Remote Specialists and Experts on Demand Improving Care and Saving Costs (Revised Version) Environmental Scan

1/17/2020

I. Overview

The purpose of this environmental scan is to provide members of the Physician-Focused Payment Model Technical Advisory Committee (PTAC) with background information and context for the physician-focused payment model (PFPM), *Remote Specialists and Experts on Demand Improving Care and Saving Costs*, a revised and resubmitted version that was proposed by Dr. Eitan Sobel on November 25, 2019. This proposal describes regional networks of specialists available for telephone or video-based consultations for conditions.

This scan focuses on issues related to telehealth care delivery, including access to specialty care, quality of care, telehealth utilization, and barriers related to state licensing and credentialing. The scan also addresses issues in telehealth payment policy and similar models addressing telehealth services. Section II presents an annotated bibliography of the sources cited in this scan. Section III includes the questions, search terms, and sources used to identify the research summarized below.

Issues in Care Delivery

Access to Specialists. Access to specialists is particularly challenging in rural areas due to long travel distances and shortages of specialty providers (Rural Health Information Hub, n.d.). As a result, rural patients sometimes substitute local primary care providers for specialists or forgo specialist care altogether. Rural residence was associated with a 40 percent higher rate of preventable hospitalizations, compared to urban residence (Johnston et al., 2019). Rural residents are also more likely to report that health care costs limit their ability to receive medical care (Rural Health Information Hub, n.d.). Telehealth services can help address rural health care access issues; through telehealth, patients in rural areas can connect with health care providers when in-person visits are not feasible (Mueller et al., 2014).

In addition to connecting patients to providers, telehealth services can facilitate provider-to-provider communication. Telehealth can be used to support rural providers with clinical decision-making by connecting them with specialists for real-time consultations. This service can be lifesaving in emergency situations where a rural hospital needs a specialist consultation faster than a specialist can drive to the location or the patient can be transported to the specialist (Ward et al., 2015). Studies have shown that tele-emergency care can reduce unnecessary transfers from remote emergency departments (EDs) and is comparable to traditional care in terms of patient outcomes (Mueller et al., 2014).

Current Medicare regulations limit telehealth coverage to beneficiaries living in rural areas, with some exceptions. A report by the Centers for Medicare & Medicaid Services (CMS, 2018) notes, however, that telehealth can benefit non-rural residents as well, particularly in urban areas with high proportions of minority residents where specialists may be inadequate or delayed. Telehealth can also increase access to specialists and reduce ED use in urban locations. In an evaluation of a telehealth program in Rochester, New York, 86 percent of patients reported that the availability of the service saved them from a trip to the emergency room (Markwick et al., 2015). For Medicare fee-for-service (FFS) beneficiaries, regional variability exists in the likelihood of seeing a specialist for common illnesses that

are typically managed by both primary care physicians and specialists, such as hypertension and diabetes (Clough et al., 2016). The same study found that an increased use of specialists was associated with 1.5 to 5 times greater costs, without a corresponding increase in satisfaction with care or perceived health status.

Primary Care and Specialist Referrals. Specialist referrals increased over the past decade. A study conducted by Barnett et al. (2012) found that for Medicare beneficiaries, about 1 in 10 visits to a primary care provider (PCP) resulted in a specialist referral in 2009, compared to 1 in 20 just 10 years earlier. For patients of all ages with all insurance types, patient complaints that led to the most referrals in 2009 were related to vision (21 percent), gynecologic (18 percent), gastrointestinal (18 percent), orthopedic (16 percent), dermatologic (15 percent), and cardiovascular (15 percent) problems. Some integrated health systems have developed eConsultation services to improve communication between primary care providers and specialists. Studies have demonstrated that this service can increase access to specialty care, reduce unnecessary face-to-face visits, decrease costs, and improve patient satisfaction (Keely et al., 2013; Gleason et al., 2017). Moreover, a carefully selected specialist network was found to be a critical driver of value in the primary care space. Close ties to high-quality specialists are a distinguishing feature of high-value primary care practices, compared with their average-value counterparts (Simon et al., 2017).

Quality of Care. A recent meta-analysis found that telehealth use is associated with improvements in patient outcomes and experiences in specialty care (Kruse et al., 2017). Telehealth can decrease travel and wait times, increase communication with providers, and empower patients to manage their chronic conditions, all of which contribute to a positive patient experience.

Consensus quality measures for telehealth have yet to be established. The National Quality Forum (NQF) Telehealth Committee has published a report (2017) detailing a framework for developing quality measures for telehealth. The report identifies six key areas for measurement: 1) travel; 2) timeliness of care; 3) actionable information; 4) added value of telehealth to provide evidence-based best practices; 5) patient empowerment; and 6) care coordination.

Use of Consumer Ratings to Choose a Specialist. Many online platforms already exist that display an aggregated provider rating to the user. Popular review sites include Yelp, WebMD, RateMD, Healthgrades, ZocDoc, and Caredash, among others. Research indicates that these consumer ratings are often just as important to a potential patient as government quality ratings (Yaraghi et al., 2018). However, evidence indicates that consumer ratings are not an accurate reflection of specialty-specific performance, suggesting these ratings alone may not be efficacious in selecting the best provider for an individual patient (Daskivich et al., 2018). Public reporting of provider quality data has demonstrated limited uptake, with both low general awareness and utilization in selecting a provider or hospital (Greene et al., 2015). In the sphere of telehealth, patients indicate that they are most satisfied using telehealth services with a provider whom they already know and with whom they have an established relationship, as opposed to a provider from a different health system or even a different provider within the same health system (Welch et al., 2017). While CMS does utilize public reporting on quality measures for its Physician Compare tool, telehealth services and patient experience with remote care are not currently contained in that reporting. It is therefore not currently possible to compare physicians based on telehealth performance. (CMS, n.d.)

