



April 2017

HEALTH CARE

Telehealth and Remote Patient Monitoring Use in Medicare and Selected Federal Programs

Accessible Version

GAO Highlights

Highlights of [GAO-17-365](#), a report to congressional committees

Why GAO Did This Study

Telehealth and remote patient monitoring can provide alternatives to health care provided in person at a physician's office, particularly for patients who cannot easily travel long distances for care. Medicare pays for some telehealth services that are subject to statutory and regulatory requirements, such as requiring the patient be present at an originating site like a rural health clinic.

The Medicare Access and CHIP Reauthorization Act of 2015 includes a provision for GAO to study telehealth and remote patient monitoring. Among other reporting objectives, this report reviews (1) the factors that associations identified as affecting the use of telehealth and remote patient monitoring in Medicare and (2) emerging payment and delivery models that could affect the potential use of telehealth and remote patient monitoring in Medicare.

GAO reviewed agency documents and regulations and interviewed agency officials. GAO also selected nine general and medical specialty associations with expertise and interest in telehealth or remote patient monitoring—six provider, two patient, and one payer association—based on a review of relevant documents and literature and through background interviews. GAO interviewed representatives from each of the associations and collected information from the provider and patient associations through a data collection instrument.

GAO provided a draft of this report to HHS. In response, HHS provided technical comments, which were incorporated as appropriate.

View [GAO-17-365](#). For more information, contact Carolyn L. Yocom at (202) 512-7114 or Yocomc@gao.gov.

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What GAO Found

Selected associations representing providers and patients most often cited the potential to improve or maintain quality of care as a significant factor that encourages the use of telehealth (providing clinical care remotely by two-way video) and remote patient monitoring (monitoring of patients outside of conventional settings) in Medicare. For example, according to officials from a provider association, telehealth can improve patient outcomes by facilitating follow-up care, while remote patient monitoring is helpful for treating patients with chronic diseases. With regard to factors that create barriers, the selected associations most often cited concerns over payment and coverage restrictions. For example, officials from a provider association noted that Medicare telehealth coverage restrictions limit the geographic and practice settings in which beneficiaries may receive services. While not indicating how significant these factors are to Medicare, officials with a payer association told GAO that they considered these factors—also identified by the provider and patient associations—as either encouraging use or creating barriers to the use of telehealth and remote patient monitoring.

Significance of Improving or Maintaining Quality of Care as a Factor that Encourages the Use of Telehealth and Remote Patient Monitoring in Medicare

	Provider associations						Patient associations	
	A	B	C	D	E	F	G	H
Telehealth	●	◐	●	●	◐	○	●	●
Remote patient monitoring	●	●	●	◐	●	◐	●	●

- A very significant factor that encourages use
- ◐ A somewhat significant factor that encourages use
- A factor that encourages use, but not a significant one
- ⊗ Not a factor that encourages use
- ◑ Did not respond

Source: GAO analysis of a data collection instrument completed by six associations that represent providers and two associations that represent patients. | GAO-17-365

Medicare models, demonstrations, and a new payment program have the potential to expand the use of telehealth and remote patient monitoring. The Centers for Medicare & Medicaid Services, an agency within the Department of Health and Human Services (HHS), supports eight models and demonstrations in which certain Medicare telehealth requirements have been waived, such as requirements for the locations and facility types where beneficiaries can receive telehealth services. For example, the waivers allow beneficiaries to access telehealth in urban areas, or from their homes. Additionally, the use of telehealth and remote patient monitoring in Medicare may change depending on how many clinicians use them as a way to achieve the goals of the new Merit-based Incentive Payment System, which—starting in 2017—will pay clinicians based on quality and resource use, among other things. Under this payment program, clinicians can use telehealth and, in some instances, remote patient monitoring, to help meet the payment program's performance criteria. For example, clinicians could use telehealth to coordinate care or use remote patient monitoring to remotely gather information to determine a patient's proper dose of medication.

Contents

Letter	1
Background	6
Available Data Show Low Proportions of Beneficiaries Accessing Telehealth; Limited Data Are Available on Remote Patient Monitoring	14
CMS Uses Routine Claims Review Processes for Telehealth Payments and Is Examining Some Questionable Claims Identified by MedPAC	18
Selected Associations Report Telehealth and Remote Patient Monitoring May Improve Care for Medicare Beneficiaries, but Cited Coverage and Payment Restrictions as Barriers	21
CMS Has Various Efforts Underway That Have the Potential to Expand the Use of Telehealth and Remote Patient Monitoring in Medicare	28
Agency and Third-Party Comments	35

Appendix I: Use of Remote Patient Monitoring by Selected Private Payers	39
Appendix II: Scope and Methodology for Identifying Factors Affecting the Use of Telehealth and Remote Patient Monitoring	42
Appendix III: Medicare Telehealth Services Added and Denied by the Centers for Medicare & Medicaid Services, 2011-2016	46
Appendix IV: Telehealth and Remote Patient Monitoring Reimbursement and Use in Selected State Medicaid Plans	52
Appendix V: Selected Associations' Rating of the Significance of Factors that Affect Telehealth and Remote Patient Monitoring	55
Appendix VI: Medicare Valuation of Remote Patient Monitoring	60
Appendix VII: Examples of Telehealth and Remote Patient Monitoring in Medicare Models and Demonstrations	66
Appendix VIII: GAO Contact and Staff Acknowledgments	68
GAO Contact	68
Staff Acknowledgments	68

Tables

Table 1: Summary of Federal Agency Telehealth Services and Originating Sites	13
Table 2: Medicare Telehealth Requirements Waived for Selected Models and Demonstrations	31
Table 3: Telehealth Use by Selected Models and Demonstrations with Waivers of Certain Medicare Requirements	33
Table 4: Potential Factors that Encourage the Use or Are Barriers to the Use of Telehealth or Remote Patient Monitoring in Medicare Used in the Data Collection Instrument	42
Table 5: Telehealth Service Codes Added by the Centers for Medicare & Medicaid Services (CMS), Calendar Years 2011 through 2016	47
Table 6: Telehealth Service Codes Denied by the Centers for Medicare & Medicaid Services (CMS), Calendar Years 2011 through 2016	49

Table 7: Reimbursement and Use of Telehealth and Remote Patient Monitoring in Selected State Medicaid Programs	52
Table 8: Centers for Medicare & Medicaid Services' Innovation Center Categories and Examples of Potential Telehealth and Remote Patient Monitoring Use in Models or Demonstrations	66

Figures

Figure 1: Example of Telehealth Use in Medicare	9
Figure 2: Significance of Certain Factors That Encourage the Use of Telehealth and Remote Patient Monitoring in Medicare, According to Selected Provider and Patient Associations	23
Figure 3: Significance of Certain Barriers to the Use of Telehealth and Remote Patient Monitoring in Medicare, According to Selected Provider and Patient Associations	26
Figure 4: Significance of Factors That Encourage the Use of Telehealth in Medicare, According to Selected Provider and Patient Associations	56
Figure 5: Significance of Factors That Encourage the Use of Remote Patient Monitoring in Medicare, According to Selected Provider and Patient Associations	57
Figure 6: Significance of Barriers to the Use of Telehealth in Medicare, According to Selected Provider and Patient Associations	58
Figure 7: Significance of Barriers to the Use of Remote Patient Monitoring in Medicare, According to Selected Provider and Patient Associations	59

Abbreviations

ACO	accountable care organization
AMA	American Medical Association
CCO	coordinated care organization
CHIP	state Children's Health Insurance Program
CMS	Centers for Medicare & Medicaid Services
DOD	Department of Defense
HHS	Department of Health and Human Services
MAC	Medicare Administrative Contractor
MedPAC	Medicare Payment Advisory Commission
RUC	American Medical Association/Specialty Society Relative Value Scale Update Committee
VA	Department of Veterans Affairs

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April 14, 2017

Congressional Committees

For certain individuals, such as those who live in remote areas or cannot easily travel long distances, access to health care services can be challenging. Telehealth and remote patient monitoring can provide an alternative to health care provided in person at a physician’s office.¹ Telehealth can be used to provide clinical care remotely by two-way video for services such as psychotherapy or the evaluation and management of conditions. Remote patient monitoring can be used to monitor patients with chronic conditions, such as those with congestive heart failure, hypertension, diabetes, and chronic obstructive pulmonary disease, and it can also be used as a diagnostic tool, such as for some heart conditions.² Although the literature is mixed on the effectiveness of telehealth and remote patient monitoring, a 2016 review of studies by the Agency for Healthcare Research and Quality—an agency within the Department of Health and Human Services (HHS)—found that the most consistent benefit of telehealth and remote patient monitoring occurs when the technology is used for communication and counseling or to remotely monitor chronic conditions such as cardiovascular and respiratory disease, with improvements in outcomes such as mortality, quality of life, and reductions in hospital admissions.³

In recent years there have been efforts to increase the use of telehealth and remote patient monitoring in federal health care programs. A federal strategic plan prepared by the Office of the National Coordinator for

¹For this report, we define telehealth as clinical services that are provided remotely via telecommunications technologies, while remote patient monitoring is a technology to enable monitoring of patients outside of conventional clinical settings, such as in the home. Federal agencies have various definitions for telehealth, and in this report we show how these definitions vary across programs.

²See Ashlea Bennett Milburn et al., “The Value of Remote Monitoring Systems for Treatment of Chronic Disease,” *IIE Transactions on Healthcare Systems Engineering*, vol. 4, no. 2 (2014); David P. Kao et al., “Impact of a Telehealth and Care Management Program on All-Cause Mortality and Healthcare Utilization in Patients with Heart Failure,” *Telemedicine and e-Health*, vol. 22, no. 1 (2016).

³Department of Health and Human Services, Agency for Healthcare Research and Quality, *Telehealth: Mapping the Evidence for Patient Outcomes from Systematic Reviews*, Technical Brief Number 26 (Washington, D.C.: June 2016).

Health Information Technology within HHS calls for an increased use of telehealth and remote patient monitoring in federal health care programs.⁴ Additionally, in the 21st Century Cures Act, enacted in December 2016, Congress expressed an interest in expanding the use of telehealth in Medicare through increasing the types of sites where telehealth can occur.⁵

While Medicare currently uses telehealth primarily in rural areas or regions designated as having a shortage of health professionals, in the future emerging payment and delivery models may change the extent to which telehealth and remote patient monitoring are available and used by Medicare beneficiaries and providers in other areas.⁶ The Centers for Medicare & Medicaid Services (CMS), another HHS agency, oversees Medicare payments for telehealth services. According to the Congressional Budget Office, the financial impact of expanding telehealth and remote patient monitoring in Medicare is difficult to predict—it may reduce federal spending if used in place of face-to-face visits, but it may increase federal spending if used in addition to these visits. Beyond the Medicare program, other federal programs, along with some private insurers, also pay for—or provide—some telehealth and remote patient monitoring services.⁷

The Medicare Access and CHIP Reauthorization Act of 2015 included a provision that we study telehealth and remote patient monitoring.⁸ In this report we

1. describe the extent to which telehealth and remote patient monitoring are used by Medicare and other federal programs to provide health care services;

⁴See Department of Health and Human Services, Office of the National Coordinator for Health Information Technology, *Federal Health IT Strategic Plan 2015-2020*.

⁵Pub. L. No. 114-255, § 4012, 130 Stat. 1033 (2016).

⁶For the purposes of this report, we use the term “provider” to refer to physicians and non-physician practitioners, such as physician assistants and nurse practitioners.

⁷Based on a 2016 study, over half of states had some requirement for telehealth coverage in private insurance. Bob Herman, “Virtual Reality: More Insurers Are Embracing Telehealth,” *Modern Healthcare*, vol. 46, no. 8 (2016).

⁸Pub. L. No. 114-10, § 106, 129 Stat. 87, 140-142 (2015).

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2. assess the extent to which CMS oversees telehealth payments in Medicare;
 3. describe the factors associations representing providers and patients rated—and payers cited—as affecting the use of telehealth and remote patient monitoring in Medicare; and
 4. describe how emerging payment and delivery models could affect the potential use of telehealth and remote patient monitoring in Medicare.

Our report also describes the use of remote patient monitoring by selected health plans in the private insurance market (see app. I).

To describe the extent to which telehealth and remote patient monitoring are used by Medicare and other federal programs, we reviewed available data, statutes, regulations, and other relevant documentation related to telehealth in Medicare, Medicaid, the Department of Defense (DOD), and the Department of Veterans Affairs (VA).⁹ We interviewed agency officials from CMS as well as officials from DOD and VA, because the latter two departments operate federal programs outside of HHS that provide telehealth to their beneficiaries. The work we performed for each program included the following:

- For Medicare, we reviewed a June 2016 Medicare Payment Advisory Commission (MedPAC) report which, among other things, includes an analysis of Medicare telehealth and remote patient monitoring claims for calendar year 2014.¹⁰
- For Medicaid, we selected a sample of six states—Connecticut, Illinois, Kansas, Mississippi, Montana, and Oregon—to include in our review. We selected states that varied in geography, physical size,

⁹Federal agencies have various definitions for telehealth. A May 2014 study from a federal working group found that across the 26 agencies that participated in the workgroup, there were multiple unique definitions using the terms “telehealth” and “telemedicine.” Some agencies’ definitions were broad, for example, defining only the overarching clinical interaction, while others included detailed descriptions of the technology involved. The study concluded that with agencies serving different populations and operating under different missions, a uniform definition of telehealth was elusive, though the study also concluded that the definitions overlapped. See Charles R. Doarn et al., “Federal Efforts to Define and Advance Telehealth—A Work in Progress,” *Telemedicine and e-Health*, vol. 20, no. 5 (2014).

¹⁰We relied on the MedPAC analysis because it analyzed the most recent Medicare data available at the time we conducted our work. See Medicare Payment Advisory Commission, *Report to the Congress: Medicare and the Health Care Delivery System*, (Washington, D.C.: June 15, 2016), 229-260.

percentage of rural population, and other factors related to coverage and reimbursement for health care services. In particular, we considered factors such as the extent to which the state's Medicaid program uses different payment systems, whether the state's Medicaid program reimburses for telehealth, the type of locations for providing the services that were allowed, and the type and number of eligible providers. We obtained information about telehealth and remote patient monitoring use for the most recent state fiscal year available from four of the six states that had the information and also interviewed state officials from all six states about the use of telehealth and remote patient monitoring in their state, including any restrictions on and reimbursement for these services.¹¹ Our findings for these six states cannot be generalized to other states.

- For DOD, we obtained data on the use of telehealth for fiscal year 2015, the most recent fiscal year available, and we interviewed officials about the use of telehealth and remote patient monitoring in DOD's health care program.
- For VA, we reviewed documentation, interviewed officials, and received data on the use of telehealth and remote patient monitoring for fiscal year 2016, the most recent fiscal year available.

To assess the reliability of the program data we used, we interviewed MedPAC officials on how they collected and analyzed Medicare data for their report; we obtained information from DOD and VA on the controls used by the programs to ensure that the data were accurate and complete. Based on these steps we determined that these data were sufficiently reliable for our purposes.

To assess the extent to which CMS oversees telehealth payments in Medicare, we reviewed related agency documentation and interviewed knowledgeable officials about the procedures used to review claims for telehealth services. Additionally, we reviewed MedPAC's report on Medicare telehealth claims for calendar year 2014 and interviewed MedPAC officials to understand the basis for their findings.¹² We

¹¹Connecticut, Illinois, and Mississippi provided us with information from 2015, and Montana also provided information for 2013 through 2015. The remaining two states—Kansas and Oregon—did not provide us with information about such things as numbers of patients or expenditures for telehealth or remote patient monitoring.

