Medical Coverage Policy

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Coverage Policy Number..... 0563

Remote Patient Monitoring (RPM) and Remote Therapeutic Monitoring (RTM)

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Related Coverage Resources

INSTRUCTIONS FOR USE

The following Coverage Policy applies to health benefit plans administered by Cigna Companies. Certain Cigna Companies and/or lines of business only provide utilization review services to clients and do not make coverage determinations. References to standard benefit plan language and coverage determinations do not apply to those clients. Coverage Policies are intended to provide guidance in interpreting certain standard benefit plans administered by Cigna Companies. Please note, the terms of a customer's particular benefit plan document [Group Service Agreement, Evidence of Coverage, Certificate of Coverage, Summary Plan Description (SPD) or similar plan document] may differ significantly from the standard benefit plans upon which these Coverage Policies are based. For example, a customer's benefit plan document may contain a specific exclusion related to a topic addressed in a Coverage Policy. In the event of a conflict, a customer's benefit plan document always supersedes the information in the Coverage Policies. In the absence of a controlling federal or state coverage mandate, benefits are ultimately determined by the terms of the applicable benefit plan document. Coverage determinations in each specific instance require consideration of 1) the terms of the applicable benefit plan document in effect on the date of service; 2) any applicable laws/regulations; 3) any relevant collateral source materials including Coverage Policies and; 4) the specific facts of the particular situation. Each coverage request should be reviewed on its own merits. Medical directors are expected to exercise clinical judgment where appropriate and have discretion in making individual coverage determinations. Where coverage for care or services does not depend on specific circumstances, reimbursement will only be provided if a requested service(s) is submitted in accordance with the relevant criteria outlined in the applicable Coverage Policy, including covered diagnosis and/or procedure code(s). Reimbursement is not allowed for services when billed for conditions or diagnoses that are not covered under this Coverage Policy (see "Coding Information" below). When billing, providers must use the most appropriate codes as of the effective date of the submission. Claims submitted

for services that are not accompanied by covered code(s) under the applicable Coverage Policy will be denied as not covered. Coverage Policies relate exclusively to the administration of health benefit plans. Coverage Policies are not recommendations for treatment and should never be used as treatment guidelines. In certain markets, delegated vendor guidelines may be used to support medical necessity and other coverage determinations.

Overview

This Coverage Policy addresses remote patient monitoring (RPM), also known as remote physiologic monitoring and remote therapeutic monitoring (RTM).

Technology used for remote monitoring includes software, use of a mobile device, or a wearable device. The information is electronically transmitted to the healthcare provider for assessment.

Information in this Coverage Policy is informed by the US Department of Health and Human Services (HHS), Health Resources and Services Administration (HRSA), Center for Medicare and Medicaid Services (CMS) and other published sources.

Remote Patient Monitoring (RPM) involves the use of digital technologies to capture and monitor information regarding the physical or behavioral functioning of an individual. An example of RPM is the monitoring of blood pressure, weight or oxygen saturation using automated digital technology.

For the purpose of this Coverage Policy, the following CPT® codes represent remote patient monitoring (AKA remote physiologic monitoring):

99091	Collection and interpretation of physiologic data (eg, ECG, blood pressure, glucose monitoring) digitally stored and/or transmitted by the patient and/or caregiver to the physician or other qualified health care professional, qualified by education, training, licensure/regulation (when applicable) requiring a minimum of 30 minutes of time, each 30 days
99453	Remote monitoring of physiologic parameter(s) (eg, weight, blood pressure, pulse oximetry, respiratory flow rate), initial; set-up and patient education on use of equipment
99454	Remote monitoring of physiologic parameter(s) (eg, weight, blood pressure, pulse oximetry, respiratory flow rate), initial; device(s) supply with daily recording(s) or programmed alert(s) transmission, each 30 days
99457	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; first 20 minutes
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; each additional 20 minutes (List separately in addition to code for primary procedure)
99473	Self-measured blood pressure using a device validated for clinical accuracy; patient education/training and device calibration
99474	Self-measured blood pressure using a device validated for clinical accuracy; separate self-measurements of two readings one minute apart, twice daily over a 30-day period (minimum of 12 readings), collection of data reported by the patient and/or

	caregiver to the physician or other qualified health care professional, with report of average systolic and diastolic pressures and subsequent communication of a treatment plan to the patient
G0322	The collection of physiologic data digitally stored and/or transmitted by the patient to the home health agency (i.e., remote patient monitoring)

Remote Therapeutic Monitoring (RTM) refers to the management of an individual's non-physiologic information by a healthcare provider. An example of RTM is the monitoring of patient adherence to a treatment plan.

