medicaid (CMS) are improving CPT codes to help providers bill for remote monitoring services.

- There currently are four CPT codes for RPM services and five for RTM services. Five new codes are being proposed for RTM services for 2023.

- By 2025, 70.6 million patients in the U.S. will be using RPM tools. Providers stand to earn more than $13 billion in insurance reimbursements per month.

REMOTE MONITORING TECHNOLOGY AS A REVENUE SOURCE FOR ORTHOPEDIC PRACTICES

RPM and RTM are proving to be valuable ancillary services for orthopedic providers alongside physician assistants (PAs), physical therapists (PT), ambulatory surgery centers (ASC), and durable medical equipment providers (DME). The decision to make remote healthcare services reimbursable is one of the primary drivers of growth in RPM.

Navigating RPM Codes

The Centers for Medicare and Medicaid (CMS) are improving CPT codes to help providers more easily bill for remote monitoring services. There currently are four CPT codes for RPM services. The 2022 CPT codes[36] and reimbursement rates for RPM are as follows:

- **99453:** Remote monitoring of physiologic parameter(s) (e.g., weight, blood pressure, pulse oximetry, respiratory flow rate), initial; set-up and patient education on use of equipment

  Reimbursement: $19.04 (One-time)

- **99454:** Remote monitoring of physiologic parameter(s) (e.g., weight, blood pressure, pulse oximetry, respiratory flow rate), initial; device(s) supply with daily recording(s) or programmed alert(s) transmission, each 30 days

  Reimbursement: $55.72 (Every 30 days)

- **99457:** Remote physiologic monitoring treatment management services, 20 minutes or more of clinical staff/physician/other qualified healthcare professional time in a calendar month requiring interactive communication with the patient/caregiver during the month

  Reimbursement: $50.18 (Every 30 days)

- **99458:** Remote physiologic monitoring treatment management services, clinical staff/physician/other qualified health care professional time in a calendar month requiring interactive communication with the patient/caregiver during the month; additional 20 minutes

  Reimbursement: $40.82 (For every 20 minutes of additional time, every 30 days)

Today's RTM Codes

[2022 also marked the first time](#)[37] that CMS created five CPT codes for Remote Therapeutic Monitoring (RTM) services, expanding the services for which providers can be reimbursed. [The 2022 CPT codes](#)[38] and reimbursement rates for RTM include:

- **98975:** Remote Therapeutic Monitoring (e.g., respiratory system status, musculoskeletal system status, therapy adherence, therapy response); initial set-up and patient education on the use of equipment

  Reimbursement: $19.38 *(One-time)*

- **98976:** Remote Therapeutic Monitoring (e.g., respiratory system status, musculoskeletal system status, therapy adherence, therapy response); device(s) supply with scheduled (e.g., daily) recording(s) and/or programmed alert(s) transmission to monitor respiratory system, each 30 days

  Reimbursement: $55.72 *(Every 30 days)*

- **98977:** Remote Therapeutic Monitoring (e.g., respiratory system status, musculoskeletal system status, therapy adherence, therapy response); device(s) supply with scheduled (e.g., daily) recording(s) and/or programmed alert(s) transmission to monitor musculoskeletal system, each 30 days

  Reimbursement: $55.72 *(Every 30 days)*

- **98980:** Remote Therapeutic Monitoring treatment management services, physician/other qualified health care professional time in a calendar month requiring at least one interactive communication with the patient/caregiver during the calendar month; first 20 minutes

  Reimbursement: $50.18 *(One-time)*

- **98981:** Remote therapeutic monitoring treatment management services, physician/other qualified health care professional time in a calendar month requiring at least one interactive communication with the patient/caregiver during the calendar month; each additional 20 minutes (List separately in addition to code for primary procedure)

  Reimbursement: $40.84 *(For every 20 minutes of additional time, every 30 days)*

Proposed RTM CPT Code Changes for 2023

CPT codes for Remote Therapeutic Monitoring are continually changing. According to the Medicare Physician Fee Schedule from CMS[39], there are five new CPT codes proposed for 2023:

- **GRTM1:** Remote Therapeutic Monitoring treatment management services, physician or NPP professional time over a calendar month requiring at least one interactive communication with the patient/caregiver during the calendar month; first 20 minutes of evaluation and management services.