¹²Medicare Payment Advisory Commission, *Report to the Congress: Medicare and the Health Care Delivery System*.

assessed CMS's oversight procedures and the agency's response to MedPAC's findings using federal standards for internal controls.¹³

To describe the factors associations representing providers and patients rated—and payers cited—as affecting the use of telehealth and remote patient monitoring in Medicare, we developed a data collection instrument for three groups of selected associations—six associations that represent providers, two associations that represent patients, and one association that represents payers. The associations representing providers and patients completed our data collection instrument; the payer association did not.¹⁴ To identify these associations, we reviewed relevant documents and literature and conducted interviews to identify relevant general and specialty associations. In the data collection instrument, we requested that the associations rate the significance of potential factors that may encourage the use of telehealth and remote patient monitoring and potential factors that may create barriers to their use. We identified these factors based on background research and initial interviews with two groups with an interest in telehealth. In addition to having the provider and patient associations rate the factors and having the payer association identify them, we also reviewed relevant documentation and interviewed officials from each provider, patient, and payer association using a structured question set to obtain examples, from their perspective, of how these factors can encourage the use of telehealth and remote patient monitoring in Medicare or create barriers to their use. The perspectives we obtained using the data collection instrument, from our document reviews, and during our interviews with association officials provided insights regarding the officials' views on factors that encourage the use of telehealth and remote patient monitoring and factors that are barriers to their use. These perspectives cannot be generalized. See appendix II for more information on our data collection instrument and on our scope and methodology for identifying relevant associations and the factors, including the significance of the factors as rated by the associations.

¹³See GAO, *Standards for Internal Control in the Federal Government*, GAO-14-704G (Washington, D.C.: September 2014); and *Standards for Internal Control in the Federal Government*, GAO/AIMD-00-21.3.1 (Washington, D.C.: November 1999). Internal control is a process effected by an entity's oversight body, management, and other personnel that provides reasonable assurance that the objectives of an entity will be achieved.

¹⁴A representative of the payer association we spoke with told us that the association did not have sufficient time to survey its members and could not complete our data collection instrument without doing so. Therefore, we reported separately the payer association's views on factors that encourage the use of, or are barriers to, telehealth and remote patient monitoring.

To describe how emerging payment and delivery models could affect the potential use of telehealth and remote patient monitoring in Medicare, we reviewed CMS documents describing and evaluating the models developed by the Center for Medicare & Medicaid Innovation (Innovation Center) to support alternative approaches to health care payment and delivery.¹⁵ We also studied implementation plans created by participants in one of the models, which outlined how the participants planned to use telehealth. We also interviewed knowledgeable agency officials about how telehealth was used in the models and how the models might affect telehealth and remote patient monitoring use in Medicare in the future. Additionally, we examined documents and interviewed CMS officials regarding a new Medicare payment program that allows the use of telehealth—and to some extent remote patient monitoring—to help achieve some of the goals of the payment program.

We conducted this work from March 2016 to April 2017 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

The federal government uses telehealth and remote patient monitoring in various health care programs, including the following:

- Medicare, which provides health care coverage for people age 65 or older, certain individuals with disabilities, and individuals with end-stage renal disease;
- Medicaid, a joint federal-state health care financing program for certain low-income and medically needy individuals;

¹⁵In 2010, the Patient Protection and Affordable Care Act created the Innovation Center within CMS to test new approaches to health care delivery and payment—known as models, or in some cases as demonstrations—in order to reduce Medicare, Medicaid, and state Children's Health Insurance Program expenditures while preserving or enhancing quality of care for beneficiaries of the programs. See Pub. L. No. 111-148, §§ 3021, 10306, 124 Stat. 119, 389, 939 (codified at 42 U.S.C. § 1315a).

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- DOD, which provides services through its regionally structured health care program to active duty personnel and their dependents, medically eligible Reserve and National Guard personnel and their dependents, and retirees and their dependents and survivors; and
 - VA, which delivers medical services to veterans primarily through an integrated health care delivery system.

Other federal agencies—within and outside of HHS—also provide grants to promote the use of telehealth.¹⁶

Medicare Telehealth and Remote Patient Monitoring Requirements

Medicare began paying separately for certain telehealth services after the passage of the Balanced Budget Act of 1997.¹⁷ The statute requires that Medicare, which covers over 50 million beneficiaries, pay for certain telehealth services, including consultations, office visits, and office psychiatry services, that are furnished through a telecommunications system with audio and video equipment permitting two-way, real-time interactive communication between the patient and distant site provider.¹⁸

¹⁶For example, within HHS, the Health Resources and Services Administration promotes the use of telehealth technologies for health care delivery, education, and health information services through grant programs. It does this to, among other things, improve health care services for medically underserved populations, support the establishment and operation of resource centers that help in implementing telehealth services, and support implementation of telehealth networks to deliver 24-hour emergency department consultation services. Additionally, the U.S. Department of Agriculture administers grants through the Distance Learning and Telemedicine and the Community Connect programs. The Distance Learning and Telemedicine program funds institutions to support advanced telecommunications in health care and education in rural communities and is designed specifically to assist rural communities that would otherwise be without access to learning and medical services over the Internet. The Community Connect program provides financial assistance to state and local governments, federally-recognized tribes, non-profit organizations, and for-profit corporations in rural areas that lack a minimum broadband speed connection.

¹⁷Pub. L. No. 105-33, § 4206, 111 Stat. 251, 337 (1997).

¹⁸Separate payment for telehealth services in Medicare fee-for-service are limited to those on CMS's approved list of telehealth services. Plans within Medicare Advantage—the Medicare managed care program—must cover the same telehealth services as those provided through fee-for-service, and the plans must include these costs in their annual bid amounts. However, Medicare Advantage plans can provide additional telehealth benefits not on CMS's approved list to their beneficiaries by using rebate dollars or charging beneficiaries a supplemental premium. Plans must receive CMS approval in order to provide the additional telehealth benefits.

According to CMS officials, Medicare fee-for-service does not have an explicit definition of remote patient monitoring. Rather, Medicare pays separately for some services that are used to remotely monitor patients, as well as for other remote monitoring bundled with other services. For example, separate payment may be made for services used to remotely monitor patients' conditions, such as services that use devices to monitor, record, and relay data on a patient's heart activity to a provider for analysis. Additionally, Medicare pays for remote services as bundled parts of other services, such as elements of monthly care management services.

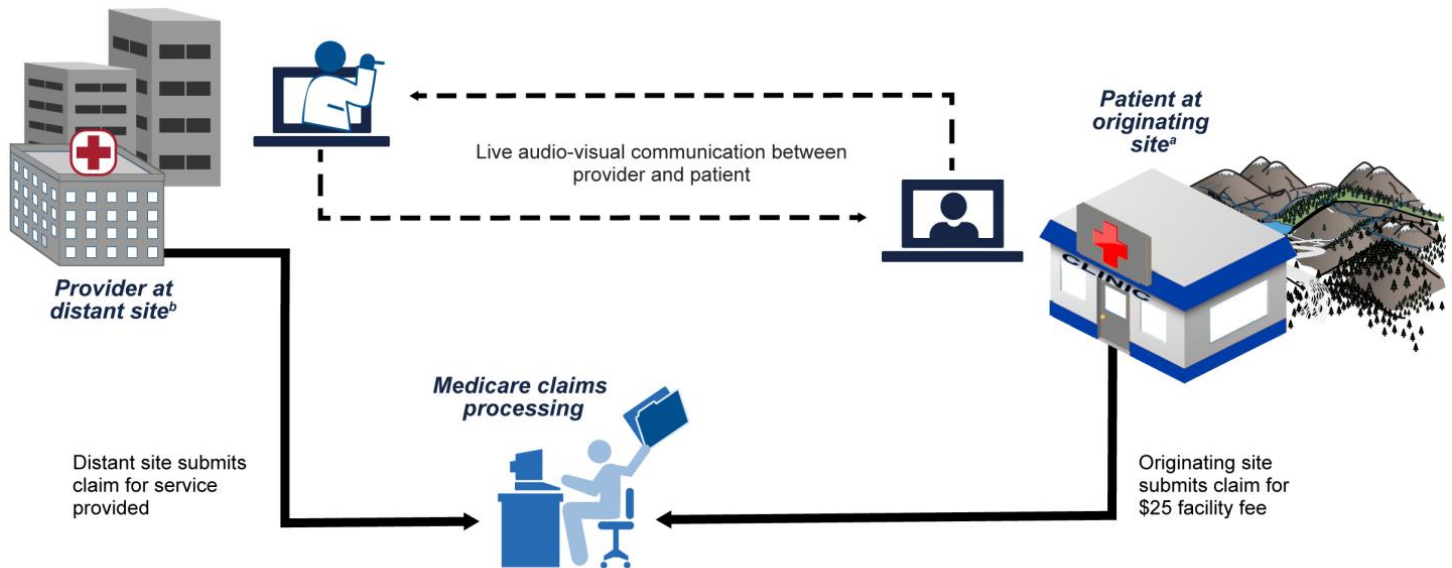
While telehealth visits with providers are conducted from a separate site, Medicare requires that the patient be physically present at a medical facility such as a hospital, rural health clinic, or skilled nursing facility—referred to as the originating site—during the telehealth service.¹⁹ Eligible providers who are furnishing Medicare telehealth services are located at a separate site, known as the distant site, and these providers submit claims in the service area where their distant site is located.²⁰ The originating site is paid a facility fee—about \$25 in calendar year 2017—under the Medicare Physician Fee Schedule for each telehealth service, and the distant site provider is paid the same rate for services delivered via telehealth as they would be paid for the in-person service, as required by statute.²¹ (See fig. 1.)

¹⁹By statute, originating sites are limited to those located in rural health professional shortage areas, counties not included in a metropolitan statistical area, and sites participating in a federal telehealth demonstration project (referred to as telemedicine demonstration projects in statute) approved by or receiving funding from the Secretary of Health and Human Services as of December 31, 2000. Eligible originating sites are a physician or provider office, a critical access hospital, a rural health clinic, a federally qualified health center, a hospital, a hospital-based or critical access hospital-based renal dialysis center or satellites, a skilled nursing facility, and a community mental health center.

²⁰Eligible telehealth providers in Medicare are physicians, physician assistants, nurse practitioners, clinical nurse specialists, certified registered nurse anesthetists, nurse-midwives, clinical social workers, clinical psychologists, and registered dietitians or nutrition professionals.

²¹Medicare pays for physician and other health professional services based on a list of services and their payment rates, called the Physician Fee Schedule.

Figure 1: Example of Telehealth Use in Medicare



Source: GAO analysis of Medicare statute and regulations. | GAO-17-365

Note: Medicare Administrative Contractors (MAC) process and pay Medicare claims in specific geographic jurisdictions. The MACs review claims and identify and prevent improper payments for Medicare services, including telehealth.

^aMedicare requires that the patient be physically present at a medical facility—referred to as the originating site—such as a hospital, rural health clinic, or skilled nursing facility during the telehealth service.

^bEligible providers who are furnishing Medicare telehealth services are located at a separate site, known as the distant site.

Medicaid, DOD, and VA Telehealth and Remote Patient Monitoring Requirements

CMS does not limit the use of telehealth and remote patient monitoring in Medicaid, which has around 70 million enrollees. Therefore, individual states determine any restrictions and limitations. For example, states have the option to determine

- whether to cover telehealth;
- what types of telehealth to cover;
- how it is provided or covered;

- which types of telehealth providers may be covered or reimbursed, as long as such providers are recognized and qualified according to Medicaid statute and regulation; and
- how much to reimburse for telehealth services, as long as such payments do not exceed other requirements.²²

States are not required to submit a separate state plan amendment to CMS for coverage or reimbursement of telehealth services if they decide to reimburse for telehealth services the same way that they pay for face-to-face services.²³ However, states must submit a separate reimbursement state plan amendment if they want to reimburse for telehealth services or components of telehealth differently than they reimburse for face-to-face services.

DOD, which serves around 9.4 million beneficiaries, allows telehealth through live videoconferencing between the provider and patient at different locations.²⁴ DOD does not have restrictions on the services that can be provided through its direct care component.²⁵ Broad types of allowable services include health assessments, treatments, diagnoses, interventions, and consultations. Different categories of providers are allowed to use telehealth and are not required to be individually licensed in the state where the patient—or originating site—is located. These providers include members of the Armed Forces, other DOD uniformed providers, civilian DOD employees, personal services contractors, and

²²For example, there are maximum payment amounts—referred to as the federal upper payment limit—that the federal government will provide in matching funds for reimbursement for services under Medicaid.

²³Each state has a Medicaid state plan—approved by CMS—that describes, among other things, the services and populations that are covered under the state's Medicaid program.

²⁴DOD also uses asynchronous telehealth, called store-and-forward, that involves the capture of diagnostic images, sounds, and data that are interpreted at a later time and at a different location by a qualified diagnostician.

²⁵DOD's direct care component provides care in military hospitals and clinics, which are referred to as military treatment facilities. DOD's purchased care, which is care provided through networks of civilian providers, limits services that can be provided via telehealth to clinical consultations, office visits, individual psychotherapy, psychiatric diagnostic interview examination, pharmacologic management, and end-stage renal disease related services when appropriate and medically necessary.

National Guard providers who are performing training or duty in response to an actual or potential disaster.²⁶

DOD allows a range of eligible originating sites for telehealth. In addition to military treatment facilities, eligible originating sites include VA medical centers and clinics; installations, armories, or other non-medical fixed DOD locations; DOD mobile telehealth platforms; civilian sector hospitals and clinics; and contracted provider offices. In February 2016, DOD approved the patient's home as an originating site for telehealth services from providers located in a military treatment facility or other designated facility in DOD's direct care component.²⁷

DOD also utilizes remote patient monitoring devices to provide care for eligible beneficiaries for a range of services. These services include the diagnosis and treatment of cardiac conditions, including ambulatory blood pressure monitoring and pacemakers, and continuous glucose monitoring for patients with diabetes. According to DOD officials, the department does not have policies that specifically govern the use of remote patient monitoring devices, but instead DOD leaves the determination of use to clinical practice guidelines or to professional society guidance or recommendations.

VA, which serves about 6.7 million patients, allows the use of telehealth via videoconferencing technologies to enable providers to assess, treat, and provide care to a patient remotely.²⁸ VA also allows remote patient monitoring using mobile and in-home technologies assigned to veterans

²⁶Providers not covered in these categories are required to be licensed in the state where the originating site is located and in the state in which the provider is located when providing such services.

²⁷In addition to the patient's home, DOD allows telehealth services for any "other patient location" that is deemed appropriate by the treating provider in DOD's direct care component. Among other requirements, the telehealth provider must be privileged at the distant site and must inform the patient's military treatment facility or primary care manager of the care delivered by telehealth. Privileging is the process that health care organizations employ to authorize providers to provide specific services to their patients. In the case of DOD's purchased care, the originating site must be located where the authorized provider normally offers professional medical or psychological services, such as the provider's office.

²⁸VA also uses store-and-forward telehealth, which uses devices to capture and store images, sounds, or data that are then forwarded to clinical caregivers for asynchronous review and interpretation.

based on individual needs.²⁹ According to officials, VA does not restrict the use of telehealth or remote patient monitoring by type of service, provider, or location. Telehealth in VA can take place in various originating and distant site locations throughout the country, such as between two VA medical centers; a VA medical center and a community-based outpatient clinic; two community-based outpatient clinics; from the provider's site and the veteran's home, a community living center, or a contract nursing home; and a provider's home and sites such as a VA medical center or community-based outpatient clinic. In recent years, VA has taken steps to increase the use of telehealth. As part of VA's fiscal year 2009 to fiscal year 2013 telehealth transformational initiative, VA recruited over 970 telehealth clinical technicians and purchased equipment for over 900 sites of care.

