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Leveraging Quality Measurement to Improve Rural Health, Telehealth, and Healthcare System Readiness

ENVIRONMENTAL SCAN REPORT - DRAFT #2

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Executive Summary

Telehealth is the provision of healthcare services and health education via information and telecommunication technologies, such as real-time visits conducted through phone calls or video platforms. While telehealth has been available for decades, the coronavirus (COVID-19) pandemic has accelerated its growth, sparked by an emergent need for access to medical care early in the pandemic when stay-at-home orders were in place. Telehealth growth was further fueled by expansions in public and private reimbursement, a loosening in restrictions on interstate licensing compacts, and other facilitating policies.[1] These factors have created a business model that has increased the availability of telehealth for both non-rural and rural communities.[2]

Telehealth has the potential to improve access to care in rural communities, which represent one in five Americans according to the United States (U.S.) Census Bureau.[3] In these areas, Americans are subject to a "rural mortality penalty," where morbidity and mortality are worse compared to non-rural communities.[4] Rural residents have greater health risks, including higher rates of chronic disease (e.g., obesity and diabetes), riskier behaviors (e.g., smoking and substance use), poorer diets, and lower health literacy. These differences are driven by rural disparities in access to care as well as health education. For example, rural residents have fewer healthcare providers in their communities, particularly specialists, and incur longer travel times for in-person care. Rural disparities in care access and outcomes have worsened in the wake of the current COVID-19 pandemic.[5]

Some rural areas have limited broadband capacity to support high-speed internet access. This limits connectivity for the remote communications required to implement video-based telehealth, particularly when patients are in their homes. Yet when technology is available and a connection is achievable, telehealth can be leveraged for many different types of healthcare encounters. Telehealth can help to overcome geographic barriers faced by rural communities, allowing clinicians to deliver care to patients in remote locations. Telehealth can also facilitate a consultation between a clinician at an originating site who is with a patient and a specialist at a distant site. These various types of telehealth services can improve access to care for everyday, time-sensitive emergencies (e.g., stroke) and enhance readiness to address public health emergencies, such as COVID-19, in which in-person services are broadly disrupted.[6]

The Centers for Medicare & Medicaid Services (CMS) funded the National Quality Forum (NQF) to explore the measurement of healthcare quality and outcomes for telehealth, with a focus on rural America and healthcare system readiness. This is vitally important given the rapid expansion of telehealth over the past year and its outsized impact in meeting the healthcare needs of rural Americans. While telehealth has a broad variety of use cases, the scope for this project includes the use of telehealth for provision of care during public health emergencies (e.g., COVID-19, wildfires, and hurricanes) as well as everyday emergencies, such as stroke, trauma, and mental health crises in which timely access for patients can improve healthcare outcomes in rural communities.

As part of this work, NQF conducted a scan of peer-reviewed literature that details barriers and facilitators to rural telehealth for readiness and synthesized major themes from 287 relevant articles. Several themes emerged:

1. Health risks and challenges of rural communities are substantial, including higher rates of poor health and barriers to accessing care.
2. During the pandemic, telehealth use cases expanded across a variety of novel areas facilitated by expanded reimbursement and other policies.
3. Technical challenges in rural communities are persistent barriers, including issues with broadband access, technology availability, and resources required to implement telehealth solutions.

NQF also identified government agencies that have been involved in telehealth policy to identify and summarize recent and evolving policies and practices related to telehealth and healthcare system readiness, primarily federal policy changes due to the COVID-19 pandemic. Policy themes included the following points:

1. In response to the COVID-19 pandemic, several telehealth policies and/or practices were enacted temporarily, including the expansion of reimbursement policies and interstate medical licensure rules, as well as relaxation of privacy rules.
2. These policies fueled growth in telehealth models across healthcare that favorably benefited rural residents who were able to access new services.
3. There is concern regarding whether the policies that created a business model for and promoted telehealth use will change post-pandemic. This will have implications for telehealth investment and sustainability in rural areas.

NQF also performed a scan of quality measure repositories and prior NQF work to identify measures that address rural-relevant conditions, emergency conditions in which telehealth can be utilized, and healthcare system readiness. Measures from the scan can be used with the Rural Telehealth and Healthcare System Readiness Framework. The measure scan included the following highlights:

1. A total of 324 measures relevant to rural populations, telehealth, and/or readiness were identified from the Centers for Medicare & Medicaid Services Measures Inventory Tool (CMIT) and prior environmental scans.
2. Over half of the identified measures were cross-cutting (i.e., non-condition specific), and the most commonly addressed topics included care coordination (18 percent), patient experience (13 percent), and surgical care (10 percent).
3. Of the four domains identified in the 2017 NQF Telehealth Framework, the measures most frequently addressed effectiveness (65 percent).
4. A total of 18 percent of measures were relevant to system readiness domains from the 2019 NQF Healthcare System Readiness Framework. Notably, none of the readiness measures are NQF-endorsed and few are used in the Center for Medicare & Medicaid Innovation (CMMI) models, quality reporting, or value-based purchasing programs.

Together these findings serve as key input as the Rural Telehealth and System Readiness Committee continues its work to develop a measurement framework for assessing the quality of care delivered via telehealth in rural areas during disasters.