Telehealth Utilization. An analysis of 2014–2016 claims data for Medicare FFS beneficiaries found that the number of beneficiaries who used telehealth services increased from 60,141 beneficiaries in 2014 to almost 90,000 in 2016, or 0.25 percent of all 2016 Medicare FFS beneficiaries. There was notable growth in utilization among those 85 and older, who made up 8.6 percent of telehealth users in 2014 and 12.5

percent in 2015 (CMS, 2018). White, non-Hispanic beneficiaries received 80 percent of all telehealth services provided during the study years; this high level of use among white beneficiaries may be because telehealth services were concentrated in disproportionately white rural areas where beneficiaries face provider shortages and longer travel times (CMS, 2018). Mehrotra et al. (2016) found that rural Medicare telehealth patients were more likely to be younger than 65, on Medicare due to disability, have more comorbidities, and live in poorer communities compared to those who did not engage in telehealth services. Large, rural states tend to see more telehealth utilization; however, there do not seem to be regional patterns to telehealth use (CMS, 2018).

Over 85 percent of all telehealth users (74,547 beneficiaries) had a mental health diagnosis in 2016. Of the 10 most common principal diagnoses for beneficiaries receiving telehealth services in 2016, almost all of them were related to mental health. Accordingly, psychotherapy was one of the most commonly provided telehealth services. Fewer than 1,000 beneficiaries were treated for physical chronic conditions, such as diabetes and heart failure, via telehealth in 2016 (CMS, 2018).

State Licensure and Credentialing. State policies governing telehealth vary widely, making delivering care across state lines complicated. Roughly 80 percent of states require out-of-state clinicians to be licensed in the state where the patient resides, which can deter physicians from utilizing telehealth, especially if telehealth is a small portion of their business (U.S. Department of Health and Human Services, 2016). Several initiatives have tried to address the cross-state licensing program. The Federation of State Medical Boards (FSMB) developed an Interstate Medical Licensure Compact that allows member states to create an expedited licensing process for physicians in other member states. As of January 2019, 24 states were participating in the Licensure Compact (Center for Connected Health Policy, Telehealth Policy Barriers, 2019).

Small or rural clinics that may not have the resources or demand to hire full-time specialists could potentially gain access to specialist providers using telehealth; however, the credentialing process makes this process slow and expensive. In 2011, CMS made telehealth more accessible by permitting hospitals and critical access hospitals (CAHs) to credential by proxy, allowing clinics to rely on the credentialing done by other hospitals, CAHs, or telemedicine entities.

Issues in Telehealth Payment Policy

Medicare Telehealth Payment Policy. The Balanced Budget Act of 1997 authorized separate Medicare FFS payments specifically for telehealth services beginning in 1999, with covered services defined under section 1834 (m) of the Social Security Act. These services are limited to those furnished by physicians or "certain other practitioners" via a telecommunications system to an individual not at the same location. Originating site stipulations require the patient to be located in a rural health professional shortage area (HPSA), outside of a Metropolitan Statistical Area (MSA), or in a region participating in a telehealth demonstration program under the Department of Health and Human Services (HHS). Physicians, nurse practitioners, physician assistants, nurse-midwives, clinical nurse specialists, nurse anesthetists, clinical psychologists, clinical social workers, and registered dieticians/nutrition professionals compose the "practitioners" that are eligible telehealth providers under Medicare FFS (CMS, 2018). The Bipartisan Budget Act of 2018 (BBA) eliminated the geographic requirement for specific telehealth services including routine clinical assessments for beneficiaries with end-stage renal disease and telestroke consultations (Medicare Rights Center, 2018).

CMS's 2020 Physician Fee Schedule (PFS) addressed restrictions on telehealth by defining certain services as "communication technology-based services" that are not governed by telehealth rules. The new reimbursement codes include services such as "virtual check-ins," remote evaluation of

prerecorded patient information, inter-professional consultations, and remote patient monitoring, among others (CMS, 2019). Virtual check-ins consist of a five- to ten-minute non-face-to-face conversation between a patient and physician. Time spent on the evaluation of prerecorded images or videos sent by patients can be billed to Medicare, provided that the physician follows up with the patient within 24 hours. To qualify as a virtual check-in or evaluation of prerecorded patient information, it must be related to a recent evaluation and management (E/M) service or result in an office visit within the next 24 hours (or earliest available appointment). CMS noted that the current lack of reimbursement for inter-professional consultations can lead to unnecessary specialist visits when a conversation between doctors would be sufficient (CMS, 2019). To address this potentialfor unnecessary specialist visits, consultations between a treating physician and another health professional regarding a specific patient will be reimbursed under the 2020 PFS. CMS also introduced new billing codes for remote patient monitoring of physiological parameters such as weight, blood pressure, pulse, and respiratory flow rate but has not yet provided guidance on the kinds of technology and scope of services covered under these codes (CMS, 2019).

CMS is also experimenting with relaxing the geographic and facility restrictions. The BBA of 2018 allowed Next Generation Accountable Care Organizations (NGACOs) to apply for a telehealth waiver that allows patients residing in any location (not just HPSAs) to receive telehealth services in their home (Medicare Rights Center, 2018). However, few NGACOs took up the telehealth expansion waiver, and those that did reported barriers to implementing telehealth services, such as lack of efficient referral systems and concerns over providers' and beneficiaries' willingness to utilize telehealth services (NORC at the University of Chicago, 2018).

Medicare Advantage. Medicare Advantage (MA) plans must cover all benefits established under Medicare FFS and may offer additional benefits beyond those in Part A/B/D. For example, an MA plan may offer in-home equipment to monitor enrollees with specific conditions. These plans must ensure that telehealth services are not used as a substitute for the patient–doctor relationship that is important to continuity of care. Under the BBA of 2018 beginning in 2020, MA plans may provide Part B services as telehealth benefits, unlike Medicare FFS, and associated costs may be bundled into capitated payments (CMS, 2018; Medicare Rights Center, 2018).