Table 1 summarizes the use of telehealth and remote patient monitoring in Medicare, Medicaid, DOD, and VA health programs.

²⁹The remote patient monitoring technologies include VA-provided hub devices placed in the veteran's home, as well as mobile platforms for use with the veteran's own device. The VA-provided hub devices can receive and transmit data via a landline phone, or in homes without a landline via a cellular modem integrated with the device, or by using the veteran's personal computer. Mobile platforms include interactive voice response, which allows veterans to use their own landline or cell phone to receive and transmit responses using voice and keypad entry, and web-enabled technology, allowing veterans to use their own smartphone, computer, or tablet to access a secure VA vendor website for data transmission.

Table 1: Summary of Federal Agency Telehealth Services and Originating Sites

Federal agency	Telehealth services	Originating sites
Centers for Medicare & Medicaid Services (CMS)	Medicare pays for the 81 telehealth services on CMS’s list of telehealth services as of 2016.	<p>For sites located in a rural health professional shortage area or a county that is not included in a Metropolitan Statistical Area, Medicare pays for telehealth used at the following locations:^a</p> <ul style="list-style-type: none"> • physician or provider office, • critical access hospital, • rural health clinic, • federally qualified health center, • hospital, • hospital-based or critical access hospital-based renal dialysis center or satellites, • skilled nursing facility, and • community mental health center.
Centers for Medicare & Medicaid Services (CMS)	Services covered differ depending on the state. According to CMS officials, CMS does not have any statutory or regulatory requirements for telehealth use in Medicaid.	CMS does not limit telehealth use in Medicaid. Restrictions on use vary by state.
Department of Defense (DOD)	DOD does not limit the services allowed for telehealth use within its direct care component. ^b	<p>Outside of military treatment facilities, originating sites are allowed at patient locations that are deemed appropriate by the treating provider in DOD’s direct care component, including the patient’s home. According to officials, telehealth services are not limited to certain geographic areas, such as rural locations.</p>
Department of Veterans Affairs (VA)	According to officials, VA does not limit the services providers can offer via telehealth.	According to officials, VA does not limit the locations where telehealth services may be offered.

Sources: CMS, DOD, and VA. | GAO-17-365

Note: The term “originating site” refers to the location where the patient is located while receiving a telehealth service.

^aMedicare also pays for telehealth use for entities that participate in a federal telehealth demonstration project (referred to as telemedicine demonstration projects in statute) approved by or receiving funding from the Secretary of Health and Human Services as of December 31, 2000.

^bDOD’s direct care component provides care in military hospitals and clinics, which are referred to as military treatment facilities. DOD’s purchased care, which is care provided through networks of civilian providers, limits services that can be provided via telehealth to clinical consultations, office visits, individual psychotherapy, psychiatric diagnostic interview examination, pharmacologic management, and end-stage renal disease related services when appropriate and medically necessary. Additionally, for purchased care, the originating site must be located where the authorized provider normally offers professional medical or psychological services, such as the provider’s office.

Available Data Show Low Proportions of Beneficiaries Accessing Telehealth; Limited Data Are Available on Remote Patient Monitoring

Our review of available data shows that low proportions of beneficiaries received care through telehealth in Medicare, Medicaid, VA, and DOD—from less than 1 percent of beneficiaries in Medicare and DOD to 12 percent in VA—while the types of services available through these technologies varies. Data on use of remote patient monitoring are not aggregated for analysis in Medicare and are not available in selected Medicaid states, and limited data are available for DOD and VA.

Medicare

Available calendar year 2014 data show that Medicare providers used telehealth services for a small proportion of beneficiaries and relatively few services. An analysis of Medicare claims data by MedPAC shows that about 68,000 Medicare beneficiaries—0.2 percent of Medicare Part B fee-for-service beneficiaries—accessed services using telehealth.³⁰ MedPAC also found that 10 states accounted for 42 percent of all Medicare telehealth visits, with South Dakota, followed by Iowa and North Dakota, accounting for the highest use—more than 20 telehealth services were provided per 1,000 fee-for-service beneficiaries.³¹ As of 2016, Medicare pays for 81 telehealth services. (See app. III for a list of health care services CMS has added or denied for inclusion on the Medicare list of telehealth services.)

Telehealth and Remote Patient Monitoring in Medicare

Medicare pays for a limited number of Part B services furnished by a physician or provider to an eligible beneficiary via a telecommunications system. Part B services include physician and outpatient hospital services. For eligible telehealth services, the use of a telecommunications system substitutes for an in-person encounter. According to officials, CMS does not consider remote patient monitoring services as a separate set of services, as it does with telehealth.

Source: CMS. | GAO-17-365

According to MedPAC, beneficiaries accessing telehealth averaged about three telehealth visits per person per year in calendar year 2014, and Medicare spent an average of \$182 per beneficiary, for a total of about \$14 million. The majority of telehealth visits—62 percent—were for

³⁰See Medicare Payment Advisory Commission, *Report to the Congress: Medicare and the Health Care Delivery System*. Part B services include physician and outpatient hospital services.

³¹The other seven states are—in rank order of use of telehealth per 1,000 beneficiaries—Wyoming, Nebraska, Minnesota, Missouri, Montana, Texas, and Oklahoma.

beneficiaries younger than 65 years old.³² The most common telehealth visits in calendar year 2014 were for evaluation and management services (66 percent), followed by psychiatric visits (19 percent).

MedPAC reported that physicians and nurse practitioners were the most common providers participating in telehealth visits in calendar year 2014 and, of all providers, behavioral health clinicians, including psychiatrists, made up 62 percent of providers at distant sites.³³ According to MedPAC, a small proportion of providers accounted for the majority of telehealth visits in calendar year 2014. Ten percent of distant sites providers accounted for 69 percent of telehealth claims.

According to officials, because CMS does not have a separate category for remote patient monitoring services, as it does with telehealth, and these services may be bundled with other services, CMS has not conducted a separate analysis of remote patient monitoring services. Therefore, the number of Medicare beneficiaries who use this service is unknown. While the number of beneficiaries who use remote patient monitoring is not identified, MedPAC reported information on Medicare spending on remote patient monitoring for selected services. Specifically, MedPAC reported that Medicare spent \$119 million on remote cardiac monitoring services for 265,000 beneficiaries in calendar year 2014.³⁴ MedPAC also reported that in calendar year 2014, Medicare spent \$70 million on remote patient monitoring for 639,000 beneficiaries to remotely monitor heart rhythms through implantable cardiac devices, such as pacemakers, and to evaluate the function of these devices.

Medicaid

In Medicaid, the use of telehealth and remote patient monitoring varies by state. We interviewed officials from six states and among these officials, the ones from states that were generally more rural than urban said they

Telehealth and Remote Patient Monitoring in Medicaid

CMS does not limit the use of telehealth or remote patient monitoring in Medicaid. The use of and any restrictions on telehealth and remote patient monitoring in Medicaid are left up to the states. As a result, states may have varying definitions of telehealth and remote patient monitoring.

Source: CMS. | GAO-17-365

³²Medicare provides health care coverage for certain individuals with disabilities and individuals with end-stage renal disease, in addition to people age 65 or older.

³³The distant site is a separate location where the provider furnishing the telehealth service is located.

³⁴These services were for mobile cardiac telemetry monitoring of patients to record the patient's electrocardiographic rhythm using external, rather than implantable, devices. The data are sent via phone signal to a surveillance site, and a physician reviews the data and prepares a report.

used telehealth and remote patient monitoring more frequently than officials from more urban states. Officials from four states provided the following information on the use of telehealth and remote patient monitoring in their Medicaid program.

- A Connecticut official said that in the state, which has medical centers in-state and is close to multiple medical centers in other states, Medicaid uses telehealth in a limited capacity by only allowing provider-to-provider consults via secure messaging in federally qualified health centers. According to this official, Connecticut Medicaid data show that the state spent \$89,053 on 817 provider-to-provider consults in 2015. The official told us that Connecticut officials needed to be convinced that the use of telehealth would not lead to unnecessary utilization of services in order to expand telehealth reimbursement beyond these consults.
- In Illinois, officials told us that telehealth represented a very small portion of the overall Medicaid budget and was used primarily to provide psychiatric services. According to officials, less than \$500,000 of Illinois' \$20 billion in Medicaid spending in the state fiscal year 2015 was for telehealth.
- Mississippi began reimbursing for telehealth and remote patient monitoring in January 2015. Mississippi telehealth data show that from January 2015 through June 2015 Medicaid expenditures were about \$9,360 for 210 claims for 172 managed care patients and \$13,218 for 222 claims for 184 fee-for-service patients. For remote patient monitoring during the same period, Mississippi Medicaid expenditures were about \$27,634 for 292 claims for 158 managed care patients and \$4,969 for 99 claims for 68 fee-for-service patients.
- Montana officials told us they have used telehealth as a tool to help patients see both in-state and out-of-state specialists remotely, as there is limited access to specialists in the state. According to state officials, Montana's Medicaid spending on telehealth increased from state fiscal years 2013 through 2015. Specifically, according to officials, Montana's Medicaid program spent about \$284,675 for 3,218 telehealth distant site claims related to telehealth services provided in state fiscal year 2015, which is an increase from about \$132,194 for 1,841 distant site claims in state fiscal year 2013. According to officials, Montana's Medicaid program reimbursed the site where the patient is located about \$3,438 for 260 originating site claims in state fiscal year 2015, with psychiatric services accounting for the largest share of the state's Medicaid telehealth expenditures that year.

For more details on telehealth and remote patient monitoring use in Medicaid in the six selected states, see appendix IV.

DOD

Telehealth and Remote Patient Monitoring in DOD

In DOD, synchronous, or “real time,” telehealth uses live videoconferencing, with or without additional instrumentation, between provider and patient.

According to DOD officials, the department allows remote monitoring for certain conditions, but does not have policies that specifically govern the use of remote patient monitoring devices, and leaves the determination of use to clinical practice guidelines or professional society guidance or recommendations.

Source: DOD. | GAO-17-365

Fiscal year 2015 data show 25,389 DOD beneficiaries—or about 0.3 percent—received care through telehealth.³⁵ The most commonly offered telehealth services were behavioral health/psychiatry services, which accounted for approximately 80 percent of all telehealth encounters in fiscal year 2015, followed by dermatology, cardiology, and pediatric services. According to officials, DOD data also show that the top five locations in fiscal year 2015 for the provision of telehealth services were San Antonio, Texas; Fort Shafter, Hawaii; Fort Meade, Maryland; Joint Base Lewis-McChord, Washington; and Landstuhl, Germany. According to DOD officials, of these locations, the surrounding areas of San Antonio, Fort Shafter, and Joint Base Lewis-McChord include zip codes that are considered rural or have an area serviced by a sole community hospital.³⁶ DOD has also used provider-to-provider e-consultations, which, according to a DOD official, allow providers to give consults to other providers who are deployed or stationed in remote areas, making it easier for providers to consult with one another even when separated by distance. According to officials, DOD also uses remote patient monitoring devices—such as remote pacemaker monitoring and sleep study monitors—to varying degrees across military treatment facilities. DOD officials noted that the agency conducted an Army pilot program using remote patient monitoring for 51 soldiers with known or newly diagnosed Type 1 Diabetes. According to DOD officials, DOD is currently developing additional pilot programs for remote patient monitoring.

VA

According to VA officials, VA provided telehealth services to more than 702,000 veterans during fiscal year 2016, or approximately 12 percent of veterans enrolled in VA’s health care system. Of these veterans, approximately 45 percent were veterans living in rural areas with limited

Telehealth and Remote Patient Monitoring in VA

Clinical video telehealth uses videoconferencing technologies to allow veterans to connect with their clinical caregivers. We refer to this as telehealth in our report.

Home telehealth monitors veterans using mobile and in-home technologies assigned to veterans based on individual needs. We refer to this as remote patient monitoring in our report.

Source: VA. | GAO-17-365

³⁵DOD telehealth also includes asynchronous telehealth, called store-and-forward, that involves the capture of diagnostic images, sounds, and data that are interpreted at a later time and at a different location by a qualified diagnostician.

³⁶Sole community hospitals provide health care in rural areas or areas where similar hospitals do not exist.

access to VA health care. Of these 702,000 veterans using telehealth, 150,600 veterans used remote patient monitoring services at least once from October 2015 to September 2016.

VA documents show that VA uses telehealth and remote patient monitoring for a wide range of services. These services include mental health services, such as services for post-traumatic stress disorder; primary care; rehabilitation; speech and audiology services; eye care; dermatology services; specialty care; critical care; and care for chronic conditions such as diabetes, chronic heart failure, chronic obstructive pulmonary disease, hypertension, and depression. According to VA officials, providers from over 50 different specialties are using telehealth. VA officials noted that as of May 2016, the most common conditions for veterans using remote patient monitoring were hypertension (almost 19,000 veterans) and diabetes (about 14,000 veterans).

CMS Uses Routine Claims Review Processes for Telehealth Payments and Is Examining Some Questionable Claims Identified by MedPAC

CMS oversees telehealth payments as a part of its general efforts to prevent improper payments in Medicare.³⁷ CMS relies on Medicare Administrative Contractors (MAC), which process and pay Medicare claims in specific geographic jurisdictions. The MACs review claims to, among other things, identify and prevent improper payments for Medicare services, including telehealth. According to CMS officials, similar to other services, CMS has directed the MACs to only approve and pay claims

³⁷An improper payment is any payment that should not have been made or that was made in an incorrect amount (including overpayments and underpayments) under statutory, contractual, administrative, or other legally applicable requirements. This definition includes any payment to an ineligible recipient, any payment for an ineligible good or service, any duplicate payment, any payment for a good or service not received (except where authorized by law), and any payment that does not account for credit for applicable discounts. Improper Payments Elimination and Recovery Act of 2012, Pub. L. No. 112-248, § 3(a)(1), 126 Stat 2390 (codified at 31 U.S.C. § 3321 note).

with a telehealth modifier if the claims meet the statutory and regulatory criteria for covered telehealth services.³⁸

According to CMS officials, CMS does not conduct any enhanced oversight or fraud prevention specific to telehealth payments, though officials told us that if there were indications of inappropriate payments or fraud schemes related to telehealth payments, CMS would provide additional oversight for these claims. Telehealth represents a very small percentage of all Medicare claims.³⁹ CMS requires the MACs to focus their efforts on areas that pose the greatest financial risk to the Medicare program and where their efforts are likely to produce the best return on investment, which is consistent with federal internal controls.⁴⁰

CMS officials told us that there are no payment incentives for a provider to put a telehealth modifier on a non-approved telehealth service, because the provider could receive payment for that service if it did not include the modifier and the service is payable under Medicare's Physician Fee Schedule. That is, the payment to a distant site provider for a service on the approved telehealth list would be the same amount as the payment for the service if it were furnished in person. Adding a telehealth modifier incorrectly also increases the possibility that claim would be examined, CMS officials said, reducing the incentive to incorrectly add the telehealth modifier. CMS officials also said that for 2017 Medicare is using a new place of service code to describe services furnished via telehealth. According to officials, the code is intended to better identify telehealth services.

However, MedPAC's 2016 report, which examined Medicare telehealth claims, identified potential improper telehealth payments. Specifically, MedPAC reported that among the 175,000 Medicare telehealth claims paid in calendar year 2014, 55 percent, or about 95,000 claims, did not

³⁸Distant site providers who furnish telehealth services bill for these services using a GT or GQ code modifier. The GT modifier is used if the telehealth service was provided via interactive audio and video telecommunications systems. The GQ modifier is used if the telehealth service was provided via an asynchronous telecommunications system. The site where the patient is located can also submit a separate originating site claim, which is indicated by the use of code Q3014.