For the purpose of this Coverage Policy, the following CPT codes represent remote therapeutic monitoring:

98975	Remote therapeutic monitoring (eg, respiratory system status, musculoskeletal system status, therapy adherence, therapy response); initial set-up and patient education on use of equipment
98976	Remote therapeutic monitoring (eg, respiratory system status, musculoskeletal system status, therapy adherence, therapy response); device(s) supply with scheduled (eg, daily) recording(s) and/or programmed alert(s) transmission to monitor respiratory system, each 30 days
98977	Remote therapeutic monitoring (eg, respiratory system status, musculoskeletal system status, therapy adherence, therapy response); device(s) supply with scheduled (eg, daily) recording(s) and/or programmed alert(s) transmission to monitor musculoskeletal system, each 30 days
98978	Remote therapeutic monitoring (eg, therapy adherence, therapy response); device(s) supply with scheduled (eg, daily) recording(s) and/or programmed alert(s) transmission to monitor cognitive behavioral therapy, each 30 days
98980	Remote therapeutic monitoring treatment management services, physician or other qualified health care professional time in a calendar month requiring at least one interactive communication with the patient or caregiver during the calendar month; first 20 minutes
98981	Remote therapeutic monitoring treatment management services, physician or other qualified health care professional time in a calendar month requiring at least one interactive communication with the patient or caregiver during the calendar month; each additional 20 minutes (List separately in addition to code for primary procedure)

Coverage Policy

Coverage for Remote Patient Monitoring (RPM) and Remote Therapeutic Monitoring (RTM) varies across plans. Refer to the customer's benefit plan document for coverage details.

Remote Patient Monitoring (RPM) (CPT® codes 99091, 99453, 99454, 99457, 99458, 99473, 99474, HCPCS code G0322) is considered medically necessary for ANY of the following indications:

- Chronic Obstructive Pulmonary Disease (COPD)
- Diabetes Mellitus
- Heart Failure

when ALL of the following criteria are met for the technology in question:

- FDA approved, cleared or has received emergency use authorization (EUA) designation as a medical device
- Prescribed and administered by a board-eligible or board-certified medical provider or subspecialist (e.g., cardiologist, pulmonologist, endocrinologist), nurse practitioner (NP) or physician assistant (PA))
- physiologic data are electronically collected and automatically uploaded for analysis and interpretation.
- intended for the purpose of displaying or analyzing the physiological parameter(s) measured by the device
- used for remote communication, counseling and monitoring of acute or chronic health conditions

Remote Patient Monitoring (RPM) is not covered or reimbursable for any other indication.

Remote Therapeutic Monitoring (RTM) (CPT codes 98975, 98976, 98977, 98978, 98980, 98981) is not covered or reimbursable for ALL indications.

General Background

Information in this Coverage Policy is informed by the US Department of Health and Human Services (HHS), Health Resources and Services Administration (HRSA), Center for Medicare and Medicaid Services (CMS) and other published sources.

Remote Patient Monitoring (RPM)
The overall language used to describe RPM, also referred to as remote physiologic monitoring, is inconsistent and still being established (Vegesna et al., 2017). For the purpose of this Coverage Policy, RPM, also referred to as remote physiologic monitoring involves the use of digital technologies such as software, or a mobile or wearable device to capture and monitor patient information related to physical or behavioral functioning of an individual. The term RPM does not refer to a single technology or intervention, multiple types of technologies may be used, depending on the condition(s) being monitored. The use of technology to monitor an individual's chronic condition remotely allows patients and providers flexibility in the scheduling of in-person trips into the healthcare provider's office. Other benefits include measurement and potential stabilization of acute symptoms.