Medicaid. Telehealth services are reimbursable under Medicaid so long as they meet federal standards of efficiency, economy, and quality of care. Telehealth/telemedicine is not itself considered a service but rather a delivery system; therefore, associated costs under Medicaid must be linkable to an aforementioned Medicare-covered service (CMS, 2018). As of late 2018, 49 states and the District of Columbia provide reimbursement for some form of live video, 20 states reimburse for remote patient monitoring, and 11 states reimburse for store-and-forward services under Medicaid FFS (Center for Connected Health Policy, State Telehealth Laws and Reimbursement Policies Report, 2019).

Commercial Insurers. Some commercial insurers have demonstrated a willingness to adopt these technologies in an effort to expand access to networks in underserved areas, which minimizes out-of-network "patient leakage" and improves access to a limited specialist pool (Young et al., 2016). In general, private plans tend to view telehealth services very differently from traditional in-person care and often enact a host of telehealth-specific regulations, such as required preauthorization for telehealth services and telehealth-specific documentation and billing codes (Antoniotti et al., 2014).

Cost Barriers. A number of barriers exist to the development and implementation of telehealth innovations to strengthen the electronic link between specialists and primary care physicians (PCPs). New eConsultation technologies are promising and demonstrate potential for long-term cost savings; however, insurers may be resistant to cover services provided via these technologies for a plethora of

reasons, including stakeholder disinterest, actuarial uncertainty, or regulatory uncertainty (Young et al., 2016). There are also substantial overhead costs associated with the adoption of telehealth services, primarily with regard to staffing and equipment. Extramural grant funding is often an essential part of the funding mix for newly established telehealth centers. However, strategies must be undertaken to ensure sustainability upon the grant's conclusion. These strategies include network membership fees, contract fees for clinical services (from the telehealth center), and per-encounter charges. In some cases, institutions view telehealth as a cost center, i.e., telehealth does not generate positive return on investment for the institution but does demonstrate added value (much like information technology departments); therefore, telehealth receives ongoing support despite a failure to produce profits (Effertz et al., 2017). Most often, larger practices are more likely to engage routinely in telehealth services, with hospitals and multispecialty practices demonstrating greater use of both physician-to-patient and physician-to-health care professional telehealth interactions. This lower adoption among smaller practices suggests a major cost barrier, or at least a major *perceived* cost barrier, that prevents widespread adoption of telehealth services despite policy-based incentives to do so (Kane et al., 2018).

Results of Other Similar or Proposed Models

Background on the Proposal Submitter. Eitan Sobel, MD, is a nephrologist in Rutland, Vermont, affiliated with the Rutland Regional Medical Center. He earned his medical degree from the Technion-Israel Institute of Technology Faculty of Medicine and completed his residency and nephrology fellowship at SUNY Health Science Center at Brooklyn.

Project ECHO. Project ECHO (Project Extension for Community Healthcare Outcomes) was founded at the University of New Mexico in 2003. Project ECHO established the key components of a technology-enabled collaborative-learning and capacity-building model: a hub-and-spoke organization, with a specialist or other clinical content expert who tele-mentors generalists in the care of a specific condition through a teleconferencing link, on a regular and recurring basis—combining a didactic component with case study presentations by participants.

The Project ECHO model has been replicated in the United States and internationally to address provider education for a range of health conditions. Models born out of Project ECHO have shown considerable uptake, with 585 ECHO-like models identified worldwide in a 2019 report. These similar models are based upon the generalist-specialist relationship, interactive mentorship, case-based training, and the use of videoconferencing technology. Some evidence suggests ECHO-like models can improve provider and patient outcomes. A systematic review of 52 articles with empirical results on the effects of such models found consistently positive effects in the areas that had been measured (Fischer, 2019). However, the quality of the evidence was generally rated as "low" or "very low," and the authors concluded that additional evidence was required before conclusions could be drawn about the impact of ECHO-like models on cost and quality outcomes.

CMS Models and Demonstrations. Some CMS models being tested offer waivers of Medicare's existing coverage of telehealth services in order to expand the benefit to more sites and services. These models currently include the NGACO Model, Bundled Payments for Care Improvement Initiative (BPCI), and Comprehensive Care for Joint Replacement Model (CJR). Uptake of these waivers has been slow, likely due to a number of barriers ranging from lack of necessary infrastructure to perceived reluctance of beneficiaries to engage in telehealth services (Lewin Group, 2018). However, it is important to note that telehealth is not the primary focus of these models and is instead a component to the care coordination they aim to achieve.

Other CMS initiatives that are not focused exclusively on Medicare also promote the use of telehealth and do not require a waiver. For example, four states that received State Innovation Models (SIM) awards utilized funds to enhance training and technical assistance to providers seeking to use telehealth services to improve access to care. Health Care Innovation Awards (HCIA) have been bestowed to 146 models demonstrating new ideas for care delivery, improved health, and lower costs. Several of these models include telehealth services as a key component (CMS, 2018).

II. Annotated Bibliography

Antoniotti NM, Drude KP, Rowe N. Private payer telehealth reimbursement in the United States. *Telemed J E Health*. 2014;20(6):539-543. doi: 10.1089/tmj.2013.0256

Subtopic(s): Issues in Payment Policy
Type of Source: Journal article
Objective: To assess the current status of telehealth reimbursement by private payers and assess to what extent there has been progress in private payer reimbursement for telehealth services.
Main Findings: Telehealth services are being reimbursed by private payers, but progress remains slow. Administrative regulations on the end of the private payers act as barriers to service and reimbursement.
Strengths/Limitations: Study is predicated on U.S. payer system, and some respondents may have lived/practiced outside the United States.
Generalizability to Medicare Population: Reasonable; respondents indicated provision of service to Medicare beneficiaries without reimbursement.
Methods: The study surveyed providers.