³⁹According to MedPAC, in calendar year 2014, Medicare paid 175,000 telehealth claims for a total of about \$14 million, which is less than 0.01 percent of the approximately \$257 billion in total annual Medicare expenditures on Part B services in fiscal year 2014.

⁴⁰GAO-14-704G, GAO/AIMD-00-21.3.1.

have a corresponding originating site claim.⁴¹ Because there was no originating site claim, it is unclear whether these beneficiaries received telehealth services in a location not permitted under the Medicare statute, such as the home, an originating site located in an urban area, or whether the claims were paid under a demonstration project or model. The Medicare statute requires beneficiaries to receive telehealth services in an originating site located in a rural area, as defined by Medicare for telehealth purposes, unless the site is part of a demonstration project or is participating in a Medicare model where telehealth location requirements are waived.

The absence of a corresponding originating site claim does not definitively indicate that the telehealth claims are improper, though it warrants further review. As a possible explanation for the difference in the number of originating site claims relative to distant site claims, CMS officials suggested that if a facility does not frequently serve as an originating site, it may not find it worthwhile to submit a claim for the approximately \$25 originating site fee. Additionally, there may be cases where a beneficiary receives multiple telehealth services in a single day, and in such cases, the telehealth encounter might include several services that are appropriately billed with several claims from the distant site provider, but only have a single originating site claim.

However, according to MedPAC, the absence of originating site claims may have occurred because some patients may have inappropriately received services in their homes or other locations not permitted under the Medicare statute.⁴² MedPAC also found that among the telehealth claims without corresponding originating site claims, 44 percent—or almost one-quarter of all telehealth claims made in calendar year 2014—were associated with beneficiaries living in urban areas, which could indicate that the patients were receiving telehealth services at

⁴¹Calendar year 2014 Medicare data were the most complete year of data at the time of MedPAC's review.

⁴²Medicare has published information for providers to guide the use of telehealth. For example, in December 2015, CMS released a publication providing information on Medicare telehealth rules and regulations, including eligibility criteria for originating sites. In March 2016, CMS released guidance for providers submitting claims to the MACs for telehealth services provided to the beneficiaries. The guidance includes an address for a website that provides an updated list of Medicare telehealth services.

inappropriate originating sites.⁴³ MedPAC officials told us that they identified one provider who conducted 2,000 telehealth visits in a single year, and all of those claims originated from an urban area.

When asked about MedPAC's findings, CMS officials told us that as of January 2017, they are reviewing the MedPAC report. They further stated that the agency will take action on MedPAC's findings, as warranted. This is consistent with federal standards for internal controls related to monitoring that call for managers to promptly evaluate findings from audits and other reviews—including those showing deficiencies—and determine and complete appropriate corrective actions.⁴⁴

Selected Associations Report Telehealth and Remote Patient Monitoring May Improve Care for Medicare Beneficiaries, but Cited Coverage and Payment Restrictions as Barriers

Officials from selected associations representing providers and patients rated the significance of certain factors that encourage the use of telehealth and remote patient monitoring in Medicare as well as factors that create barriers to their use. The officials reported that both telehealth and remote patient monitoring may improve or maintain quality of care in Medicare, but they rated concerns regarding payment and coverage restrictions as potential barriers. Officials with a payer association we selected generally agreed with the assessments of the selected provider and patient associations.

⁴³MedPAC reported in 2013 that some physician practices billed errantly for telehealth services for urban patients because their billing managers were unaware of Medicare's location requirements for telehealth payment.

⁴⁴GAO-14-704G, GAO/AIMD-00-21.3.1.

Selected Associations Cited the Potential to Improve or Maintain Quality of Care as a Significant Factor Encouraging the Use of Telehealth and Remote Patient Monitoring in Medicare

Among the factors presented as potentially encouraging both telehealth and remote patient monitoring use in Medicare, officials from selected provider and patient associations most often rated the potential to improve or maintain quality of care as very or somewhat significant. (See fig. 2.) Officials from a provider association told us that telehealth can improve patient outcomes by facilitating follow-up to care. Additionally, an official from a patient association stated that remote patient monitoring is a helpful tool for treating patients with chronic disease.

Furthermore, officials from selected provider and patient associations more often rated alleviating provider shortages, convenience to patients, and coverage of services as very significant or somewhat significant factors that encourage both telehealth and remote patient monitoring use in Medicare. For example, officials from one provider association noted that provider and regional medical specialty shortages can be addressed through telehealth, potentially increasing productivity and ensuring on-time scheduling of appointments. Officials from another provider association reported that telehealth can increase convenience by shortening or eliminating travel times—which may lead to better adherence to recommended treatments and to patient satisfaction. Regarding remote patient monitoring, officials from a provider association explained that it can be an important tool for emergency department physicians to provide expertise to rural areas remotely, which could alleviate provider shortages.

Figure 2: Significance of Certain Factors That Encourage the Use of Telehealth and Remote Patient Monitoring in Medicare, According to Selected Provider and Patient Associations

Factor that encourages use	Provider associations						Patient associations	
	A	B	C	D	E	F	G	H
Improving or maintaining quality of care								
Telehealth	●	◐	●	●	◑	○	●	●
Remote patient monitoring	●	●	●	◑	●	◐	●	●
Alleviation of provider shortages/scheduling problems								
Telehealth	●	●	●	●	◑	●	◐	●
Remote patient monitoring	●	⊗	●	◑	●	⊗	●	●
Convenience for the patient								
Telehealth	◐	◐	●	●	◑	◐	●	●
Remote patient monitoring	◐	⊗	●	◑	●	◐	●	●
Coverage of services								
Telehealth	⊗	●	●	●	◑	●	◐	●
Remote patient monitoring	●	●	●	◑	●	⊗	◐	●

- A very significant factor that encourages use
- ◐ A somewhat significant factor that encourages use
- A factor that encourages use, but not a significant one
- ⊗ Not a factor that encourages use
- ◑ Did not respond

Source: GAO analysis of a data collection instrument completed by six associations that represent providers and two associations that represent patients. | GAO-17-365

Note: Remote patient monitoring is a technology to enable monitoring of patients outside of conventional clinical settings, such as in the home.

Less frequently identified factors cited by association officials that encourage telehealth and remote patient monitoring use are described in the following examples, and in appendix V.

- Officials from two selected provider associations told us that emerging Medicare payment structures—such as accountable care

organizations (ACO)—could alleviate concerns about overutilization in Medicare’s fee-for-service payment system.⁴⁵ The concern is that telehealth would be used in addition to, instead of in place of, face-to-face visits.

- Officials from one selected provider association stated that remote patient monitoring use shows promise in lowering health care costs and avoiding unneeded emergency room visits, because it allows a provider to identify subtle changes in a patient’s condition and schedule an office visit before the patient’s condition deteriorates.
- Officials from a selected patient association said that remote patient monitoring can help patients and their caregivers save on transportation costs and help them avoid having to miss work.

Although officials from the payer association we selected did not rate the significance of the factors, they confirmed that improving or maintaining quality of care was a factor in encouraging the use of both telehealth and remote patient monitoring. For example, officials stated that telehealth has the potential to decrease hospital readmissions and use of intensive care units. These officials also identified alleviating provider shortages and providing convenience for the patient as encouraging the use of telehealth. Additionally, these officials noted that the ability of patients to use their own electronic devices—such as home computers or smartphones—could facilitate broader use of remote patient monitoring services.

Selected Associations Cited Payment and Coverage Restrictions as Barriers to the Use of Telehealth and Remote Patient Monitoring in Medicare

Among the factors presented as potential barriers to the use of both telehealth and remote patient monitoring in Medicare, selected patient and provider associations most often rated cost increases or inadequate payment and coverage restrictions as very significant or somewhat significant. (See fig. 3.) Officials often linked their comments on payment with those regarding coverage restrictions. For example, officials from a provider association reported that Medicare’s telehealth policies for

⁴⁵ACOs are groups of physicians, hospitals, and other health care providers who voluntarily work together to give coordinated care to the Medicare patients they serve. See GAO, *Medicare Value-Based Payment Models: Participation Challenges and Available Assistance for Small and Rural Practices*, GAO-17-55 (Washington, D.C.: Dec. 9, 2016).

payment and coverage lag behind other payers due to the program's statutory and regulatory restrictions. In particular, these restrictions limit the geographic and practice settings in which beneficiaries may receive services, as well as the types of services that may be provided via telehealth and the types of technology that may be used.

Additionally, officials from another provider association described coverage as the single greatest barrier to the use of telehealth, adding that Medicare's restrictions on the types of services covered by the program have prohibited its broader use. Regarding remote patient monitoring, officials from another provider association stated that Medicare's valuation methodology for services results in low payment rates for remote patient monitoring, which these officials said remains a principal barrier to the use of these services. For more information on Medicare's valuation of remote patient monitoring, see appendix VI.

Officials from selected provider and patient associations more often rated infrastructure requirements as a very significant or somewhat significant barrier to the use of both telehealth and remote patient monitoring in Medicare. For example, officials from one provider association and both patient associations we selected described access to sufficiently reliable broadband internet service as a barrier to telehealth use. Officials from both of the patient associations also mentioned the ability to access the technology necessary to use telehealth as a potential barrier to its use. Officials from two of these provider associations also described uncertainty around which remote patient monitoring products and services are most effective.

Figure 3: Significance of Certain Barriers to the Use of Telehealth and Remote Patient Monitoring in Medicare, According to Selected Provider and Patient Associations

	Provider associations						Patient associations	
	A	B	C	D	E	F	G	H
Barrier to use								
Cost increase or inadequate payment								
Telehealth	●	●	⊗	●	●	●	⊗	●
Remote patient monitoring	●	●	●	●	●	◐	◐	●
Coverage of services								
Telehealth	●	●	○	●	●	●	●	●
Remote patient monitoring	●	●	●	●	●	◐	◐	●
Infrastructure Requirements								
Telehealth	◐	◐	⊗	◐	●	○	●	●
Remote patient monitoring	●	○	●	●	⊗	●	●	●

- A very significant barrier
- ◐ A somewhat significant barrier
- A barrier, but not a significant one
- ⊗ Not a barrier
- Did not respond

Source: GAO analysis of a data collection instrument completed by six associations that represent providers and two associations that represent patients. | GAO-17-365

Note: Remote patient monitoring is a technology to enable monitoring of patients outside of conventional clinical settings, such as in the home.

Less frequently identified barriers to telehealth and remote patient monitoring use cited by selected provider and patient association officials are shown in the following examples, and in appendix V.

- Officials from both selected patient associations rated provider and patient training requirements as very significant barriers to the use of both telehealth and remote patient monitoring. Officials from one of these patient associations noted that training is important for patients, providers, and caregivers to help them understand the technology involved in using telehealth and remote patient monitoring.
- Officials from both selected patient associations also rated cultural factors, such as language and technological literacy, as very

significant barriers to the use of both telehealth and remote patient monitoring.

- Officials from four selected provider associations rated professional licensure issues as a very or somewhat significant barrier to the use of telehealth. Officials from one association mentioned states' participation in the Interstate Medical Licensure Compact as a potential strategy to overcome telehealth licensure barriers.⁴⁶

Although officials from the payer association we selected did not rate the significance of barriers to telehealth or remote patient monitoring use, they confirmed that cost increases and inadequate payment, as well as infrastructure requirements, are barriers to the use of these technologies. For example, officials cited as barriers equipment costs and the distribution of equipment to patients. Additionally, they discussed concerns about problems with the interoperability of platforms and devices used for telehealth.⁴⁷

⁴⁶The Interstate Medical Licensure Compact is a voluntary expedited pathway to licensure for physicians who wish to practice in multiple states.

⁴⁷Interoperability is the ability of two or more systems or components to exchange information and to use the information that has been exchanged. See GAO, *Electronic Health Records: DOD and VA Have Increased Their Sharing of Health Information, but More Work Remains*, GAO-08-954 (Washington, D.C.: July 28, 2008).

CMS Has Various Efforts Underway That Have the Potential to Expand the Use of Telehealth and Remote Patient Monitoring in Medicare

CMS has efforts underway that have the potential to expand the use of telehealth and remote patient monitoring in Medicare. First, CMS supports models and demonstrations that offer alternative approaches to health care payment and delivery.⁴⁸ Second, CMS's new Medicare payment program allows participating clinicians to use telehealth, and to some extent remote patient monitoring, to help them achieve some of the goals of the payment program.⁴⁹

CMS Models and Demonstrations

The Patient Protection and Affordable Care Act created the Innovation Center within CMS to test innovative payment and service delivery models to reduce Medicare, Medicaid, and state Children's Health Insurance Program expenditures while preserving or enhancing the quality of care for beneficiaries of the programs.⁵⁰ The Innovation Center also supports Medicare demonstration projects, which study the likely impact of new methods of service delivery, coverage of new types of services, and new payment approaches on beneficiaries, providers, health plans, states, and the Medicare trust funds. The Innovation Center has the authority to waive Medicare telehealth requirements as part of its efforts to implement and test these models and, as allowed by other statutory authorities, as part of testing demonstrations.

⁴⁸Models are new payment and service delivery structures developed by CMS under the authority of section 1115A of the Social Security Act. Demonstration projects study the likely impact of new methods of service delivery, coverage of new types of services, and new payment approaches on beneficiaries, providers, health plans, states, and the Medicare trust funds. These demonstration projects are established under other statutory authorities.

⁴⁹The Merit-based Incentive Payment System applies to eligible clinicians, defined as physicians, physician assistants, nurse practitioners, clinical nurse specialists, certified registered nurse anesthetists, and groups that include such clinicians who bill under Medicare Part B. While we refer to "providers" elsewhere in our report, we use the term "clinicians" when discussing the Merit-based Incentive Payment System.

⁵⁰Pub. L. No. 111-148, §§ 3021, 10306, 124 Stat. 119, 389, 939 (codified at 42 U.S.C. § 1315a).

According to CMS, telehealth waivers may broaden access to telehealth services, and CMS's Innovation Center has used its authority, and other statutory authorities as applicable, to waive Medicare telehealth requirements for eight models and demonstrations in certain circumstances.⁵¹ Specifically, CMS's Innovation Center waived certain requirements regarding the geographic location or types of permitted sites at which beneficiaries can receive telehealth services for four models:

- Next Generation ACOs are groups of doctors, hospitals, and other health care providers and suppliers who come together voluntarily to provide coordinated, high-quality care at lower costs to their Medicare patients.⁵²
- Two Bundled Payments for Care Improvement models link payments for the multiple services beneficiaries receive during an episode of care.⁵³ Under this initiative, organizations enter into payment arrangements that include financial and performance accountability for episodes of care.
- The Comprehensive Care for Joint Replacement Model aims to support better and more efficient care for beneficiaries undergoing hip and knee replacements, which are the most common inpatient surgeries for Medicare beneficiaries.⁵⁴

Additionally, CMS officials told us that three Episode Payment Models will have telehealth waivers removing Medicare's geographic and permitted site telehealth requirements beginning sometime in calendar year 2017 and will pay providers for care based on the following conditions treated:

- acute myocardial infarction,

⁵¹The Social Security Act provides authority for the Secretary of Health and Human Services to waive Medicare payment requirements as may be necessary for the Innovation Center to test payment and delivery service models. According to CMS officials, the statutory authorities of certain demonstrations have provided similar authority to waive Medicare telehealth requirements.

⁵²As of January 2017, there were 45 Next Generation ACO model participants.