Although devices used for RPM may be invasive or non-invasive, for the purpose of this Coverage Policy RPM refers to non-invasive interventions

Information that is collected and automatically transmitted to the healthcare provider for assessment may include measurement of blood pressure, weight, heart and respiratory rate, pulse oximetry, spirometry, temperature and blood glucose levels (American Telemedicine Association, 2006; Malasinghe et al., 2019).

According to the Centers for Medicare and Medicare Services ([CMS, 2021]) and the Health Resources and Services Administration ([HRSA], 2022) the following parameters apply to RPM:

- Physiologic data must be electronically collected and automatically uploaded to a secure location where the data can be available for analysis and interpretation by the billing practitioner.

- Devices must be FDA-approved as a medical device and they must be able to automatically transmit data and information to the provider without patient interference.
- Remote physiologic monitoring services must monitor an acute care or chronic condition.
- The services may be provided by auxiliary personnel under the general supervision of the billing practitioner.
- Monitoring must occur over at least 16 days of a 30-day period.
- When multiple medical devices are provided to a patient, the services associated with all the medical devices can be billed only once per patient per 30-day period and only when at least 16 days of data have been collected.
- For the purpose of this Coverage Policy, the following CPT® codes represent remote patient monitoring (AKA remote physiologic monitoring):

For the purpose of this Coverage Policy, the following CPT codes represent RPM:

99091	Collection and interpretation of physiologic data (eg, ECG, blood pressure, glucose monitoring) digitally stored and/or transmitted by the patient and/or caregiver to the physician or other qualified health care professional, qualified by education, training, licensure/regulation (when applicable) requiring a minimum of 30 minutes of time, each 30 days
99453	Remote monitoring of physiologic parameter(s) (eg, weight, blood pressure, pulse oximetry, respiratory flow rate), initial; set-up and patient education on use of equipment
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G0322	The collection of physiologic data digitally stored and/or transmitted by the patient to the home health agency (i.e., remote patient monitoring)

Remote Therapeutic Monitoring (RTM)
Like RPM, RTM involves the use of digital technologies such as software, or a mobile or wearable device to capture and monitor patient information by a healthcare provider. However, the devices support the receipt of non-physiologic information, such as whether or not an individual is taking medication or participating in therapy as prescribed or to monitor the level of pain. Per CMS guidelines the use of RTM in reporting an individual's non-physiologic information is limited to musculoskeletal and respiratory conditions. It is unclear whether CMS will expand the use of reporting RTM to include additional conditions.

For the purpose of this Coverage Policy, the following CPT codes represent remote therapeutic monitoring:

98975	Remote therapeutic monitoring (eg, respiratory system status, musculoskeletal system status, therapy adherence, therapy response); initial set-up and patient education on use of equipment
98976	Remote therapeutic monitoring (eg, respiratory system status, musculoskeletal system status, therapy adherence, therapy response); device(s) supply with scheduled (eg, daily) recording(s) and/or programmed alert(s) transmission to monitor respiratory system, each 30 days
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Health Equity in Remote Patient Monitoring
According to HRSA (2022), health barriers to telehealth access remain, including the lack of video sharing technology, such as a smartphone, tablet, or computer, spotty or no internet access, few local providers who offer telehealth practices, language barriers and lack of adaptive equipment for people with disabilities.

Remote patient monitoring as a subset of telehealth services is proposed as a means to allow more equitable access to healthcare services to underserved communities such as low income individuals, those who live in rural areas, people of color, immigrants and others.

U.S. Food and Drug Administration (FDA)

A number of remote or wearable patient monitoring devices have received FDA approval, clearance or emergency use authorization (EUA) status. These include non-invasive remote monitoring devices that measure or detect common physiological parameters and non-invasive monitoring devices that wirelessly transmit patient information to a health care provider or other monitoring entity. (FDA, 2022).

Literature Review

Remote Patient Monitoring (RPM)
Remote patient monitoring (RPM) has been proposed for a wide variety of indications. Multiple peer-reviewed randomized controlled trials, metaanalyses and systematic reviews have been published. Limitations such as heterogeneous patient populations, variability in the type of

monitoring performed and diversity in study design have been identified. Additionally there is a lack of published professional society guidelines for RPM.