Barnett ML, Song Z, Landon BE. Trends in physician referrals in the United States, 1999-2009. *Arch Intern Med*. 2012;172(2):163-170. doi:10.1001/archinternmed.2011.722

Subtopic(s): Description of the Issue
Type of Source: Journal article
Objective: To assess changes in the annual rate of referrals to other physicians from physician office visits in the United States from 1999 to 2009.
Main Findings: The report finds that over the 10 years between 1999 and 2009 the probability that an outpatient visit to a physician resulted in a referral to another physician increased from 4.8 percent to 9.3 percent ($p<0.001$), a 94 percent increase. The absolute number of visits resulting in a physician referral increased 159 percent nationally during this period, from 41 million to 105 million. This trend was consistent across subgroups, except for slower growth among physicians with ownership stakes in their practice.
Strengths/Limitations: The age of the data is a limitation: the study uses survey data from 1999–2009.
Generalizability to Medicare Population: Strong; study examines patients with private and public insurance, and calls out certain Medicare results.
Methods: Analysis of nationally representative cross-sections of ambulatory patient visits in the United States, using the National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey.

Center for Connected Health Policy. State telehealth laws and reimbursement policies. https://www.cchpca.org/telehealth-policy/state-telehealth-laws-and-reimbursement-policies-report. Published Spring 2019. Accessed September 20, 2019.

Subtopic(s): Issues in Payment Policy
Type of Source: Report
Objective: To review nationwide state telehealth laws.

Main Findings: Each state differs in telehealth definitions and regulations. There are variations in payments for live video and store-and-forward sessions, remote patient-monitoring, originating sites, facility fees, and private payer telehealth reimbursement.
Strengths/Limitations: N/A
Generalizability to Medicare Population: N/A
Methods: N/A

Center for Connected Health Policy. Telehealth policy barriers. Fact sheet. https://www.cchpca.org/sites/default/files/2019-02/TELEHEALTH%20POLICY%20BARRIERS%202019%20FINAL.pdf. Published February 2019. Accessed September 20, 2019.

Subtopic(s): Issues in Care Delivery
Type of Source: Fact sheet
Objective: To explain the barriers to telehealth expansion and adoption.
Main Findings: The primary barriers to telehealth adoption include reimbursement, malpractice, licensing, privacy and security, prescribing, and credentialing and privileging.
Strengths/Limitations: N/A
Generalizability to Medicare Population: Strong; article looks at barriers for all insurer types and points out Medicare-specific issues.
Methods: N/A

Centers for Medicare & Medicaid Services (CMS). Information on Medicare telehealth. https://www.cms.gov/About-CMS/Agency-Information/OMH/Downloads/Information-on-Medicare-Telehealth-Report.pdf. Published November 15, 2018. Accessed September 20, 2019.

Subtopic(s): Issues in Care Delivery; Issues in Payment Policy; Results of Proposed or Similar Models
Type of Source: Government report
Objective: To respond to the directive of the 21st Century Cures Act, Section 4012(a) by providing information about the populations of Medicare beneficiaries whose care may be improved by the expansion, activities by the Center for Medicare and Medicaid Innovation (CMMI) that examine the use of telehealth models, high-volume services that can be furnished using telehealth, and barriers that may prevent expansion of telehealth.
Main Findings: The overall rate of adoption of telehealth services is low but concentrated in the oldest populations (85+) and rural areas designated as HPSA. Telehealth is an emerging field, with the potential to lower costs and improve access to care in both emergent and chronic settings.
Strengths/Limitations: N/A
Generalizability to Medicare Population: Strong; report is Medicare focused.
Methods: The report is based on a literature review as well as analysis of current Medicare claims and stakeholder interviews.

Centers for Medicare & Medicaid Services (CMS). Performance Information and Physician Compare. https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/physician-compare-initiative/Quality-Data-and-Physician-Compare-#performance. Accessed January 17, 2020.

Subtopic(s): Issues in Care Delivery
Type of Source: Government website
Objective: To provide information about quality measures data and public reporting for Physician Compare.

Main Findings: N/A
Strengths/Limitations: N/A
Generalizability to Medicare Population: Strong; information intended for Medicare patients and physicians.
Methods: N/A

Centers for Medicare & Medicaid Services. Revisions to payment policies under the Medicare Physician Fee Schedule, Quality Payment Program and other revisions to Part B for CY 2020. CMS.gov https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeeSched/PFS-Federal-Regulation-Notices-Items/CMS-1715-F. Published November 15, 2019. Accessed December 5, 2019.

Subtopic(s): Issues in Payment Policy
Type of Source: Final Rule
Objective: To outline the policy, payment, and quality provision changes to Medicare's Physician Fee Schedule (MPFS) for 2020.
Main Findings: The 2020 MPFS expanded the use of telehealth and telehealth-related services.
Strengths/Limitations: N/A
Generalizability to Medicare Population: N/A
Methods: N/A

Clough JD, Patel K, Shrank WH. Variation in specialty outpatient care patterns in the Medicare population. *J Gen Intern Med*. 2016;31(11):1278-1286. doi:10.1007/s11606-016-3745-8

Subtopic(s): Issues in Care Delivery
Type of Source: Journal article
Objective: To describe regional variation in outpatient visits for individual specialties and the association between specialty physician-specific payments and patient-reported satisfaction with care and health status.
Main Findings: These findings demonstrated high regional variability in the likelihood of seeing a specialist for common illnesses that are typically managed by PCPs and specialists. Multiple analyses suggested that this variation was not due to differences in beneficiary health status. An increased use of specialists was associated with a considerable increase in cost, without a corresponding increase in beneficiary overall satisfaction with care or perceived health status.
Strengths/Limitations: This is an observational study, which cannot establish a causal relationship between specialty use and outcomes. Generalizability is limited by inclusion and exclusion criteria.
Generalizability to Medicare Population: Strong; study focused on Medicare population.
Methods: This retrospective cross-sectional study utilized demographic data from the beneficiary summary files, claims data from the carrier files, and patient-reported data from the 2012 Medicare Current Beneficiary Survey (MCBS) for a 20 percent random sample of Medicare FFS beneficiaries in 2012.