⁵³When we refer to the Bundled Payments for Care Improvement Model, we are referring to model two, Retrospective Acute & Post Acute Care Episode, and model three, Retrospective Post Acute Care Only, which are the two Bundled Payments for Care Improvement models with access to the telehealth waiver. As of January 2017, model two has 577 participants and model three has 779 participants.

⁵⁴Comprehensive Care for Joint Replacement Model participation is required in 67 Metropolitan Statistical Areas.

- coronary artery bypass grafts, and
- surgical hip and femur fractures.⁵⁵

Furthermore, in one demonstration that aims to develop and test new models of integrated health care in sparsely populated rural counties—the Frontier Community Health Integration Project Demonstration—CMS allows participants to receive cost-based payments for telehealth when their location serves as the originating site, rather than the approximately \$25 fixed fee that CMS otherwise pays originating sites.⁵⁶ See table 2 for more information on the Medicare telehealth requirements waived for these models and demonstrations.

CMS officials told us that the Innovation Center also has the authority to waive requirements regarding payment for telehealth services for payment and delivery service models, but that the Innovation Center identified waiving requirements regarding the originating site as the best way to provide broader access to telehealth.⁵⁷ The Innovation Center could potentially waive other telehealth requirements if it decided to do so in the future.

⁵⁵According to CMS officials, the Acute Myocardial Infarction Model and the Coronary Artery Bypass Graft Model will be implemented in 98 Metropolitan Statistical Areas, accounting for approximately 1,127 hospitals, and the Surgical Hip and Femur Fracture Treatment Model will be implemented in the 67 Metropolitan Statistical Areas where the Comprehensive Care for Joint Replacement Model is also occurring, accounting for 866 hospitals.

⁵⁶The Frontier Community Health Integration Project Demonstration has 10 rural health care participants, and of those, 8 have telehealth as a demonstration intervention tool. CMS officials told us that CMS initially explored implementing a store-and-forward waiver for this demonstration, which would have allowed providers to, for example, take a photo of a skin condition, then send that photo to a dermatologist at a distant site for review. CMS officials told us they determined that it was not operationally feasible to implement that waiver within the demonstration period.

⁵⁷CMS officials told us that CMS also has the authority to waive some telehealth requirements for other demonstration projects through other statutory authority.

Table 2: Medicare Telehealth Requirements Waived for Selected Models and Demonstrations

Requirement	Change in Medicare telehealth requirement under waiver	Applicable models and demonstrations
Originating site geography	<p>This waiver removes the requirement that telehealth only occur in</p> <ul style="list-style-type: none"> • a rural health professional shortage area, • a county that is not included in a Metropolitan Statistical Area, or • an entity that participates in a federal telehealth demonstration project (referred to as telemedicine demonstration projects in statute) approved by or receiving funding from the Secretary of Health and Human Services as of December 31, 2000. 	<p>Bundled Payments for Care Improvement Model^a</p> <p>Comprehensive Care for Joint Replacement Model</p> <p>Episode Payment Models^b</p> <p>Next Generation Accountable Care Organizations</p>
Originating site type	<p>The waiver allows for telehealth services to be furnished in the patient's home or place of residence and eliminates the requirement that the patient receiving telehealth services must be at one of the specified originating sites:</p> <ul style="list-style-type: none"> • physician or provider office, • critical access hospital, • rural health clinic, • federally qualified health center, • hospital, • hospital-based or critical access hospital-based renal dialysis center or satellites, • skilled nursing facility, or • community mental health center. <p>The waiver eliminates the requirement to pay originating site fees when telehealth services are provided in the patient's home.</p>	<p>Comprehensive Care for Joint Replacement Model</p> <p>Episode Payment Models^b</p> <p>Next Generation Accountable Care Organizations</p>
Originating site facility fee	<p>The waiver allows participants to receive cost-based payment for telehealth when they are the originating site, rather than the approximately \$25 set fee for originating sites.</p>	<p>Frontier Community Health Integration Project Demonstration</p>

Source: GAO analysis of Medicare statute and Centers for Medicare & Medicaid Services (CMS) regulations. | GAO-17-365

Note: The term "originating site" refers to the location where the patient is located while receiving a telehealth service.

^aThe Bundled Payments for Care Improvement Model refers in this case only to Bundled Payments for Care Improvement models two and three.

^bEpisode Payment Models refer to three models for episodes of care surrounding (1) acute myocardial infarction, (2) coronary artery bypass graft, and (3) surgical hip/femur fracture treatment. CMS officials told us that these models would begin sometime in calendar year 2017.

In calendar year 2015, 15 Next Generation ACOs submitted implementation plans that detailed their proposed strategies to implement the telehealth waiver.⁵⁸ Eleven out of the 15 expected to use telehealth to provide increased access to specialty providers.⁵⁹ For example, one participant reported that it would use telehealth to establish a virtual network of specialists who could provide telehealth consultations to patients in areas such as cardiology, rheumatology, and psychiatry. In addition, 8 out of 15 Next Generation ACOs included plans to use telehealth to improve care for patients with chronic conditions.⁶⁰ For example, one participant planned to use telehealth to connect beneficiaries who have chronic diseases—such as congestive heart failure, diabetes, and pulmonary diseases—with their care team, including specialty providers.

As table 3 shows, the Innovation Center models and demonstration with waivers are in various stages of implementation, and their participants are using telehealth to varying degrees.

⁵⁸There were 18 Next Generation ACOs operating in calendar year 2016, and of those, 15 provided CMS with implementation plans to use telehealth waivers. CMS officials told us that implementation plans were also required for the Frontier Community Health Integration Project Demonstration, but not for the other models with telehealth waivers.

⁵⁹The remaining four Next Generation ACOs may plan to provide increased access to specialty providers through the use of telehealth; however, their implementation plans did not explicitly state that this was the ACOs' intent under the waiver.

⁶⁰The remaining seven Next Generation ACOs may plan to use telehealth to improve care for patients with chronic conditions; however, their implementation plans did not explicitly state that this was the ACOs' intent under the waiver.

Table 3: Telehealth Use by Selected Models and Demonstrations with Waivers of Certain Medicare Requirements

Model or demonstration	Time period of services	Number of Medicare telehealth services provided	Additional information
Bundled Payments for Care Improvement Model ^a	October 2013-June 2015	7	CMS officials told us that during this period model participants performed a total of 166,000 services.
Next Generation Accountable Care Organization (ACO) Model	January 2016-June 2016	1,422	According to CMS officials, telehealth services were concentrated among a few ACOs. One ACO accounted for more than half of all the telehealth claims, and five each had more than 50 telehealth claims. CMS officials said that around one-third of the telehealth services provided were for beneficiaries residing in urban areas, and the officials said they could attribute this use to the waiver.
Comprehensive Care for Joint Replacement Model	April 2016-September 2016	0	CMS officials said that as of January 2017 these data were still preliminary and may not include all claims for care that occurred between April 2016 and September 2016. As a result, there may be claims for telehealth services delivered as part of the Comprehensive Care for Joint Replacement Model during that time frame that are not yet reflected in CMS's claims data.
Frontier Community Health Integration Project Demonstration	n/a	n/a	CMS officials told us that as of January 2017, they did not have data on the utilization of the originating site facility fee waiver, as the demonstration has only been operational for a few months.
Episode Payment Model ^b	n/a	n/a	CMS officials told us that these models would begin sometime in calendar year 2017.

Source: GAO analysis of Centers for Medicare & Medicaid Services (CMS) reports and interviews. | GAO-17-365

Note: n/a = not applicable.

^aThe Bundled Payments for Care Improvement Model refers in this case only to Bundled Payments for Care Improvement model two and three.

^bEpisode Payment Models refer to three models for episodes of care surrounding (1) acute myocardial infarction, (2) coronary artery bypass graft, and (3) surgical hip/femur fracture treatment.

In addition to the models and demonstrations in which CMS waives certain telehealth requirements, other models and demonstrations may affect the use of telehealth, as described in the following examples.

- Under its Health Care Innovation Award program, CMS funds cooperative agreements that the agency identifies as the most compelling new ideas to deliver better health, improve care, and lower costs to Medicare, Medicaid, and state Children's Health Insurance

Program beneficiaries.⁶¹ Some of these projects include initiatives focused on telehealth and remote patient monitoring.⁶² For example, one award supported efforts to use telehealth and remote patient monitoring to provide care for urban and rural Medicare patients receiving intensive care. An evaluation of this awardee found the effort was associated with a reduction in hospital readmissions.⁶³

- According to CMS documents, in the Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents—which aims to improve the quality of care for individuals residing in long-term care facilities by reducing avoidable hospitalizations—a participant plans to use telehealth to evaluate nursing home residents whose conditions worsen at night when physicians are not present.⁶⁴
- The Independence at Home Demonstration, which tests a payment incentive and service delivery model that uses primary care teams to provide in-home primary care to Medicare beneficiaries with multiple chronic conditions, includes practices that have the ability to use remote monitoring and mobile diagnostic technology with their patients.⁶⁵

For more examples of how telehealth and remote patient monitoring may be used in models and demonstrations, see appendix VII.

⁶¹A cooperative agreement is a legal instrument used to provide financial support when substantial interaction is expected between a federal agency and a state, local government, or other recipient carrying out the funded activity.

⁶²Round one of the Health Care Innovation Awards funded up to \$1 billion in awards over three years through cooperative agreements. A 2015 CMS report shows that 17 of the agency's 108 round one Health Care Innovation Awards include a telehealth or remote patient monitoring component. Department of Health and Human Services, Center for Medicare & Medicaid Innovation, *Health Care Innovation Awards (HCIA) Meta-Analysis and Evaluators Collaborative, Annual Report Year 1*.

⁶³Round two of the Health Care Innovation Awards funded up to \$360 million in awards. CMS officials told us that of the 39 round two Health Care Innovation Awards, 7 focused on telehealth. The officials told us the awards were underway and that evaluation results are not yet available.

⁶⁴As of January 2017, there were seven organizations selected for the Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents.

⁶⁵This demonstration supports home-based primary care for Medicare beneficiaries with multiple chronic conditions.

Merit-based Incentive Payment System

Beginning in 2017, CMS will implement the Quality Payment Program, which will include a new Medicare payment program—the Merit-based Incentive Payment System—for physicians and other clinicians. The Merit-based Incentive Payment System will consolidate components of programs currently used to tie payments to quality and provide incentives for quality, resource use, clinical practice improvement activities, and advancing care information through the meaningful use of electronic health record technology.⁶⁶ Under this payment program, clinicians can use telehealth in certain ways to meet the criteria in the program’s improvement activities performance category, which can help clinicians improve their performance under the payment program.⁶⁷ For example, clinicians could use telehealth to coordinate care and, in some cases, to reach patients in remote locations. Additionally, there are some instances when clinicians can use remote patient monitoring to meet Merit-based Incentive Payment System goals—for example, using home monitoring to remotely gather information to determine a patient’s proper dose of blood thinning medication. According to CMS officials, clinicians using telehealth and remote patient monitoring for these purposes do not have to bill Medicare for the service in order to receive credit for it under the Merit-based Incentive Payment System, and these services can count for credit under the improvement activities performance category regardless of whether they meet the statutory telehealth requirements. However, if clinicians want to bill Medicare for these services, the service must meet Medicare’s statutory requirements for payment.

Agency and Third-Party Comments

We provided a draft of this report to HHS, DOD, and VA for review and comment. These departments provided technical comments, which we incorporated as appropriate.

⁶⁶81 Fed. Reg. 77010. Components of the previously separate Physician Quality Reporting System, Physician Value-based Payment Modifier program, and Medicare electronic health record incentive program will be merged into the Merit-based Incentive Payment System so that payments for most physicians will reflect physician performance on both quality measures and electronic health record use. See GAO-17-55.

⁶⁷Improvement activities are those that support broad aims within health care delivery, including care coordination, beneficiary engagement, population management, and health equity.

We also provided relevant draft portions of this report to stakeholders we interviewed. Specifically, we provided these excerpts to state Medicaid program officials for Connecticut, Illinois, Kansas, Mississippi, Montana, and Oregon; representatives of selected provider, patient, and payer associations; and officials from selected private payers. Not all of the stakeholders responded. One state and one association confirmed that the information we provided was accurate. In addition, three states, four associations, and three private payers provided technical comments, which we incorporated as appropriate.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Health and Human Services, Secretary of the Department of Defense, Secretary of the Department of Veterans Affairs, and to other interested parties. In addition, the report is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-7114 or YocomC@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix VIII.



Carolyn L. Yocom
Director, Health Care

List of Requesters

The Honorable Orrin Hatch
Chairman
The Honorable Ron Wyden
Ranking Member
Committee on Finance
United States Senate

The Honorable Lamar Alexander
Chairman
The Honorable Patty Murray
Ranking Member
Committee on Health, Education, Labor, and Pensions
United States Senate

The Honorable Greg Walden
Chairman
The Honorable Frank Pallone
Ranking Member
Committee on Energy and Commerce
House of Representatives

The Honorable Kevin Brady
Chairman
The Honorable Richard Neal
Ranking Member
Committee on Ways and Means
House of Representatives

Appendix I: Use of Remote Patient Monitoring by Selected Private Payers

As part of our work, we interviewed officials from health plans in the private insurance market (private payers) about the use of remote patient monitoring.¹ This appendix provides the results of those interviews. Officials from three of the top private payers (based on market share) told us that providers can use remote patient monitoring in their health care systems when it is indicated for a patient's condition.²

Officials from the three private payers told us they have limited data on the extent to which remote patient monitoring is used. They told us they did not have data available because, for example, remote patient monitoring services are usually part of a care management program in which charges are bundled and not billed and detailed separately. It is therefore difficult to distinguish remote patient monitoring services from services provided via telehealth, officials explained. Some of the health plans of these three private payers reimburse for remote patient monitoring on a fee-for-service basis, while others include it as part of the services offered through integrated delivery systems that do not reimburse for separate services.

Officials from one private payer explained that they want physicians to decide which patients, conditions, problems, and circumstances are most suited to remote patient monitoring. This private payer does not reimburse physicians on a fee-for-service basis, noting that incentives, such as payment, can drive behavior. As an example, if the provider receives reimbursement based on the amount of monitoring, the provider

¹Remote patient monitoring is a technology to enable monitoring of patients outside of conventional clinical settings, such as the home.

²The three private payers we interviewed were in the top five payers by market share in the accident and health insurance industry based on the National Association of Insurance Commissioners' 2015 report. See National Association of Insurance Commissioners, *2014 Market Share Reports: For the Top 125 Accident and Health Insurance Groups and Companies by State and Countrywide* (2015).

may file more claims for monitoring, regardless of whether the use is driven by evidence-based care processes. Instead, officials from this private payer stated that their incentives focus on the care outcomes of physicians' patients, and they pay physicians based on the quality of the outcomes by disease population. Officials explained that they are currently rolling out programs to track diabetic patients' blood sugar by monitoring what they eat, the exercise they get, and how they live. Additionally, this private payer has been using remote patient monitoring for patients with heart failure for some time, and officials told us that data gathered through monitoring of weight and blood pressure are good predictors of early deterioration of heart conditions. Similarly, this private payer has a program for patients with hypertension that monitors a patient's stress level.