Although studies suffer from multiple limitations as previously noted, there is some evidence to support a reduction in the number of emergency department visits, inpatient hospital admissions or mortality rates with the use of RPM for the management of chronic obstructive pulmonary disease (COPD), diabetes mellitus (DM) and heart failure (HF). An improvement in patient satisfaction with care management and quality of life is suggested by some study data.

Multiple Conditions
Flodgren et al. (2016) published results of a systematic review evaluating the effectiveness of telemedicine (TM) delivered in addition to, or as an alternative to, usual care as compared to usual care alone as reported in 93 RCTs (n =22,047). Clinical conditions included in eligible studies were heterogeneous and included cardiovascular disease (36 studies), diabetes mellitus (21 studies), respiratory conditions (9 studies), behavioral health (BH) conditions or substance abuse (9 studies).

Telemedicine provided remote monitoring (55 studies), or real-time video-conferencing (38 studies), which was used either alone or in combination. The type of data transmitted by the patient, the frequency of data transfer, (e.g. telephone, e-mail, SMS) and frequency of interactions between patient and healthcare provider varied across studies, as did the type of healthcare provider/s and healthcare system involved in delivering the intervention.

No difference was found between groups for all-cause mortality for patients with heart failure (16 studies;
n = 5239, p = 0.12, moderate to high certainty of evidence) at a median of six months follow-up. Admissions to hospital (11 studies; n = 4529) ranged from a decrease of 64% to an increase of 60% at median eight months follow-up (moderate certainty of evidence). Data suggests some evidence of improved quality of life (five studies; P < 0.02, moderate certainty of evidence) for those allocated to TM as compared with usual care at a median three months follow-up.

In studies recruiting participants with diabetes mellitus (16 studies; n = 2768) there were lower HbA1c levels in those allocated to TM than in controls (P < 0.00001, high certainty of evidence) at a median of nine months follow-up. Some evidence for a decrease in low density lipoprotein (LDL) (four studies; n = 1692; p=< 0.00001, moderate certainty of evidence), and blood pressure (four studies; n = 1770, p < 0.00001, moderate certainty evidence) was noted in TM as compared with usual care.

Seven studies that recruited participants with various behavioral health and/or substance abuse reported no differences in the effect of therapy delivered over video-conferencing, as compared to face-to-face delivery. Findings from the other studies were inconsistent; there was some evidence that monitoring via TM improved blood pressure control in participants with hypertension, and a few studies reported improved symptom scores for those with a respiratory condition.

Authors note the use of TM in the management of heart failure reflected similar health outcomes as face-to-face or telephone delivery of care; however, there is some evidence that TM can improve the control of blood glucose in those with diabetes.

Taylor et al. (2020) published a systematic review of 91 studies, including RCTs, cohort studies and case–controlled studies that compared acute hospital use by patients utilizing RPM with those not remotely monitored, and studies comparing acute hospital use pre-RPM and post-RPM.

Of 91 studies, 15 were for cardiovascular disease, primarily heart failure, COPD (n=18) or co-morbid cardiovascular disease and COPD (n=4). Of the thirteen RCTs investigating RPM in COPD populations; seven trials showed no significant difference in hospital use between the intervention and control groups while 30% reported a reduction in hospital use. Two RCTs reported an increase in hospital admissions in the RPM group. Of the 15 RCTs reporting results for cardiovascular disease, eight trials reported no difference and seven trials (47%) reported a reduction in acute hospital use.

Due to the limited number of studies evaluated, the benefit of RPM for other conditions, including behavioral health and neuromuscular conditions, could not be determined.

Overall, the authors note that 50% of included studies reported decreased hospital admissions and 50% reported no change with the use of RPM. A smaller number of studies reported the effect of RPM on length of stay (n=47) and ED presentations (n=32), with around half reporting a decrease and half reporting no change for both.

Studies were not limited to RCTs and P values were not reported. Systematic review suggests some decrease in rates of acute care hospital use in a subpopulation of individuals with cardiovascular disease, COPD or comorbid conditions of cardiovascular disease and COPD.

Vegesna et al. (2017) reported on a systematic review of RPM utilizing non-invasive remote patient monitoring technology for various conditions in 62 studies. Study design was heterogeneous and included RCT, systematic reviews, cohort and observational studies. The review noted whether a study reported positive or neutral results. The conditions reviewed most frequently were COPD (7 RCTs, 4 positive results, 3 neutral results and 1 cohort study with a neutral result), DM (4 RCTs with positive results and 2 cohort studies: one positive and 1 neutral result and 1 observational study with a positive result). Two RCTs with positive results were reviewed for HF.