Daskivich TJ, Houman J, Fuller G, Black JT, Kim HL, Spiegel B. Online physician ratings fail to predict actual performance on measures of quality, value, and peer review. *JAMIA Open.* 2018;25(4):401-407. doi: 10.1093/jamia/ocx083

Subtopic(s): Issues in Care Delivery
Type of Source: Journal article
Objective: To determine whether online ratings of specialist physicians from five platforms predict quality of care, value of care, and peer-assessed physician performance.

Main Findings: Online specialist ratings do not predict objective measures of quality of care nor peer assessment of clinical performance. Scores were consistent across the five platforms assessed.
Strengths/Limitations: Study is limited by sample size, sample being drawn from a single center study, and no access to health care providers and systems or patient satisfaction data.
Generalizability to Medicare Population: Reasonable; quality metrics are considered important to much of the Medicare population.
Methods: Observational study of 78 physician representing eight medical and surgical specialties and measure of association of consumer scores with quality metrics and peer-review scores.

Effertz G, Alverson DC, Dion D, Duffy V, Noon C, Langell K, Antoniotti N, Lowery C. Sustaining and expanding telehealth: A survey of business models selected prominent U.S. telehealth centers. *Telemed J E Health*. 2017;23(2):137-142. doi:10.1089/tmj.2016.0023

Subtopic(s): Issues in Payment Policy
Type of Source: Journal article
Objective: To explore the business models being used at established telehealth centers.
Main Findings: Grants, network membership fees, contract clinical services, per-encounter charges, and operation as a cost center compose the general business approaches to telehealth, with most centers adopting multiple strategies.
Strengths/Limitations: Researchers only examined 10 telehealth centers.
Generalizability to Medicare Population: Relatively weak; not directly relevant to Medicare payment but instead to internal operations.
Methods: Researchers conducted qualitative interviews with key individuals via teleconference or telephone.

Fischer SH, Rose AJ, McBain RK, Faherty LJ, Sousa J, Martineau M. Evaluation of technology-enabled collaborative learning and capacity building models: Materials for a report to Congress. Attachment B: RAND Report. In *Report to Congress: Current state of technology-enabled collaborative learning and capacity building models*. https://aspe.hhs.gov/system/files/pdf/260691/ECHOAct-ConsolidatedReportToCongress.pdf. Published February 2019. Accessed September 20, 2019.

Subtopic(s): Results of Proposed or Similar Models
Type of Source: Government report
Objective: To update Congress on the development of Project ECHO
Main Findings: ECHO and ECHO-like models (EELM) have expanded; empirical evidence on patient and provider outcomes remains modest. More evidence is required to assess EELM efficacy
Strengths/Limitations: N/A
Generalizability to Medicare Population: Reasonable; research is framed around policy initiatives focused on the Medicare population that promote telehealth.
Methods: N/A

Gleason N, Prasad PA, Ackerman S, et al. Adoption and impact of an eConsult system in a fee-for-service setting. *Healthcare*. 2017;5(1):40-45. doi:10.1016/j.hjdsi.2016.05.005

Subtopic(s): Issues in Care Delivery
Type of Source: Journal article

Objective: To analyze whether an eConsult program would improve access to specialty care, decrease wait time, and decrease costs.
Main Findings: Adoption of the eConsult system resulted in a significant reduction in referral rate, specialty care utilization, specialty care wait time, and costs.
Strengths/Limitations: Analysis includes only patients who had a referral or eConsult. It is likely that this biases the analysis by underrepresenting the cost reduction.
Generalizability to Medicare Population: Fair; study included Medicare patients but did not report Medicare-specific results.
Methods: A survey was conducted to assess PCP and specialist acceptability of the eConsult system. Primary care physician referral rates, specialty visit rates, ED visits, and hospitalizations were measured to assess outcomes.

Greene J, Fuentes-Caceres V, Verevkina N, Shi Y. Who's aware of and using public reports or provider quality? *J Health Care Poor Underserved*. 2015;26:873-888. doi: https://doi.org/10.1353/hpu.2015.0093

Subtopic(s): Issues in Care Delivery
Type of Source: Journal article
Objective: To explore the extent to which people with chronic conditions are aware of and using comparative quality information on hospitals and doctors and how awareness and use of information differs by individuals' socio-demographic characteristics.
Main Findings: Patients with chronic conditions have low awareness of hospital and doctor continuous quality improvement (CQI) and lower CQI use. Higher educational attainment and income were related to greater CQI awareness.
Strengths/Limitations: Key measures of CQI use were self-reported and limited to the prior year; survey response rate was poor, and design was not nationally representative.
Generalizability to Medicare Population: Reasonable; Medicare beneficiaries are more likely to enroll in plans with higher ratings, and this research is somewhat of an extension investigating the mechanism.
Methods: The survey examined adults with chronic conditions.

Johnston KJ, Wen H, Joynt Maddox KE. Lack of access to specialists associated with mortality and preventable hospitalizations of rural Medicare beneficiaries. *Health Aff*. 2019;38(12):1993-2002. doi:10.1377/hlthaff.2019.00838

Subtopic(s): Issues in Care Delivery
Type of Source: Journal article
Objective: To examine differences in access to specialists between urban and rural Medicare beneficiaries and the effects of disparate access.
Main Findings: Rural residence was associated with a higher preventable hospitalization rate and higher mortality rate, compared to urban residence. Access to specialists accounted for more than half of the rural-urban difference in preventable hospitalizations.
Strengths/Limitations: Potential for confounding effects by uncontrolled factors on which rural and urban beneficiaries differ.
Generalizability to Medicare Population: Strong; study focused on Medicare beneficiaries
Methods: The study linked MCBS data linked to Medicare claims data and performed patient-level multi-variable regressions and a decomposition analysis.