Officials from a second private payer stated that they reimburse for remote patient monitoring in a manner that is appropriate for the specific condition being treated. For example, they reimburse for cardiologic remote patient monitoring if the patient has symptoms that are indications for the use of monitoring. If the condition does not indicate cardiologic monitoring, the private payer does not reimburse for this monitoring. Officials from this second private payer said they are reimbursing for remote patient monitoring that is used in real time to monitor patients with one or more chronic conditions and for high-risk patients. For example, the service is used to monitor blood pressure for hypertension, weight changes for congestive heart failure, and real-time blood sugar for diabetes. According to these private payer officials, providers typically use remote patient monitoring in the short-term and episodically, or to retrospectively look at monitoring results to make a clinical decision. Remote patient monitoring is also used to connect health plan members with their care managers, and these managers can notify providers to intervene if the monitoring indicates a need. This private payer also has various pilot programs related to remote patient monitoring, including a program for its members with varying levels of congestive heart failure.

Officials from the third private payer told us that if remote patient monitoring is indicated by a patient's condition, then the provider can order its use. Some of the payer's private plans are integrated delivery systems for overall care, and in these plans providers are not paid separately for remote patient monitoring. According to officials, their agreements with providers are designed to encourage providers to use data from all sources, such as claims information, electronic medical records, and remote patient monitoring. The private payer also contracts with accountable care organizations and enters into payment

arrangements with provider groups.³ Those entities use remote patient monitoring and the information obtained through monitoring as part of their care management of patients. This private payer's fee-for-service plans reimburse for remote patient monitoring services, including cardiac services.

Officials from all three private payers told us that there are challenges to using remote patient monitoring in the private sector. For example, officials from one private payer said that barriers to the use of remote patient monitoring can include the need to set up equipment in the patient's home, interact with members with cognitive and physical disabilities and their caregivers, and address technical difficulties with the equipment.

³Accountable care organizations are groups of physicians, hospitals, and other health care providers who voluntarily work together to provide coordinated care to the Medicare patients they serve.

Appendix II: Scope and Methodology for Identifying Factors Affecting the Use of Telehealth and Remote Patient Monitoring

We administered a data collection instrument to selected associations representing providers, patients, and payers to obtain information on the factors that encourage the use of telehealth and remote patient monitoring in Medicare or are barriers to their use. To develop the data collection instrument, we identified a list of potential factors and barriers based on background research and initial interviews with two groups with an interest in telehealth. Table 4 displays the list of factors that encourage use or are barriers to use as they appeared in the data collection instrument.¹ For the purposes of the data collection instrument, we defined telehealth as clinical services that are provided remotely via telecommunications technologies, and we defined remote patient monitoring as a technology to enable monitoring of patients outside of conventional clinical settings, such as in the home.

Table 4: Potential Factors that Encourage the Use or Are Barriers to the Use of Telehealth or Remote Patient Monitoring in Medicare Used in the Data Collection Instrument

Potential factors that encourage or are barriers ^a	If Yes, how significant is the factor that encourages or is a barrier?			
	Is this a factor that encourages or is a barrier (Y/N)?	Not Significant	Somewhat Significant	Very Significant
Factors that encourage use				
Alleviation of provider shortages/scheduling problems				

¹For the purposes of this report, we combined the tables for factors that encourage use or are barriers to use in one table. In the data collection instrument, the factors that encourage use or are barriers to use were separate for both telehealth and remote patient monitoring.

Appendix II: Scope and Methodology for Identifying Factors Affecting the Use of Telehealth and Remote Patient Monitoring

Potential factors that encourage or are barriers ^a	If Yes, how significant is the factor that encourages or is a barrier?			
	Is this a factor that encourages or is a barrier (Y/N)?	Not Significant	Somewhat Significant	Very Significant
Convenience for the patient				
Cost reduction				
Coverage of services				
Emerging Medicare payment structures or waivers				
Enabling the use of emerging technology				
Health Resources and Services Administration telehealth grant programs/other federal initiatives				
Improving or maintaining quality of care				
Other: please list any other factors				
Barriers to use				
Concern regarding quality of care				
Cost increase or inadequate payment				
Coverage of services				
Cultural factors ^b				
Infrastructure requirements ^c				
Pace of changing technology				
Privacy and security concerns				
Professional licensure issues				
Provider/patient training requirements				
Other: please list any other barriers				

Source: GAO analysis of background research documents and interviews with two groups with an interest in telehealth. | GAO-17-365

Note: Remote patient monitoring is a technology to enable monitoring of patients outside of conventional clinical settings, such as in the home.

^aWe used the word “incentive” in the data collection instrument, which we are referring to as “factors that encourage” for the purpose of our report.

^bCultural factors may include language and technological literacy, among others.

^cInfrastructure requirements may include access to broadband internet, imaging technology or peripherals, and wireless communications systems, among others.

To identify associations that might have an interest in telehealth and remote patient monitoring, we conducted background research, interviewed two groups with an interest in telehealth, and used knowledge from our previous engagements to judgmentally select associations based on their relevance and expertise. We chose associations that represented three health care perspectives—providers, patients, and payers. In addition, we chose medical specialty associations that represent common conditions for which telehealth or remote patient

monitoring may be used, or could be beneficial, during the course of treatment, such as stroke, heart disease and congestive heart failure, and mental health. We included nine associations in our review: six associations that represent providers, two associations that represent patients, and one association representing payers.²

A representative of the payer association we spoke with told us that it did not have sufficient time to survey its members and could not complete our data collection instrument without doing so. Therefore, we reported separately the payer association's views on factors that encourage the use of, or are barriers to, telehealth and remote patient monitoring. For the payer association, we interviewed officials to identify factors that encourage use or are barriers to the use of telehealth and remote patient monitoring in Medicare. We used professional judgment based on information obtained throughout the course of our engagement to match the payer association officials' statements on factors that encourage use or are barriers to use with corresponding data collection instrument factors that encourage use or are barriers to use.

After identifying the associations, we administered the data collection instrument and requested that officials from each association rate each factor that encourages the use of telehealth and remote patient monitoring and each barrier to use. We requested that officials rate factors that encourage telehealth use, factors that encourage remote patient monitoring use, barriers to telehealth use, and barriers to remote patient monitoring use. For example, if an official identified a factor as encouraging the use of telehealth, we requested that the official rate the factor as not significant, somewhat significant, or very significant.

To identify the factors that encourage use or are barriers to use that were rated either most often or more often "very significant" or "somewhat significant" by the associations who completed our data collection instrument, we developed the following scoring system.

²These associations are AARP, America's Health Insurance Plans, American Heart Association/American Stroke Association, American Hospital Association, American Medical Association, American Telemedicine Association, National Association of Rural Health Clinics, National Patient Advocate Foundation, and Remote Cardiac Services Provider Group.

- Highest points (5) were assigned to an individual factor when an association rated it very significant for both telehealth and remote patient monitoring.
- Next highest points (3) were assigned to an individual factor when an association rated it very significant for either telehealth or remote patient monitoring and somewhat significant for either telehealth or remote patient monitoring.
- Lowest points (1) were assigned to an individual factor when an association rated it somewhat significant for both telehealth and remote patient monitoring.

No points were assigned for any other rating combinations.

We used this scoring system to separately calculate total points assigned to (1) each individual factor that encouraged use, and (2) each factor considered to be a barrier to use. Within either group (either among those that encouraged use or among those that were considered barriers to use), if any one or two factors had measurably greater scores than the other factors, those factors were reported as rated most often very significant or somewhat significant. Additionally, we determined whether any other factor or several factors had obviously higher scores than the remaining factors that either encourage use or are a barrier to use, and we reported those factors as rated more often very significant or somewhat significant.

We also interviewed officials from each association using a structured question set to obtain examples of how these factors can encourage or create barriers to the use of telehealth and remote patient monitoring in Medicare. Finally, we obtained and reviewed any relevant documentation from these associations. The perspectives we obtained using the data collection instrument, from our document reviews, and during our interviews with association officials provided insights regarding officials' views about the factors that encourage the use of telehealth and remote patient monitoring and the factors that are barriers to their use. These perspectives cannot be generalized to other associations or officials.

Appendix III: Medicare Telehealth Services Added and Denied by the Centers for Medicare & Medicaid Services, 2011-2016

The Centers for Medicare & Medicaid Service (CMS)—an agency within the Department of Health and Human Services—has a process for adding or denying proposed services to the list of Medicare telehealth services.¹ This process provides the public with an ongoing opportunity to submit requests for adding services. Under this process, CMS assigns requests to one of two categories:

1. services that are similar to professional consultations, office visits, and office psychiatry services that are currently on the list of telehealth services; and
2. services that are not similar to the current list of telehealth services. In reviewing these requests, CMS looks for evidence indicating that the use of a telecommunications system in furnishing the requested telehealth service produces clinical benefit for the patient.

The most common reason a proposed service was added for payment from calendar years 2011 through 2016 was similarity to a service already on the list of telehealth services. See table 5 for the Current Procedural Terminology and Healthcare Common Procedure Coding System codes that were approved by CMS, including the reason for adding the service, from calendar year 2011 through calendar year 2016.

¹Medicare pays for a limited number of Part B services furnished by a physician or provider to an eligible beneficiary via a telecommunications system. Part B services include physician and outpatient hospital services. For eligible telehealth services, the use of a telecommunications system substitutes for an in-person encounter.

**Appendix III: Medicare Telehealth Services
Added and Denied by the Centers for Medicare
& Medicaid Services, 2011-2016**

Table 5: Telehealth Service Codes Added by the Centers for Medicare & Medicaid Services (CMS), Calendar Years 2011 through 2016

Calendar year	Service code	Description of service	CMS rationale for adding the service
2011	G0108 G0109	Individual and group diabetes outpatient self-management training services	CMS initially denied this in 2009 because it might involve injection training. The agency approved it as sufficiently similar to G0270 medical nutrition therapy, but requires 1 hour of in-person injection training.
2011	G0420 G0421	Individual and group kidney disease education	Similar to another telehealth code, G0270 medical nutrition therapy.
2011	96153 96154 97804	Group medical nutrition therapy services, and group Health Behavior Assessment and Intervention services	Similar to other telehealth codes.
2011	99231 99232 99233	Subsequent hospital care services	Similar to follow-up inpatient consultation services. These services can only be furnished through telehealth once every 3 days.
2011	99307 99308 99309 99310	Subsequent nursing facility care services	Similar to other telehealth codes. These services can only be furnished through telehealth once every 30 days.
2012	99406 99407 G0436 G0437	Smoking and tobacco use cessation counseling, intermediate and intensive	Similar to individual kidney disease education reported by code G0420 and individual medical nutrition therapy services reported by G0270, 97802, and 97803.
2013	G0396 G0397	Alcohol and substance abuse assessment, 15 to 30 minutes and greater than 30 minutes, respectively	Similar to an existing telehealth service: smoking cessation counseling 99406 and 99407.
2013	G0442 G0443 G0444 G0445 G0446 G0447	Screening for behavioral conditions: alcohol misuse and counseling, depression, sexually transmitted infections, cardiovascular disease, and obesity	Similar to existing behavioral intervention telehealth codes.
2014	99495 99496	Transitional care management services with follow up communication, 14 days and 7 days after discharge, respectively	Similar to other telehealth services.
2015	G0438 G0439	Annual wellness visit, initial and subsequent, respectively	Similar to existing behavioral intervention telehealth codes.
2015	90845 90846 90847	Psychoanalysis, family psychotherapy without patient, and family psychotherapy with patient, respectively	Similar to existing behavioral intervention telehealth codes.
2015	99354 99355	Prolonged service in the office or other outpatient setting requiring direct patient contact beyond the usual service, first hour and each additional 30 minutes, respectively	Similar to existing behavioral intervention telehealth codes.

**Appendix III: Medicare Telehealth Services
Added and Denied by the Centers for Medicare
& Medicaid Services, 2011-2016**

Calendar year	Service code	Description of service	CMS rationale for adding the service
2016	90963 90964 90965 90966	End-stage renal disease related services for home dialysis per full month; patients younger than ages 2, 2-11, 12-19, and 20+, respectively	Similar to existing psychiatric diagnostic procedures or office/outpatient visits codes.
2016	99356 99357	Prolonged service in the inpatient or observation settings, requiring unit/floor time beyond the usual service; first hour and additional 30 minutes, respectively	Similar to existing psychiatric diagnostic procedures or office/outpatient visits codes.

Source: GAO analysis of Federal Register Notices for Medicare Telehealth Services. | GAO-17-365

There are several reasons that CMS denied proposed services for its approved telehealth list for calendar years 2011 through 2016. These reasons are, for example, that

- the service was not like any other on the telehealth list, and the requester could not prove to CMS that the service is effective when furnished through telehealth;
- the service was furnished by a provider or in a location that is not allowed under Medicare;
- the service was not face-to-face when not provided via telehealth; and
- the service required face-to-face care because of patient acuity or another factor.

See table 6 for the Current Procedural Terminology and Healthcare Common Procedure Coding System codes that were denied by CMS and the reasons for denial, from calendar year 2011 through calendar year 2016.

**Appendix III: Medicare Telehealth Services
Added and Denied by the Centers for Medicare
& Medicaid Services, 2011-2016**

Table 6: Telehealth Service Codes Denied by the Centers for Medicare & Medicaid Services (CMS), Calendar Years 2011 through 2016

Calendar year	Service code	Description of service	CMS rationale for denial
2011	96119	Neuropsychological testing	Not similar to other telehealth services; no studies were provided on the efficacy of this service when provided through telehealth.
2011	99221 99222 99223	Level 1, 2, and 3 initial hospital care, respectively	No current telehealth codes resemble initial hospital care like these, and CMS was not convinced by studies provided in support of the request.
2011	99238 99239	Hospital discharge management, less than 30 minutes and more, respectively	There are no services on the current list of telehealth services that resemble such preparation of a patient for discharge. CMS was not convinced by the studies provided in support of the request.
2011	99304 99305 99306 99315 99316 99318	Nursing facility care codes—initial, discharge, and annual assessment	Codes 99304, 99305, 99306, and 99318 are federally-mandated nursing facility visits that should be provided in person. Codes 99315 and 99316 are not required to be furnished under Medicare, but if a provider chooses to provide these services, the services should be provided in person. No current telehealth codes resemble this preparation of a patient for discharge, and CMS did not have evidence that these services provided via telehealth are equivalent to in-person services.
2011	No code provided	Home wound care	The home is not an eligible telehealth originating site under Medicare.
2011	No code provided	Speech language pathology services	Speech language pathologists are not eligible telehealth providers under Medicare.
2012	96040	Medical genetics and genetic counseling services	The services under this code would only be furnished by genetics counselors, who are not eligible telehealth providers.
2012	99090 99091	Analysis of clinical data stored in computers and collection and interpretation of physiologic data	As explained in a 2002 final rule, this code is part of pre- and post-work for a separate and unspecified evaluation and management code. These codes are not separately payable. CMS also denied these codes in 2015.
2012	99291 99292	Critical care, evaluation and management of the critically ill or critically injured patient, first 30 to 74 minutes and each additional 30 minutes, respectively	Previously considered and denied adding these codes in 2009 and 2010 because critical care services are not similar to any services on the current list of Medicare telehealth services and CMS believes patients requiring critical care services are more acutely ill than typical patients receiving telehealth services. Additionally, CMS did not have evidence that these services provided via telehealth are equivalent to in-person services.
2012	99334 99335 99336 99337	Domiciliary or rest home evaluation and management visit; 15 minute visit, 25 minute visit, 40 minute visit, and 60 minute visit respectively	A domiciliary or rest home is not an eligible telehealth originating site under Medicare.
2012	99444	Online evaluation and management	As indicated in 2008, 2012, 2014, and 2016, this is a noncovered service because it is non-face-to-face and the language of the descriptor indicates that the service could be for noncovered entities, like guardians.
2012	No code provided	Audiology services	Audiologists are not authorized telehealth providers under Medicare.