The lack of quantification of study results prohibits an assessment regarding impact on outcomes. Further research utilizing robust study designs is needed to assess the efficacy and value of RPM technology.

Castelyn et al. (2021) performed a systematic review and metaanalysis of 89 RCT, longitudinal studies and nonrandomized experimental studies investigating telehealth interventions, such as the remote monitoring of patient clinical data (e.g. blood pressure, blood glucose, heart rate, medication use) as a strategy to better manage chronic conditions and to reduce the impact on patients and healthcare system. Authors report variance in the quality, sample size and performance among the studies.

The authors reported that overall, algorithms involved in diagnosis (n = 22, 47%) had superior performance to those involved in predicting a future event (n = 25, 53%). Detection of arrhythmia and ischemia using ECG data showed promising results; however, there was no evidence of a positive impact on healthcare utilization ($p = .35$) or mortality ($p = .208$). A positive effect was noted on health status ($p = .010$] and diabetes control ($p < .001$).

Data suggest telehealth interventions may have a positive impact on health outcomes for control of diabetes and general health status.

Chronic Obstructive Pulmonary Disease (COPD)
Vianello et al. (2018) reported results of a 12 month RCT involving 334 patients diagnosed with COPD. Patients were provided with a telemonitoring system consisting of a finger pulse-oximeter and a gateway device for data transmission over telephone line to a central data management

unit. Clinical staff was alerted via a trained operator whenever variations in respiratory parameters fell beyond the individual's normal range.

The study's primary endpoint was health related quality of life (HRQL). Secondary endpoints were scores on the Hospital Anxiety and Depression Scale (HADS), the number and duration of hospitalizations; the number of readmissions; the number of appointments with a pulmonary specialist; the number of visits to the emergency department; and the number of deaths.

There was no significant difference in Physical and Mental Component Summary scores between the TM and control groups (p = 0). Variations in HADS were not significantly different in the two groups (p = 0.65, p = 0.71, respectively). The hospitalization rate was not significantly different in the two groups (p = 0.16, p = 0.16, respectively). The readmission rate was significantly lower in the TM group compared to control group (p = 0.01). Study data suggest tele-monitoring may result in decreased readmission rates for this subset of patients.

Walker et al. (2018) reported results of an RCT evaluating the efficacy of home monitoring compared with usual care for 312 patients with COPD and comorbidities. Patients on the telemonitoring arm used a device that measured within-breath respiratory mechanical impedance, a touch-screen computer, and a mobile modem. Patients with a comorbid diagnosis of congestive heart also used a wearable device to assess blood pressure,
oxygen saturation, heart rate, and body temperature over a 4-minute period. An algorithm identified deterioration and a telephone contact was triggered.

Primary outcomes were time to first hospitalization and change in the EuroQoL utility index score. Secondary outcomes included rate of antibiotic and corticosteroid prescription, hospitalization. COPD Assessment Tool, Patient Health Questionnaire-9 and Minnesota Living with Heart Failure questionnaire scores, quality adjusted life years and healthcare costs.

Telemonitoring was associated with fewer repeat hospitalizations (p=0.017). No effect on other outcomes was noted. Data suggest some improved outcomes related to hospitalization rate for this subset of patients.

Cooper et al. (2020) published results of a non-randomized trial of 17 patients receiving RPM who were trained in the use of novel software that recorded daily symptoms, medication use and self-reported activity level. They were also trained to use a handheld spirometer and pulse oximeter. The handheld spirometer was programmed with electronic diaries and the capability for recording pulse oximetry and included questions on daily symptoms, daily physical activities and daily medications. Various physiological values related to lung function were measured and was used to identify predictors of exacerbations.

There was agreement between forced vital capacity and self-reported healthcare utilization events ($p<0.001$) as well as between increased use of inhaled short-acting bronchodilators and exacerbations. There was moderate agreement between forced expiratory volume and self-reported healthcare utilization events ($p<0.001$) and between oxygen saturation less than 90% and exacerbations. Although data are not high level evidence, there are some data to suggest a positive effect of RPM for COPD.