- **GRTM2:** Remote Therapeutic Monitoring treatment management services, physician or NPP professional time over a calendar month requiring at least one interactive communication with the patient/caregiver over a calendar month; each additional 20 minutes of evaluation and management services during the calendar month.

- **GRTM3:** Remote Therapeutic Monitoring treatment assessment services, 20 minutes personally furnished by a qualified nonphysician health care professional over a calendar month requiring at least one interactive communication with the patient/caregiver during the month.

- **GRTM4:** Remote Therapeutic Monitoring treatment assessment services, 20 minutes personally furnished by a qualified nonphysician health care professional over a calendar month requiring at least one interactive communication with the patient/caregiver during the month; each additional 20 minutes personally furnished by a non-physician qualified health care professional.

- **989X6,** for Cognitive Behavioral Therapy (CBT) monitoring services: Remote therapeutic monitoring (e.g., therapy adherence, therapy response); device(s) supply with scheduled (e.g., daily) recording(s) and/or programmed alert(s) transmission to monitor cognitive behavior therapy, each 30 days.

CMS has improved the billing process and made outsourcing simpler. The CPT codes for Remote Physiologic Monitoring allow non-physician practitioners[40] to order and bill for the services.

The Remote Therapeutic Monitoring codes provide additional opportunities. Qualified health care practitioners such as physical therapists, occupational therapists, physician assistants, nurses, and clinical social workers can independently bill for RTM services.

Additional information about proposed CPT codes, including reimbursement amounts, is expected to be available in late 2022.

Additional Ancillary Services Revenue for Orthopedic Practices

Providers who embrace remote patient monitoring technology as an ancillary service stand to grow their practices' revenue substantially. Insider Intelligence estimates that by 2025, approximately 70.6 million patients in the U.S. will be using RPM tools. Factoring in the Medicare & Medicaid reimbursement amounts outlined on page 9,

$225,048

Amount a single orthopedic surgeon with 100 active patients could expect to generate in additional ancillary services revenue per year.

* based on the 2022 national average
non-facility-based payment from CMS

providers may capture as much as $13 billion in combined insurance reimbursements per month. To illustrate how an RPM program aligns with practice ancillary revenue services, national Medicare averages $187.54 of reimbursement on billable services per patient per month. An orthopedic physician overseeing the remote care of 100 patients could receive $225,048 in reimbursement revenue per year. These estimates are based on Medicare national averages, with commercial payor averaging higher reimbursements.

RPM and RTM have the potential to become a real source of ancillary service revenue for orthopedics. Depending on adoption, engagement, and compliance, orthopedic practices with thousands of established patients have the opportunity to add millions of dollars in annual revenue to their practices.

CONCLUSION

The barrier to entry is low for orthopedic practices, as remote patient monitoring companies can help implement the technology, monitor patient results, and coach patients throughout their specific treatment plans. While some vendors only supply the technology, a full-service remote monitoring solution simplifies implementation with little-to-no upfront budget or additional staff required to get started. By partnering with a dedicated team focused on patient health outside of clinic, orthopedic surgeons and their teams can focus on care inside the clinic.

Remote patient monitoring offers many clinical and financial benefits for orthopedic practices and their patients. Even by conservative estimates, RPM and RTM have great potential to reshape the orthopedics landscape, including the physician-patient relationship, patient outcomes, and the overall approach to improving population health. More patients than ever are interested in digital health and proactive care from their physician, including more conservative care options and virtual treatment pathways. Remote patient monitoring is the solution.

MORE CARE

MORE CONNECTED

MORE TIME

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