**Appendix III: Medicare Telehealth Services
Added and Denied by the Centers for Medicare
& Medicaid Services, 2011-2016**

Calendar year	Service code	Description of service	CMS rationale for denial
2013	99408 99409	Alcohol and substance abuse screening, 15 to 30 minutes and greater than 30 minutes, respectively	These are noncovered services under the Physician Fee Schedule. ^a As explained in 2008, Medicare only provides payment for certain screening services with an explicit benefit category. However, CMS created parallel codes—G0396 and G0397—and approved those for the telehealth list.
2014	98969	Online assessment and management service provided by a non-physician	These are noncovered services because it is non-face-to-face and the language of the descriptor indicates that the service could be for noncovered entities, like guardians.
2014	99444	Online evaluation and management	As indicated in comments for 2008, 2012, 2014, and 2016, this is a noncovered service because it is non-face-to-face and the language of the descriptor indicates that the service could be for noncovered entities, like guardians.
2015	57452 57454 57460	Colposcopy of the cervix, colposcopy of the cervix with biopsy, and colposcopy of the cervix with loop electrode biopsy(s) of the cervix, respectively	These services are not similar to other services on the telehealth list and the requester did not submit evidence to support the clinical benefit of furnishing these services via telehealth.
2015	90887 99090 99091 99358 99359	Interpretation of psychiatric examinations, analysis of clinical data stored in computers, collection and interpretation of physiologic data, prolonged evaluation and management, first hour and each additional 30 minutes, respectively	Medicare does not make a separate payment for these services.
2015	92250 93010 93307 93308 93320 93321 93325	Fundus photography with interpretation and report, and five types of echocardiography services	These services include a technical component and a professional component. By definition, the technical component portion of these services needs to be furnished in the same location as the patient and thus cannot be furnished via telehealth.
2015	96103 96120	Psychological testing, neuropsychological testing, respectively	These services involve testing by computer, can be furnished remotely without the patient being present, and are payable in the same way as other physicians' services. These services are not Medicare telehealth services.
2015	96101 96102 96118 96119	Psychological testing per hour of physician time and technician time; neuropsychological testing per hour of physician time and technician time, respectively	These services are not similar to other services on the telehealth list, as they require close observation of how a patient responds. The requester did not submit evidence supporting the clinical benefit of furnishing these services via telehealth.
2015	No code provided	Urgent dermatologic problems and wound care	Without a specified code, CMS cannot determine if this is an appropriate telehealth service.

**Appendix III: Medicare Telehealth Services
Added and Denied by the Centers for Medicare
& Medicaid Services, 2011-2016**

Calendar year	Service code	Description of service	CMS rationale for denial
2016	99291 99292	Critical care, evaluation and management of the critically ill or critically injured patient, first 30 to 74 minutes and each additional 30 minutes, respectively	Previously considered and denied adding these codes in 2009, 2010, and 2012 because critical care services are not similar to any services on the current list of Medicare telehealth services, and CMS believes patients requiring critical care services are more acutely ill than typical patients receiving telehealth services. Additionally, CMS did not have evidence that these services provided via telehealth are equivalent to in-person services. In 2016, CMS did not find that the submitted evidence demonstrates a clinical benefit to the patient.
2016	99358 99359	Prolonged evaluation and management service before or after direct patient care, first hour and each additional 30 minutes, respectively	As indicated in 2015, Medicare does not make a separate payment for these services.
2016	99444	Online evaluation and management	As indicated in 2008, 2012, 2014, and 2016, this is a noncovered service because it is inherently non-face-to-face and the language of the descriptor indicates that the service could be for noncovered entities, like guardians.
2016	99490	Chronic care management services	This service can be furnished without the beneficiary's face-to-face presence and using any number of non-face-to-face means of communication.
2016	99605 99606 99607	Medication therapy management services provided by a pharmacist, initial 15 minutes, new patient; initial 15 minutes, established patient; each additional 15 minutes, respectively	These are noncovered services under the Physician Fee Schedule.
2016	No code provided	All evaluation and management services, telerehabilitation services; and palliative care, pain management and patient navigation services for cancer patients	The requests did not identify specific codes being requested, and two of the requests did not include evidence of any clinical benefit when the services are furnished via telehealth.

Source: GAO analysis of Federal Register Notices for Medicare Telehealth Services. | GAO-17-365

^aMedicare pays for physician and other health professional services based on a list of services and their payment rates, called the Physician Fee Schedule.

Appendix IV: Telehealth and Remote Patient Monitoring Reimbursement and Use in Selected State Medicaid Plans

To better understand how telehealth and remote patient monitoring are used in Medicaid plans, we selected a sample of six states—Connecticut, Illinois, Kansas, Mississippi, Montana, and Oregon—to include in our review, and interviewed Medicaid officials from each of those states. We selected states that provide variation in geography, physical size, percentage of rural population, and other factors related to coverage and reimbursement for health care services.

The Centers for Medicare & Medicaid Services does not limit telehealth and remote patient monitoring use in Medicaid, thus reimbursement and use vary by state. The six states had a range of restrictions for the use of telehealth. For example, Illinois requires a medical professional be present with the patient receiving care at the originating site, while Oregon does not require anyone to be with the patient who is receiving care, at what is known as the originating site. More details on the use of telehealth and remote patient monitoring by selected state are included in table 7.

Table 7: Reimbursement and Use of Telehealth and Remote Patient Monitoring in Selected State Medicaid Programs

State characteristics ^a	Reimbursement of telehealth and remote patient monitoring	Use of telehealth and remote patient monitoring
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Appendix IV: Telehealth and Remote Patient Monitoring Reimbursement and Use in Selected State Medicaid Plans

State characteristics^a	Reimbursement of telehealth and remote patient monitoring	Use of telehealth and remote patient monitoring
Connecticut Small 12 percent rural Primarily fee-for-service	As described in state documentation, Connecticut passed a law effective July 1, 2016, for coverage under the Medicaid program for telehealth services that are (1) clinically appropriate to be provided by means of telehealth, (2) cost effective for the state, and (3) likely to expand access to medically necessary services for Medicaid recipients for whom accessing appropriate health care services poses an undue hardship. A Connecticut official told us that currently, Connecticut reimburses for provider-to-provider consults via secure electronic messaging, and does not reimburse for any other telehealth or remote patient monitoring services.	A Connecticut official told us that the state has considerable health resources and proximity to specialists, both in Connecticut and in neighboring states, and thus has less need for telehealth use.
Illinois Medium 12 percent rural Primarily managed care	As described in state documentation, Illinois requires telehealth patients to be at an originating site with a physician or licensed health care professional or other clinician present. A physician's office, podiatrist's office, local health department, community mental health center, and outpatient hospitals are allowed as originating sites. Allowable providers of telehealth are hospitals, physicians, advanced practice nurses, podiatrists, federally qualified health centers, rural health clinics, and encounter rate clinics. ^b	Illinois officials told us telehealth is used frequently for psychiatric care.
Kansas Large 26 percent rural Primarily managed care	As described in state documentation, Kansas does not limit reimbursement based on patient location and allows reimbursement for home-based telehealth. Kansas also does not limit the providers who can offer telehealth services. Kansas officials told us they reimburse for some remote patient monitoring services, such as monitoring of blood pressure, blood glucose, and weight.	Kansas officials told us that telehealth is a valuable tool, especially in supporting emergency room staff in hospitals without a level I or II trauma center nearby. ^c The state has some experience with remote patient monitoring through a pilot project, which ran from September 2007 to June 2010 and, according to a Kansas report, reduced the rate of emergency department utilization.
Mississippi Medium 51 percent rural Primarily managed care	As described in state documentation, Mississippi reimburses for telehealth services that are medically necessary and would otherwise be covered in an in-person setting. Mississippi requires that telehealth be delivered in a live, interactive audiovisual format and does not reimburse for other types of services, such as telephone and email communication. Mississippi reimburses for telehealth services provided in specific originating sites.	Mississippi officials told us they began reimbursing for telehealth and remote patient monitoring in January 2015. Officials told us they focus their use of telehealth on serving high-cost, high-use beneficiaries.
Montana Large 44 percent rural Primarily fee-for-service	According to state officials, Montana does not restrict the use of telehealth. They started reimbursing for originating site fees in 2014, and have increased the number of sites where they provide an originating site reimbursement fee since 2014. Officials told us that they do not reimburse for remote patient monitoring.	Montana officials told us the state does not have any medical schools and has limited access to specialists. As such, telehealth services are important to providing patients with access to specialty care.

Appendix IV: Telehealth and Remote Patient Monitoring Reimbursement and Use in Selected State Medicaid Plans

State characteristics^a	Reimbursement of telehealth and remote patient monitoring	Use of telehealth and remote patient monitoring
Oregon Large 19 percent rural Primarily managed care	As described in state documentation, Oregon reimburses for medically appropriate covered telehealth services within the patient's benefit package. In its definition of "telemedicine," Oregon does not further specify restrictions on originating sites or provider types.	Oregon officials told us they see telehealth and remote patient monitoring as tools to be used by Oregon's coordinated care organizations (CCO) when appropriate for delivering quality, value-based care. ^d

Source: U.S. Census Bureau data, state documents, and interviews with state officials. | GAO-17-365

Note: The term "originating site" refers to the location where the patient is located while receiving a telehealth service.

^aState size refers to the geographical size of the state and is based on U.S. Census 2010 data. Large states are from the largest third of states by size, medium states are from the middle third, and small states are from the smallest third. Rurality, the percentage of population living in a rural area, is based on U.S. Census 2010 data.

^bEncounter rate clinics are health care providers actively participating in the Illinois Department of Healthcare and Family Services' Medical Assistance Program as an encounter rate clinic as of July 1, 1988; or, a clinic operated by a county with a population of over three million.

^cAccording to the American Trauma Society, trauma center levels (I, II, III, IV, or V) refer to the kinds of resources available in a trauma center and the number of patients admitted yearly. The categorization of trauma center level varies from state to state (including distinctions of adult and pediatric centers). A level I facility is capable of providing total care for every aspect of injury, and a level II trauma center is able to initiate definitive care for all injured patients, while lower levels may not be able to offer as comprehensive of care.

^dAs described in state documentation, Oregon defines a CCO as a network of all types of health care providers (physical health care, addiction and mental health care, and sometimes dental care providers) who have agreed to work together in their local communities to serve people who receive health care coverage under Oregon's Medicaid plan.

Appendix V: Selected Associations' Rating of the Significance of Factors that Affect Telehealth and Remote Patient Monitoring

Through an administered data collection instrument, officials from six associations representing providers and two associations representing patients identified, and rated the significance of, factors that encourage—and barriers that limit—the use of telehealth and remote patient monitoring in Medicare.¹ Officials were asked to respond from the perspective of their association, specifically from a provider or patient perspective, depending on the association.²

Figures 4 and 5 show how provider and patient associations rated the significance of factors that encourage the use of telehealth and remote patient monitoring in Medicare. Figures 6 and 7 show how provider and patient associations rated the significance of barriers to the use of telehealth and remote patient monitoring in Medicare.

¹For the purposes of this report, telehealth refers to clinical services that are provided remotely via telecommunications technologies, while remote patient monitoring is a technology to enable monitoring of patients outside of conventional clinical settings, such as in the home.

²A representative of the payer association we spoke with told us that it did not have sufficient time to survey its members and could not complete our data collection instrument without doing so. Therefore, we reported separately the payer association's views on factors that encourage the use of or are barriers to telehealth and remote patient monitoring.

**Appendix V: Selected Associations' Rating of
the Significance of Factors that Affect
Telehealth and Remote Patient Monitoring**

Figure 4: Significance of Factors That Encourage the Use of Telehealth in Medicare, According to Selected Provider and Patient Associations

Factor that encourages telehealth use	Provider associations						Patient associations	
	A	B	C	D	E	F	G	H
Alleviation of provider shortages/scheduling problems	●	●	●	●	○	●	◐	●
Convenience for the patient	◐	◐	●	●	○	◐	●	●
Cost reduction	●	◐	⊗	●	○	◐	●	◐
Coverage of services	⊗	●	●	●	○	●	◐	●
Emerging Medicare payment structures or waivers	◐	●	◐	◐	○	⊗	⊗	○
Enabling the use of emerging technology	◐	○	●	◐	○	⊗	⊗	⊗
Health Resources and Services Administration telehealth grant programs/other federal initiatives	◐	○	⊗	●	○	⊗	⊗	⊗
Improving or maintaining quality of care	●	◐	●	●	○	○	●	●

- A very significant factor that encourages use
- ◐ A somewhat significant factor that encourages use
- A factor that encourages use, but not a significant one
- ⊗ Not a factor that encourages use
- Did not respond

Source: GAO analysis of a data collection instrument completed by six associations that represent providers and two associations that represent patients. | GAO-17-365

Appendix V: Selected Associations' Rating of the Significance of Factors that Affect Telehealth and Remote Patient Monitoring

Figure 5: Significance of Factors That Encourage the Use of Remote Patient Monitoring in Medicare, According to Selected Provider and Patient Associations

Factor that encourages remote patient monitoring use	Provider associations						Patient associations	
	A	B	C	D	E	F	G	H
Alleviation of provider shortages/scheduling problems	●	⊗	●	○	●	⊗	●	●
Convenience for the patient	◐	⊗	●	○	●	◐	●	●
Cost reduction	●	◐	●	○	●	⊗	◐	●
Coverage of services	●	●	●	○	●	⊗	◐	●
Emerging Medicare payment structures or waivers	●	◐	○	○	◐	⊗	⊗	○
Enabling the use of emerging technology	◐	⊗	●	○	●	⊗	⊗	⊗
Health Resources and Services Administration telehealth grant programs/other federal initiatives	◐	⊗	○	○	◐	⊗	⊗	⊗
Improving or maintaining quality of care	●	●	●	○	●	◐	●	●

- A very significant factor that encourages use
- ◐ A somewhat significant factor that encourages use
- A factor that encourages use, but not a significant one
- ⊗ Not a factor that encourages use
- Did not respond

Source: GAO analysis of a data collection instrument completed by six associations that represent providers and two associations that represent patients. | GAO-17-365

Note: Remote patient monitoring is a technology to enable monitoring of patients outside of conventional clinical settings, such as in the home.

Appendix V: Selected Associations' Rating of the Significance of Factors that Affect Telehealth and Remote Patient Monitoring

Figure 6: Significance of Barriers to the Use of Telehealth in Medicare, According to Selected Provider and Patient Associations

Barrier to telehealth use	Provider associations						Patient associations	
	A	B	C	D	E	F	G	H
Concern regarding quality of care	⊗	◐	⊗	◑	◑	◐	●	◐
Cost increase or inadequate payment	●	●	⊗	◑	◑	●	⊗	●
Coverage of services	●	●	○	◑	◑	●	◑	●
Cultural factors ^a	◐	⊗	⊗	◑	◑	◐	●	●
Infrastructure requirements ^b	◐	◐	⊗	◐	◑	○	●	●
Pace of changing technology	◐	○	⊗	⊗	◑	⊗	●	⊗
Privacy and security concerns	◐	◐	⊗	●	◑	⊗	⊗	●
Professional licensure issues	◐	◐	●	◑	◑	◐	⊗	◐
Provider/patient training requirements	⊗	◐	⊗	◑	◑	○	●	●

- A very significant barrier
- ◐ A somewhat significant barrier
- A barrier, but not a significant one
- ⊗ Not a barrier
- ◑ Did not respond

Source: GAO analysis of a data collection instrument completed by six associations that represent providers and two associations that represent patients. | GAO-17-365

^aCultural factors may include language and technological literacy, among others.

^bInfrastructure requirements may include access to broadband internet, imaging technology or peripherals, and wireless communications systems, among others.