Diabetes Mellitus
Lee et al. (2019) reported on a RCT evaluating the effects of remote telemonitoring with team-based management on 240 people with uncontrolled type 2 diabetes mellitus. The intervention group received home glucose telemonitors and transmitted glucose data to a care team compared with routine healthcare services. The primary outcome was the change in HbA1c at 24 and 52 weeks. Secondary outcomes included change in fasting plasma glucose, blood pressure, lipid

levels and health-related quality of life. At week 24, both groups showed reduction in the HbA1c levels from baseline; however this did not reach statistical improvement in glycemic control at 24 or 52 weeks (p=0.226). No differences in secondary outcomes were observed, including the number of adverse events and health-related quality of life. Data suggests limited benefit in the use of remote telemonitoring compared with self-monitoring of blood glucose.

Bollyky et al. (2017) reported on a trial of 330 adults with Type 2 DM who were current participants in the Livongo Diabetes Program and who had not yet achieved glycemic control and weight goals. Participants were randomized into one of four groups: no further intervention, a connected scale, a scale plus less-intensive coaching with a certified diabetes educator (CDE) or a scale plus intense coaching with a CDE. Primary study objectives were to determine if use of a connected scale plus intensive lifestyle coaching would be associated with greater improvements in glycemic control and weight goals compared with other study arms. Patient characteristics of those with the greatest engagement were also investigated.

Participants were 64.2% white/Caucasian, 10.9% Black/African American, 0.9% Hispanic/Latino/Mexican and for 11.8% race was unknown. Baseline characteristics among groups were similar except that the participants randomized to the less intensive coaching intervention were significantly less likely to be on insulin than control participants (p = 0 007).

The mean weight loss was greatest in the intensive coaching group compared with scale-only (p = 0 005). Mean improvement in blood glucose was highest in the intensive coaching group compared to scale-only group (p = 0 02). There were no significant differences between the less-intensive and intensive lifestyle coaching groups on any of the outcomes of interest. Participants with the greatest improvements in glucose control at the end of the intervention had higher preintervention mean blood glucose levels. Age, gender, race/ethnicity, and insulin use were not associated with improvements in mean blood glucose. Data suggest that intervention with a connected scale and coaching with a CDE results in an improvement in weight loss and HbA1c compared to use of connected scale only or no intervention.

Heart Failure (HF)
Conway et al. (2014) conducted a systematic review and metaanalysis of RCTs to examine the effect of specific technology used for noninvasive remote monitoring compared with usual care for people with HF. Reductions in all-cause mortality and HF–related hospitalizations were evaluated. Separate metaanalyses were performed according to the specific type of technology used. Four different types of noninvasive remote monitoring technologies were identified (i.e., structured telephone calls, videophone, interactive voice response devices and telemonitoring). Telemonitoring involved transmission of physiological data, such as weight, heart rate and rhythm, oxygen saturations, and blood pressure, from the measuring device to a central server via telephonic, satellite, or broadband capabilities for interpretation by a healthcare team.

Only structured telephone calls and telemonitoring were effective in reducing the risk of all-cause mortality
($p = 0.06$ and $p < 0.0001$, respectively) and heart failure–related hospitalizations ($p < 0.001$ and $p = 0.003$, respectively). Data suggest that there is positive health benefit with the use of tememonitoring for an individual with HF.

Inglis et al. (2011) published a systematic review and metaanalysis of 30 RCTS assessing the outcomes of structured telephone support (STS) or telemonitoring (TM) as the primary component of chronic heart failure management. STS was defined as monitoring and/or self-care management delivered using telephone technology where data may have been collected and stored by a computer. TM was defined as digital/broadband/satellite/wireless, or blue-tooth

transmission of physiological data (e.g., electrocardiogram, blood pressure, weight, pulse oximetry, respiratory rate) and other data (e.g., self-care, education, lifestyle modification, and medicine administration).

Of the 30 RCTs, thirteen studies of STS and four studies of TM examined the effect of these interventions on the risk of CHF-related hospitalization. STS reduced the proportion of patients hospitalized due to CHF by 23% ($p< 0.0001$) while TM reduced the risk of hospitalization by 21% ($p=0.008$). Data suggests a positive health benefit with the use of RPM in a population of individuals with chronic heart failure.