Kane CK, Gillis K. The use of telemedicine by physicians: Still the exception rather than the rule. *Health Aff*. 2018;37(12):1923-1930. doi:10.1377/hlthaff.2018.05077

Subtopic(s): Issues in Payment Policy

Type of Source: Journal article
Objective: To provide better information on where and how telemedicine is being used to inform strategies to encourage its appropriate use.
Main Findings: Larger practice size is an important correlate of telemedicine use, suggesting a financial barrier for smaller practices.
Strengths/Limitations: Practice-level reporting may not be indicative of individual physician experience.
Generalizability to Medicare Population: Strong; study looks specifically at Medicare claims.
Methods: Ordinary least squares (OLS) regression modeling was used to assess association of specialty, practice characteristic, and market characteristic with five measures of telemedicine use.

Keely E, Liddy C, Afkham A. Utilization, benefits, and impact of an e-consultation service across diverse specialties and primary care providers. *Telemed and e-Health*. 2013;19(10):733-738. doi:10.1089/tmj.2013.0007

Subtopic(s): Issues in Care Delivery
Type of Source: Journal article
Objective: To demonstrate the utilization and impact of virtual consultation services.
Main Findings: Specialists provided responses without having to request further information in 89 percent of cases. Three-quarters of cases were answered in fewer than three days. A specialty visit was avoided in 43 percent of cases.
Strengths/Limitations: The study was limited by a small sample size and inability to verify if patients were seen in a face-to-face consultation following the e-consultation.
Generalizability to Medicare Population: Weak; study was conducted in Canada.
Methods: Utilization data included number of e-consultations, specialists' responses, and time needed for specialists to complete e-consultations. Primary care physician and patient perceptions were assessed in a survey.

Kruse CS, Krowski N, Rodriguez B, Tran L, Vela J, Brooks M. Telehealth and patient satisfaction: A systematic review and narrative analysis. *BMJ Open*. 2017;7(8):e016242. https://bmjopen.bmj.com/content/7/8/e016242

Subtopic(s): Issues in Care Delivery
Type of Source: Journal article
Objective: To explore the association between telehealth, patient satisfaction, and effectiveness.
Main Findings: The factors most contributing to telehealth effectiveness were improved outcomes, preferred modality, ease of use, low cost, improved communication, and decreased travel times.
Strengths/Limitations: Selection bias and publication bias are possible.
Generalizability to Medicare Population: Moderate; study reviewed a large range of research, including Medicare populations, but was not focused on the experiences of Medicare beneficiaries.
Methods: This literature review of articles published between 2010 and 2017 used the Cumulative Index of Nursing and Allied Health Literature (CINAHL) via EBSCOhost and PubMed.

The Lewin Group. CMS Bundled Payments for Care Improvement initiative models 2–4: Year 5 evaluation & monitoring annual report. Prepared for CMS. https://downloads.cms.gov/files/cmmi/bpci-models2-4-yr5evalrpt.pdf. Published October 2018. Accessed September 20, 2019.

Subtopic(s): Results of Proposed or Similar Models
Type of Source: Evaluation report
Objective: To provide a summative evaluation of the Bundled Payments for Care Improvement (BPCI) initiative, incorporating all analyses conducted during the five-year evaluation contract and to describe the experience under BPCI for more than three years of the initiative, from the fourth quarter (Q4) of 2013 through Q4 2016.
Main Findings: Many BPCI Awardees indicated that they wanted to use waiver flexibility; however, only 35 percent actually did. Waivers became less important to BPCI Awardee strategy as the patient share receiving institutional post-acute care (PAC) reduced.
Strengths/Limitations: The primary analytic approach is dependent on how well the comparison group represents what would have happened absent the BPCI initiative. For some combinations, the comparison episodes were not as close a match as the authors would like. Sensitivity analyses also suggested that the statistical significance of some results may have been due to the chance selection of particular comparison episodes. The evaluation of the BPCI initiative is not complete. There are seven more quarters of claims and assessment data to evaluate.
Generalizability to Medicare Population: Strong; the report is an evaluation of a Medicare program.
Methods: Findings in this report are based on analyses of Medicare claims and enrollment data, PAC provider patient assessments, awardee-submitted data, beneficiary surveys, participant interviews, and participant site visits.

Markwick L, McConnochie K, Wood N. Expanding telemedicine to include primary care for the urban adult. *J Health Care Poor Underserved*. 2015;26(3:771–776. doi:10.1353/hpu.2015.0078

Subtopic(s): Issues in Care Delivery
Type of Source: Journal article
Objective: To evaluate the expansion of a telemedicine program to adults in Rochester, New York.
Main Findings: While program volume was lower than anticipated due to lack of funds for advertising and marketing, patients reported high patient satisfaction. A very high proportion of patients (93 percent) reported that telemedicine services saved them a trip to an afterhours clinic, and 86 percent reported that it saved them a trip to the ED.
Strengths/Limitations: Very small sample size (45 patients making 73 telemedicine visits) confined to Rochester, New York
Generalizability to Medicare Population: Weak; patients were adults but not Medicare recipients, and the small sample size limits generalizability.
Methods: Researchers surveyed telehealth program users.

Medicare Rights Center. The Bipartisan Budget Act of 2018: Key provisions and policies for people with Medicare. https://www.medicarerights.org/pdf/budget-act-2018-analysis.pdf. Published 2018. Accessed December 2019.