Appendix V: Selected Associations' Rating of the Significance of Factors that Affect Telehealth and Remote Patient Monitoring

Figure 7: Significance of Barriers to the Use of Remote Patient Monitoring in Medicare, According to Selected Provider and Patient Associations

Barrier to remote patient monitoring use	Provider associations						Patient associations	
	A	B	C	D	E	F	G	H
Concern regarding quality of care	⊗	●	○	○	⊗	⊗	◐	●
Cost increase or inadequate payment	●	●	○	○	●	◐	◐	●
Coverage of services	●	●	○	○	●	◐	◐	●
Cultural factors ^a	◐	⊗	○	○	⊗	⊗	●	●
Infrastructure requirements ^b	●	○	○	○	⊗	●	●	●
Pace of changing technology	◐	◐	○	○	⊗	⊗	◐	⊗
Privacy and security concerns	◐	○	○	○	○	⊗	⊗	●
Professional licensure issues	●	⊗	○	○	●	⊗	⊗	◐
Provider/patient training requirements	◐	◐	○	○	◐	○	●	●

- A very significant barrier
- ◐ A somewhat significant barrier
- A barrier, but not a significant one
- ⊗ Not a barrier
- Did not respond

Source: GAO analysis of a data collection instrument completed by six associations that represent providers and two associations that represent patients. | GAO-17-365

Note: Remote patient monitoring is a technology to enable monitoring of patients outside of conventional clinical settings, such as in the home.

^aCultural factors may include language and technological literacy, among others.

^bInfrastructure requirements may include access to broadband internet, imaging technology or peripherals, and wireless communications systems, among others.

Appendix VI: Medicare Valuation of Remote Patient Monitoring

Remote patient monitoring refers to a coordinated system that uses one or more home-based or mobile monitoring devices that transmit vital sign data or information on activities of daily living that are subsequently reviewed by a health care professional. This process can enable providers to closely track a patient's condition and provide earlier intervention to potential problems.¹ According to a report by the Agency for Healthcare Research and Quality, remote patient monitoring has been shown to produce positive outcomes, such as reduced hospitalization, when used as a part of care management for chronic conditions such as diabetes and congestive heart failure.

A June 2016 report by the Medicare Payment Advisory Commission (MedPAC) found that Medicare covers some services through its Physician Fee Schedule that involve remote monitoring of a patient.² For example, MedPAC's analysis of 2014 Medicare data found that the agency spent \$119 million on remote cardiac monitoring services for 265,000 beneficiaries. While remote patient monitoring is used in Medicare, there are concerns about how to establish accurate valuations for some of these services' Medicare payment rates in the Physician Fee Schedule. To identify these concerns, we collected documentation from and interviewed associations representing provider, patient, and payer

¹Monitoring programs can collect a wide range of health data from the point of care, such as weight, blood pressure, blood glucose, blood oxygen levels, and heart rate.

²Medicare Payment Advisory Commission, *Report to the Congress: Medicare and the Health Care Delivery System*, (Washington, D.C.: June 15, 2016). MedPAC noted that Medicare also covers many services under the Physician Fee Schedule that involve a provider's remote interpretation of a diagnostic test. For example, a hospital can perform an imaging study on a patient and transmit the images electronically to a radiologist to interpret the images in another location. Medicare pays for physician and other health professional services based on a list of services and their payment rates, called the Physician Fee Schedule.

associations.³ We also reviewed documentation and conducted interviews with Centers for Medicare & Medicaid Services (CMS) officials.

CMS—the agency within the Department of Health and Human Services that administers the Medicare program—values remote patient monitoring services in the same way it values other physician services—by setting payment rates primarily as a result of underlying relative values that CMS assigns to each service.⁴ These relative values largely reflect estimates of the level of physician work and the amount of practice expenses needed to provide one service relative to other services.⁵ Physician work relative values are based on the estimate of two main inputs: (1) the time the physician needs to perform the service (including pre- and post-service activities, or work performed before and after the service), and (2) the intensity of the service (including the physician’s mental effort and judgment, technical skill and physical effort, and psychological stress). Practice expense relative values are based primarily on estimates of (1) direct practice expense inputs, which reflect the clinical labor, medical equipment, and disposable supplies needed to provide a specific service as well as the amount of time for which labor is required and equipment is used, and (2) indirect practice expenses, which generally reflect overhead expenses not associated with a specific service.⁶

³In conducting our work to describe factors identified as encouraging the use of or creating barriers to remote patient monitoring in Medicare, we collected documentation from and interviewed representatives of associations who represented providers, patients, and payers. To identify these associations, we reviewed relevant documents and literature and conducted interviews to identify general associations, as well as specialty associations that represent common conditions for which telehealth or remote patient monitoring may be used, or could be beneficial, during the course of treatment, such as stroke, congestive heart failure, and mental health. We included 10 associations in our review: 7 associations that represent providers, 2 associations that represent patients, and 1 association representing payers. Not all associations commented on concerns regarding the Medicare valuation of remote patient monitoring.

⁴CMS generates initial relative values for new services and may revise relative values for existing services to maintain their accuracy. The agency generally reviews valuation for several hundred service codes per year, while rates are re-calibrated annually to maintain relativity among the services. CMS reviews the relative values of all physicians’ services at least every 5 years.

⁵A third resource, malpractice relative values, accounts for the cost of malpractice insurance premiums of the specialties that perform the service.

⁶For more information about CMS’s process for establishing relative values, see GAO, *Medicare Physician Payment Rates: Better Data and Greater Transparency Could Improve Accuracy*, GAO-15-434 (Washington, D.C.: May 21, 2015).

Several characteristics of remote patient monitoring services have been identified by some of the selected associations we interviewed as raising challenges to valuation within CMS's methodology, such as the services' personnel and technology, and the operating hours and location of where certain remote patient monitoring services are delivered. Additionally, officials from one provider association noted that some parts of CMS's process for developing Medicare valuation may not consider input from stakeholders most knowledgeable about the technical components of the services.

Personnel. Officials from an association representing certain providers of remote patient monitoring services told us that Independent Diagnostic Testing Facilities frequently perform remote patient monitoring services that include patient diagnostic testing, but some personnel costs may not be recognized in the Medicare valuation methodology because these personnel are not considered clinical staff.⁷ For example, personnel involved in remote cardiac monitoring at Independent Diagnostic Testing Facilities include non-clinical administrative staff who the association officials noted are not adequately accounted for in the CMS methodology.

Technology. Officials from this same association also noted that the costs of technology associated with remote patient monitoring may not be fully captured by CMS's valuation methodology. For example, while wearable remote devices only monitor one patient at a time, wireless communication systems—with their hardware and software costs—that can be used to remotely monitor multiple patients at a time are not attributed to an individual patient when considering the direct practice expense inputs.⁸ Therefore, this type of equipment is classified within the indirect cost category (with overhead costs), resulting in lower payment

⁷An Independent Diagnostic Testing Facility is a diagnostic testing facility that is independent of a physician office or hospital. Its purpose is to furnish diagnostic tests and not to directly use test results to treat a patient.

⁸CMS officials explained that for costs that are not attributable to individual patients, like a centralized monitoring system, the established practice expense methodology considers these costs, like others not attributable to individual services or patients, to be indirect costs. According to officials, they are accounted for through the allocation of indirect practice expense relative value units that would be assigned to the code billed for the monitoring. In contrast, the equipment costs of the monitor worn by an individual patient would be a direct practice expense cost assigned to a particular service code. This direct practice expense cost would serve as an allocator for indirect practice expense relative value units to be assigned to the code (these might represent the costs associated with centralized monitoring equipment).

rates than if these costs were considered direct costs, according to association officials. Additionally, other unique costs for remote patient monitoring related to technology include such things as the cost of delivering the monitoring device to the patient and the cost of the patient returning the device after the monitoring period has ended.

In addition, technology used to provide remote patient monitoring services can vary among service providers and is evolving, contributing to difficulties in developing valuation for the services. Officials with a payer association said there is variation among the type of devices the patient or provider must possess or that must be installed in the patient's home to carry out remote patient monitoring, such as motion sensors to determine if a patient has fallen or the components that transmit biometric information such as blood pressure or weight back to the monitoring site. Officials with a second provider association noted that remote patient monitoring technology continues to evolve, and for such newly-developed technology there is not a consensus in how to use and charge for the multiplicity of delivery models, including the range of services and procedures.

Hours of operation and location. Some remote patient monitoring may require a monitoring facility to operate 24 hours a day, 7 days per week. An association representing certain providers of remote patient monitoring services noted that Medicare's valuation methodology, which CMS officials stated was designed for and primarily applies to services furnished in standard physician offices during business hours, may not fully incorporate costs associated with maintaining operations outside of standard business hours and in non-physician office settings, such as at Independent Diagnostic Testing Facilities or other types of remote monitoring centers.

Knowledgeable stakeholders. CMS works with a committee established by the American Medical Association (AMA)—the AMA/Specialty Society Relative Value Scale Update Committee (RUC)—three times a year annually to review a subset of physicians' services, identified in part by CMS and in part by the RUC, to develop recommendations to CMS on the resources needed to provide those specific services. RUC members generally represent physician specialty societies, such as those for

cardiology, family medicine, and internal medicine.⁹ However, for services such as the cardiac monitoring services that are widely provided by Independent Diagnostic Testing Facilities, representatives from Independent Diagnostic Testing Facilities do not serve on the RUC and do not officially participate in the RUC process as advisors regarding these services, according to officials with the association representing certain providers of remote patient monitoring services.

CMS response to cited concerns. CMS officials agreed that the payment rates that result from the application of the current Medicare methodology may reflect relative resources for services furnished in the typical physician office rather than other locations. Officials said that they use CMS's annual rulemaking process for setting payment rates for the Physician Fee Schedule to address services, such as remote patient monitoring, that vary from the usual service delivery model.¹⁰ CMS officials said this process affords members of the public an opportunity to recommend codes to be considered for revaluation if they believe the services are inappropriately valued. Some examples CMS officials cited include the following:

- In revisions to the Physician Fee Schedule for calendar year 2016, CMS increased the input price for patient worn telemetry system equipment, which is a factor in establishing the payment rate for cardiovascular telemetry transmitted to a remote attended surveillance center for up to 30 days. In response to a request received in a public comment period during the annual Physician Fee Schedule rulemaking, CMS increased the price from \$21,575 to \$23,537 to account for the unique properties of the equipment, including its use 24 hours per day and 7 days per week for an individual patient over several weeks and its use primarily outside of a health care setting.
- CMS has developed codes within the Physician Fee Schedule that describe the non-face-to-face care management services that include

⁹The RUC members are supported by physician representatives who are responsible for coordinating with their respective specialty societies to develop relative value recommendations to present to the RUC.

¹⁰Each year CMS publishes proposed and then final rules setting out revisions to payment policies under the Physician Fee Schedule, which include relative values for existing services and for new services as well as opportunities both for public comment on these proposals and for requests from interested parties regarding payment rates for Medicare services.

interactions furnished through communication technology. These non-face-to-face services are associated with managing the particular needs of patients and are furnished over the course of a calendar month.

Appendix VII: Examples of Telehealth and Remote Patient Monitoring in Medicare Models and Demonstrations

The Patient Protection and Affordable Care Act created the Center for Medicare & Medicaid Innovation (Innovation Center) within the Centers for Medicare & Medicaid Services to test innovative payment and service delivery models to reduce Medicare, Medicaid, and state Children’s Health Insurance Program expenditures while preserving or enhancing the quality of care.¹ The Innovation Center also supports Medicare demonstration projects, which study the likely impact of new methods of service delivery, coverage of new types of services, and new payment approaches on beneficiaries, providers, health plans, states, and the Medicare trust funds. The Innovation Center has organized the models and demonstrations into seven categories. Table 8 shows the seven categories and for each provides a description and an example of how a model or demonstration within that category may use telehealth or remote patient monitoring.²

Table 8: Centers for Medicare & Medicaid Services’ Innovation Center Categories and Examples of Potential Telehealth and Remote Patient Monitoring Use in Models or Demonstrations

Innovation Center category	Category description	Example of a model or demonstration that can use telehealth or remote patient monitoring
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¹Pub. L. No. 111-148, §§ 3021, 10306, 124 Stat. 119, 389, 939 (codified at 42 U.S.C. § 1315a).

²For the purposes of this report, telehealth is defined as clinical services that are provided remotely via telecommunications technologies, while remote patient monitoring is a technology to enable monitoring of patients outside of conventional clinical settings, such as in the home.

Appendix VII: Examples of Telehealth and Remote Patient Monitoring in Medicare Models and Demonstrations

Accountable care	Accountable Care Organizations (ACO) and similar care models are designed to incentivize health care providers to become accountable for a patient population and to invest in infrastructure and redesigned care processes that provide for coordinated care, high quality, and efficient service delivery.	Next Generation ACO: This model allows beneficiaries to receive telehealth services at home and in urban areas.
Episode-based payment initiatives	Under these models, health care providers are held accountable for the cost and quality of care that beneficiaries receive during an episode of care, which usually begins with a triggering health care event—such as a hospitalization or chemotherapy administration—and extends for a limited period of time thereafter.	Bundled Payments for Care Improvement models 2 and 3: These models remove geographic limitations on the use of telehealth services.
Primary care transformation	Advanced primary care practices—also called medical homes—utilize a team-based approach, while emphasizing prevention, health information technology, care coordination, and shared decision making among patients and their providers.	Independence At Home Demonstration: This demonstration requires practices to have the ability to use remote patient monitoring and mobile diagnostic technology with their patients.
Initiatives focused on the Medicaid and CHIP populations	Medicaid and the state Children’s Health Insurance Program (CHIP) are administered by the states but are jointly funded by the federal government and states. Initiatives in this category are administered by the participating states.	Medicaid Incentives for the Prevention of Chronic Disease: This model included grantees that use telehealth to reach participants dispersed through a large region.
Initiatives focused on the Medicare-Medicaid enrollees	Individuals enrolled in both Medicare and Medicaid (the “dual eligibles”) account for a disproportionate share of the programs’ expenditures. According to the Center for Medicare & Medicaid Innovation, a fully integrated, person-centered system of care that ensures that all their needs are met could better serve this population in a high quality, cost-effective manner.	The Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents: This model includes a participant that plans to use telehealth to provide after-hours telehealth services when needed.
Initiatives to accelerate the development and testing of new payment and service delivery models	Many innovations necessary to improve the health care system are expected to come from local communities and health care leaders from across the country. By partnering with these local and regional stakeholders, the Centers for Medicare & Medicaid Services intends to help accelerate the testing of new models.	The Frontier Community Health Integration Project Demonstration: This demonstration includes testing the use of telehealth in critical access hospitals.
Initiatives to speed the adoption of best practices	The Center for Medicare & Medicaid Innovation is partnering with a broad range of health care providers, federal agencies, professional societies, and other experts and stakeholders to test new models for disseminating evidence-based best practices and significantly increasing the speed of adoption.	The Million Hearts Initiative: This initiative includes information for providers about how they may be able to be paid for at-home blood pressure monitoring devices, and additional information on potential remote patient monitoring use.

Source: GAO analysis of Centers for Medicare & Medicaid Services documentation. | GAO 17-365

Note: Remote patient monitoring is a technology to enable monitoring of patients outside of conventional clinical settings, such as in the home.

Appendix VIII: GAO Contact and Staff Acknowledgments

GAO Contact

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Staff Acknowledgments

In addition to the contact named above, Karen Doran, Assistant Director; Sarah Resavy, Analyst-in-Charge; Luke Baron; Muriel Brown; Krister Friday; Monica Perez-Nelson; and Helen Sauer made key contributions to this report.

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