Nakamura et al. (2013) published a metaanalysis of 13 RCTs using RPM compared with usual care for 3337 chronic heart failure patients. The primary outcome was mortality. In order to determine which RPM model was most effective, subgroup analyses were conducted by age, severity of illness, measurement frequency, medication management and speed of intervention. The group with rapid intervention had the lowest mortality compared with non-rapid risk intervention ($p=0.05$). The group with high measurement frequency had lower mortality compared with low measurement frequency ($p=0.07$). The group with medication management had lower mortality compared with the non-medication management group ($p=0.19$). Data suggests RPM may be effective in decreasing risk of mortality in chronic heart failure.

Olivari et al. (2018) performed an RCT comparing remote monitoring (RM) (n=229) with usual care (UC) (n=110) in patients with heart failure (HF) who were hospitalized in the previous three months. The primary end-point was the combined 12-month incidence of death by any cause or at least one hospital readmission for HF. The primary endpoint was reached in 101 (44.1%) and 51 (46.4%) patients in the RM and UC groups, respectively, ($p=0.78$). No difference was seen in mortality ($p=0.097$) or in the proportion of patients with at least one rehospitalization for HF ($p=0.48$). A secondary endpoint of quality of life was significantly improved in the RM group, both in physical ($p<0.0001$) and behavioral health components ($p =0.04$). Data suggest RM did not result in improved mortality or rehospitaliztion for HF; however, data suggest improved quality of life measures.

Koehler et al. (2018) published results of a RCT comparing RPM (n=796) or usual care (UC) (n=775) for HF. RPM intervention consisted of a daily transmission of physiologic data, including weight, blood pressure, heart rate, analysis of the heart rhythm, peripheral capillary oxygen saturation and a self-rated health status.

The percentage of days lost due to unplanned cardiovascular hospital admissions and all-cause death was 4.88% in the RPM group and 6.64% in the UC group ($p=0.0460$). The all-cause death rate was 7.86 per 100 person-years of follow-up in the remote patient management group compared with 11.34 per 100 person-years of follow-up in the usual care group ($p=0.0280$). Cardiovascular mortality was not significantly different between the two groups ($p=0.0560$). Data suggest a positive effect on unplanned admission for cardiovascular conditions and all-cause death in the group who utilized RPM.

Kitsiou et al. (2021) reported results of a metaanalysis and systematic review of 16 RCTs (n=4389) utilizing remote monitoring and clinical feedback for patients with HF. Primary outcomes included all-cause mortality, cardiovascular mortality, HF–related hospitalizations and all-cause hospitalizations compared with usual care. Remote monitoring intervention was heterogeneous between studies. Four trials involved the use of dedicated mobile app.

Summary statistics regarding race or ethnicity were provided in four trials. Of these one study included 75% Hispanic/Latino and 25% African American with HF. The other three trials included a majority of white participants (≥67%).

Compared with usual care, remote monitoring and clinical feedback reduced the risk of all-cause mortality (risk reduction (p=0.02, high-quality evidence), cardiovascular mortality (p=0.009, high-quality evidence) and heart failure hospitalization (p=0.001, high-quality evidence). No effect was noted on all-cause hospitalizations. Data suggest a positive effect of remote monitoring methods on heart failure.

Klersy et al. (2009) published a metaanalysis of 20 RCTs and twelve cohort studies assessing the effect of RPM compared with usual care on the outcome of patients with chronic HF. RPM was defined as regularly scheduled structured telephone contact between patients and health care providers or electronic transfer of physiological data using remote access technology via remote external, wearable, or implantable electronic devices. Both RCTs and cohort studies demonstrated a significantly lower number of deaths (RCTs: p=0.006; cohort studies: p<0.001) and hospitalizations (RCTs: p=0.030; cohort studies: p<0.001) with the use of RPM. Data suggest a positive health benefit of RPM on an individual with chronic HF compared with usual care.

Other Conditions
Research utilizing robust study designs is needed to assess the efficacy and value of RPM technology for other conditions. Data are not yet available to determine improved patient outcomes compared to standard of care clinical practice for additional indications.