Subtopic(s): Issues in Payment Policy
Type of Source: Gray literature
Objective: To outline the primary provisions relating to Medicare included in the Bipartisan Budget Act of 2018.
Main Findings: The CHRONIC Care Act (contained within BBA 2018) includes provisions that expand coverage of telehealth for specific services and include telehealth as a base benefit for Medicare Advantage beneficiaries. Telehealth is also expanded within ACOs.
Strengths/Limitations: N/A

Generalizability to Medicare Population: N/A
Methods: N/A

Mehrotra A, Jena AB, Busch AB, Souza J, Uscher-Pines L, Landon BE. Utilization of telemedicine among rural Medicare beneficiaries. *JAMA.* 2016;315(18):2015-2016. doi:10.1001/jama.2016.2186

Subtopic(s): Issues in Care Delivery
Type of Source: Research letter
Objective: To describe trends in telehealth utilization among rural Medicare beneficiaries between 2004 and 2013.
Main Findings: The number of telehealth visits increased by more than 25 percent between 2004 and 2013; however, less than 1 percent of rural Medicare beneficiaries received a telemedicine visit. Rural Medicare telehealth patients were more likely to be younger than 65, on Medicare due to disability, have more comorbidities, and live in poorer communities, compared to those who did not engage in telehealth services.
Strengths/Limitations: The reason for the visit was based on first-listed diagnosis; urban areas were excluded from analysis.
Generalizability to Medicare Population: Strong; study focused exclusively on Medicare beneficiaries.
Methods: The letter analyzed a 20 percent random sample of traditional Medicare beneficiaries.

Mueller KJ, Potter AJ, MacKinney AC, Ward MM. Lessons from tele-emergency: Improving care quality and health outcomes by expanding support for rural care systems. *Health Aff.* 2014;33(2):228-234. doi:10.1377/hlthaff.2013.1016

Subtopic(s): Issues in Care Delivery
Type of Source: Journal article
Objective: To identify tele-emergency models and outcomes
Main Findings: Tele-emergency improved patient care outcomes, reduced ED transfers, and improved care coordination. Providers indicated that tele-emergency expands the care team, increases available resources, shortens time to care, and promotes patient-centered care.
Strengths/Limitations: Survey and interviews were limited to the upper Midwest and relied on staff perceptions. There is potential for survey results to suffer from non-response bias.
Generalizability to Medicare Population: Fair; the study's methods rely on provider perspectives and does not focus on the Medicare population specifically.
Methods: Researchers used a literature review, survey, and phone interviews with clinicians and hospital administrators.

National Quality Forum. Creating a framework to support measure development for telehealth. http://www.qualityforum.org/Publications/2017/08/Creating_a_Framework_to_Support_Measure_Development_for_Telehealth.aspx. Published August 2017. Accessed September 19, 2019.

Subtopic(s): Issues in Care Delivery
Type of Source: Report
Objective: To create a framework for developing quality measures for telehealth.
Main Findings: The committee identified measure concepts to serve as a foundation for new measures to assess the quality of care provided using telehealth.
Strengths/Limitations: Report is just a preliminary framework; no measures have been finalized.
Generalizability to Medicare Population: Strong; NQF is commonly used by Medicare when evaluating care quality.
Methods: Researchers conducted an environmental scan to inform framework development.

NORC at the University of Chicago. Next Generation Accountable Care Organization (NGACO) model evaluation. Center for Medicare & Medicaid Innovation; 2019. https://innovation.cms.gov/Files/reports/nextgenaco-firstannrpt.pdf. Accessed December 5, 2019.

Subtopic(s): Issues in Payment Policy
Type of Source: Report
Objective: To evaluate the first year of the NGACO model
Main Findings: With regards to telehealth, the report found that few ACOs took up the telehealth expansion waiver.
Strengths/Limitations: Evaluation is of the first of a multi-year program.
Generalizability to Medicare Population: Strong; NGACOs apply only to Medicare patients.
Methods: Study included interviews and surveys with ACO leadership and analyses of Medicare claims data.

Rural Health Information Hub. Healthcare access in rural communities introduction. https://www.ruralhealthinfo.org/topics/healthcare-access. Accessed September 20, 2019.

Subtopic(s): Issues in Care Delivery
Type of Source: Website
Objective: To provide an overview of health care access in rural communities.
Main Findings: N/A
Strengths/Limitations: N/A
Generalizability to Medicare Population: Strong; article does not specifically address the Medicare population, but they would face similar barriers to care as described in the article.
Methods: N/A

U.S. Department of Health and Human Services (HHS). Report to Congress: E-health and telemedicine. https://aspe.hhs.gov/system/files/pdf/206751/TelemedicineE-HealthReport.pdf. Published August 12, 2016. Accessed September 20, 2019.

Subtopic(s): Issues in Care Delivery
Type of Source: Government report
Objective: To update Congress on HHS' current telehealth efforts.
Main Findings: The department proposed to expand the ability of Medicare Advantage organizations to deliver certain medical services through telehealth by eliminating Part B requirements that those services be provided through face-to-face encounters.
Strengths/Limitations: N/A
Generalizability to Medicare Population: Strong; report discusses challenges and initiatives specific to the Medicare program.
Methods: N/A

Ward MM, Jaana M, Natafgi N. Systematic review of telemedicine applications in emergency rooms. *Int J Med Inform*. 2015;84(9):601-616. doi:10.1016/j.ijmedinf.2015.05.009

Subtopic(s): Issues in Care Delivery
Type of Source: Journal article
Objective: To review the literature on telemedicine in hospital emergency room settings.
Main Findings: Studies reported positive findings, particularly in terms of quality and user satisfaction, clinical processes, and outcomes.
Strengths/Limitations: Some studies reviewed were limited by their study design, sample size, study duration, and comparison groups.

Generalizability to Medicare Population: Weak; review did not highlight patients' insurance status used in studies.
Methods: The literature review examined 38 journal articles on use of telemedicine in EDs.