Remote Therapeutic Monitoring (RTM)
There are limited published, peer-reviewed data regarding the effect of RTM on health outcomes. At this time there is insufficient evidence to support improved health outcomes with remote therapeutic monitoring compared to standard of care clinical practice.

Professional Societies/Organizations
Published professional society consensus guidelines are lacking regarding the use of RPM or RTM.

In a Remote Patient Monitoring Billing, Coding and Regulations Information document published by the American College of Physicians ([ACP], 2022), RPM codes are considered Evaluation and Management (E/M) services. According to the ACP RPM is allowed for patients with both chronic and acute conditions.

Medicare Coverage Determinations

	Contractor	Determination Name/Number	Revision Effective Date
NCD	National	N/A	
LCD	Local	N/A	

Coding Information

Note: 1) This list of codes may not be all-inclusive.
2) Deleted codes and codes which are not effective at the time the service is rendered may not be eligible
for reimbursement.

Considered Medically Necessary when criteria in the applicable policy statements listed above are met:

CPT®* Codes	Description
99091	Collection and interpretation of physiologic data (eg, ECG, blood pressure, glucose monitoring) digitally stored and/or transmitted by the patient and/or caregiver to the physician or other qualified health care professional, qualified by education, training, licensure/regulation (when applicable) requiring a minimum of 30 minutes of time, each 30 days
99453	Remote monitoring of physiologic parameter(s) (eg, weight, blood pressure, pulse oximetry, respiratory flow rate), initial; set-up and patient education on use of equipment
99454	Remote monitoring of physiologic parameter(s) (eg, weight, blood pressure, pulse oximetry, respiratory flow rate), initial; device(s) supply with daily recording(s) or programmed alert(s) transmission, each 30 days
99457	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; first 20 minutes
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; each additional 20 minutes (List separately in addition to code for primary procedure)
99473	Self-measured blood pressure using a device validated for clinical accuracy; patient education/training and device calibration
99474	Self-measured blood pressure using a device validated for clinical accuracy; separate self-measurements of two readings one minute apart, twice daily over a 30-day period (minimum of 12 readings), collection of data reported by the patient and/or caregiver to the physician or other qualified health care professional, with report of average systolic and diastolic pressures and subsequent communication of a treatment plan to the patient

HCPCS Codes	Description
G0322	The collection of physiologic data digitally stored and/or transmitted by the patient to the home health agency (i.e., remote patient monitoring)

ICD-10-CM Diagnosis Codes	Description
E08-E13	Diabetes mellitus
I50.1-I50.9	Heart failure
J44.0-J44.9	Chronic obstructive pulmonary disease

Not Covered or Reimbursable:

ICD-10-CM Diagnosis Codes	Description
	All other diagnosis codes

Not Covered or Reimbursable:

CPT®* Codes	Description
98975	Remote therapeutic monitoring (eg, respiratory system status, musculoskeletal system status, therapy adherence, therapy response); initial set-up and patient education on use of equipment
98976	Remote therapeutic monitoring (eg, respiratory system status, musculoskeletal system status, therapy adherence, therapy response); device(s) supply with scheduled (eg, daily) recording(s) and/or programmed alert(s) transmission to monitor respiratory system, each 30 days
98977	Remote therapeutic monitoring (eg, respiratory system status, musculoskeletal system status, therapy adherence, therapy response); device(s) supply with scheduled (eg, daily) recording(s) and/or programmed alert(s) transmission to monitor musculoskeletal system, each 30 days
98978	Remote therapeutic monitoring (eg, therapy adherence, therapy response); device(s) supply with scheduled (eg, daily) recording(s) and/or programmed alert(s) transmission to monitor cognitive behavioral therapy, each 30 days
98980	Remote therapeutic monitoring treatment management services, physician or other qualified health care professional time in a calendar month requiring at least one interactive communication with the patient or caregiver during the calendar month; first 20 mintues
98981	Remote therapeutic monitoring treatment management services, physician or other qualified health care professional time in a calendar month requiring at least one interactive communication with the patient or caregiver during the calendar month; each additional 20 minutes (List separately in addition to code for primary procedure)

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Revision Details

Type of Revision	Summary of Changes	Date