Welch BM, Harvey J, O' Connell NS, McElligott JT. Patient preferences for direct-to-consumer telemedicine services: a nationwide survey. *BMC Health Serv Res*. 2017;17:784. doi: 10.1186/s12913-017-2744-8.

Subtopic(s): Issues in Care Delivery
Type of Source: Journal article
Objective: To understand patients' preferences and desires for direct-to-consumer telemedicine.
Main Findings: Few respondents have ever used telemedicine with their care provider. Most respondents were more willing to see their own care provider as opposed to one they had not met in person. Patients prefer to use telemedicine with their own doctor with whom they have established a prior relationship.
Strengths/Limitations: Respondents recruited through online platform; survey methodology not as rigorous as direct interview methods.
Generalizability to Medicare Population: Somewhat weak; 17 percent of respondents were covered under Medicare.
Methods: This nationwide survey examined 4,345 "demographically balanced" respondents.

Yaraghi N, Wang W, Gao GG, Agarwal R. How online quality ratings influence patients' choice of medical providers: Controlled experimental survey study. *JMIR,* 2018; 20(3): e99 doi:10.2196/jmir.8986.

Subtopic(s): Issues in Care Delivery
Type of Source: Journal article
Objective: To measure the relative importance of Web-based quality ratings from governmental and commercial agencies on choice of primary care physician.
Main Findings: Nonclinical ratings from commercial websites are perceived to be just as important as governmental clinical ratings.
Strengths/Limitations: Survey sampled from Amazon Mechanical Turk users.
Generalizability to Medicare Population: Limited; study participants were not Medicare beneficiaries.
Methods: This was a choice-based conjoint experiment.

Young MJ, Phan J. Improving the electronic nexus between generalists and specialists: A public health imperative? *Healthcare*, 2016;4:302-306. doi:10.1016/j.hjdsi.2016.10.002

Subtopic(s): Issues in Payment Policy
Type of Source: Journal article
Objective: First, to examine how technological innovations, including next-generation eConsultation platforms, portend improvements in access and utilization that can accelerate the development of more equitable and affordable systems of health care delivery in the era of rapidly evolving health policy and, second, to explore key challenges toward these ends.
Main Findings: Optimizing the nexus between primary care physicians and specialists through innovations, including eConsultation platforms, will lead to improvements in access and utilization that may accelerate the development of equitable and affordable systems of care delivery. Obstacles to widescale implementation pose challenges, but the opportunity for public health and easing of health care disparities is notable.
Strengths/Limitations: N/A

Generalizability to Medicare Population: Strong; study is in response to CONNECT for Health Act.
Methods: Article is based on a literature review.

III. Research Questions, Data Sources, Key Word, and Search Term Table

The environmental scan includes a review of information from existing peer-reviewed and non-peer-reviewed publications. We conducted a formal search of major medical, health services research, and general academic databases. We also conducted targeted searches of content available in the grey literature. We reviewed the websites of professional associations/societies and CMS for relevant evaluation reports and program documentation. The table below lists the research questions motivating this environmental scan, as well as the sources and search terms used.

Table 1. Search Strategy

Research Questions	Preliminary Search Terms	Sources
Issues in Payment Policy		
1. Describe the current landscape of telemedicine services and reimbursement for specialists (e.g., direct-to-consumer, provider-to-provider, remote patient monitoring). 2. What are Medicare FFS payment rules on telemedicine? a. What services are covered? b. What are the requirements related to rural/urban areas, originating and distant site, etc. 3. What are Medicare Advantage payment rules on telemedicine? 4. What are Medicaid rules on telemedicine? 5. What, if any, other payment models exist to address telemedicine? 6. What are the technology- and equipment-related costs of telemedicine?	Telemedicine/telehealth + policy, payment, coverage, services, reimbursement + Fee-for-service (FFS) Medicare Medicare Advantage Medicaid	UNMHSC Environmental Scan MedPAC March 2018 report CMS telehealth report to Congress Medicare coverage database MLN training resources CMMI Medicare claims Processing manual Medicaid policies report Medicaid policies page HRSA Proposed and final rule—Section 50325 of the Bipartisan Budget Act of 2018 (acute stroke telehealth services)

Research Questions	Preliminary Search Terms	Sources
Problems in Care Delivery		
7. What are patterns/trends in access to specialty care among Medicare FFS beneficiaries? 8. What are the rates of utilization of telehealth interventions among Medicare FFS beneficiaries? a. How do rates differ across subpopulations (e.g., age, race, eligibility, disease status)? b. How do rates of telehealth service delivery vary geographically (e.g., rural versus urban, across geographic regions)? 9. Is there evidence that current referral and care coordination practices negatively affect quality, patient safety, or patient experience of care? 10. What costs and health consequences are associated with inadequate access to specialists (e.g., cost of air/ambulance transfer, treatment time delay)? 11. What quality measures are available to assess specialty telehealth interventions? 12. What are barriers that may prevent the expansion/adoption of telehealth services? a. State licensure	Specialist + Rural area Medically underserved area Medicare telemedicine/telehealth uptake, utilization Telehealth/performance measures/metrics Telemedicine Satisfaction Questionnaire (TSQ) CAHPS patient experience survey	UNMHSC Environmental Scan ACP MNM Environmental Scan Cochrane NCQA CMS Measures Inventory Tool PubMed Google Scholar CMMI CMS telehealth report to Congress ASPE telehealth report to Congress MedPAC American Heart Association/American Stroke Association Rural Telehealth Research Center Center for Connected Health Policy Rural Health Research Gateway
Results of Proposed or Similar Models		
1. Background on proposal Submitter (Eitan Sobel, MD) 2. What are the results of other models or demonstrations that include a telemedicine component? a. Project ECHO		UNMHSC Environmental Scan Google Scholar PubMed CMMI Federal telehealth compendium CRS report