Introduction

Background

Telehealth encompasses a broad range of healthcare services and health education provided via electronic information and telecommunication technologies over long distances. This can include real-time phone or video conferencing, asynchronous care (e.g., via email), patient education, and remote patient monitoring. A major component of telehealth is telemedicine, or medical care that uses technology to deliver services at a distance.[7]

While telehealth has been available for decades, the COVID-19 pandemic has been a major inflection point in its growth. In the early stages of the pandemic, the imminent need for telehealth increased with the disruption of medical care delivery. This ignited new and temporary changes in reimbursement and other facilitating policies that addressed some of the long-standing barriers to telehealth adoption.[8] Additionally, CMS, state Medicaid agencies, and private payers expanded reimbursement opportunities for telehealth services, reimbursing more services with fewer restrictions. Currently, services are reimbursed at the same rate as in-person care; however, policy discussions have been held to potentially reduce telehealth reimbursement rates.[9] Reimbursement was expanded to improve access to healthcare services as in-person visits were limited due to early stay-at-home orders.[10] While decisions on long-term reimbursement for telehealth have not been finalized, some reimbursement policies have been permanently enacted and others will likely remain permanent. Additional policies minimized the Health Insurance Portability and Accountability Act (HIPAA) restrictions with telehealth technologies and expanded the interstate licensure compact, allowing clinicians to practice across state lines without obtaining licenses in additional states. The combined result of a greater need for telehealth due to lower availability of in-person care and facilitating policies led to meteoric growth in telehealth visits. This also fueled the founding of new start-up companies, expansion of existing telehealth companies, and the development of new telehealth technologies.

Telehealth is particularly useful in bringing care to rural communities that face a myriad of barriers to accessing healthcare services.[11] People who live in rural areas have limited access to in-person services due to long geographical distances between their home and healthcare settings. There are also fewer healthcare services available in rural communities, including both primary care providers and specialists. Rural areas also have challenges with accessing both technology and broadband internet connections. Such barriers to care, reduced services, and limited technology are exemplified in rural Alaskan and American Indian populations, for whom major gaps in access to preventive and emergency care have been documented.[12] Rural residents are older and have higher rates of diabetes and mental health disorders.[13] The challenges of living in rural areas, including less access to health education, have led to poorer health literacy.[14] These barriers to care and poorer health worsen health outcomes in rural communities; this disparity is often termed the *rural mortality penalty*.[4]

Rural disparities in morbidity and mortality are particularly relevant for time-sensitive emergencies and readiness for public health emergencies, such as COVID-19. Examples of time-sensitive emergencies include stroke and trauma care, in which early access to specialists improves outcomes.[15] Telehealth has been effective in improving access to specialist care. Telestroke, for example, allows for access to stroke neurologists remotely 24/7/365, bringing this expertise into rural emergency departments (EDs). Telestroke services provide guidance on critical decisions about time-sensitive stroke treatments, such

as tissue plasminogen activator (tPA), and transfers to higher-level care for more advanced services, such as clot retrieval.[16]

Telehealth has been transformational in improving readiness during the COVID-19 pandemic and increasing access to care for rural patients in their homes, for people with COVID-19, and for those whose access to regular care has been disrupted.[17] This has been facilitated by relaxations in HIPAA restrictions that allow the use of existing technology, including meeting platforms (e.g., Zoom) and FaceTime (i.e., via Apple's iPhone). Telehealth has offered a safe option during the pandemic for those who fear seeking in-person care due to concerns of contagion within healthcare settings and prevented viral spread in waiting rooms. Telehealth has improved the readiness of rural communities to meet the challenges of the current public health emergency—the COVID-19 pandemic—as well as inevitable future emergencies that will affect both rural and non-rural areas. Despite this improvement, many gaps still exist in rural health readiness. Providers still face financial, regulatory, and technical barriers to develop telehealth systems to deliver care in rural communities and strengthen readiness.

Project Overview

With funding from CMS, NQF convened a multistakeholder Committee with several objectives. The Committee has been tasked with creating a conceptual measurement framework that guides quality measurement for care delivered via telehealth in rural areas in response to disasters. After completing this work, key stakeholders will be able to identify which measures are available for current use, encourage the development of new measures that address gaps, and promote the use of such measures to assess the impact of telehealth on healthcare system readiness and health outcomes in rural areas affected by disasters, such as pandemics, natural disasters, mass violence, and other events that are likely to affect public health.

This project builds upon previous, related NQF work. In 2017, NQF published a quality measurement framework that described four domains for telehealth measurement: (1) experience, (2) effectiveness, (3) financial impact/cost, and (4) access to care.[18] In that report, six types of measure concepts were identified that could be used to shape the selection and development of measures to assess the impact of telehealth on care and outcomes. Many of the concepts in that report are directly relevant to addressing barriers to care in rural communities for time-sensitive emergencies and public health emergencies. For example, existing measures and measure concepts addressed key issues, such as travel, timeliness of care, actionable information, the added value of telehealth to deliver evidence-based practice, patient empowerment, and care coordination, all of which are highly relevant to emergency care and readiness in rural communities. In addition, several other recent NQF reports have examined measurement issues related to telehealth readiness in rural communities, including ED transitions in care (2017),[19] chief complaint-based measures (2019),[20] trauma outcomes (2019),[21] and healthcare system readiness (2019).[22] Measures and measure concepts from this prior work are incorporated into this environmental scan and will be integrated where appropriate into this project.

This environmental scan report:

- reviews literature on telehealth in rural areas and high-priority issues related to quality measurement of telehealth delivery, healthcare system readiness, and health outcomes;
- summarizes the current state of national policies and practices that affect the delivery of telehealth in rural areas; and

- identifies a comprehensive list of measures and measure concepts that could facilitate assessment of the impact of telehealth on rural healthcare system readiness and health outcomes during public health emergencies.

The results of this environmental scan and input from the Committee will be used to produce a measurement framework linking quality of care delivered by telehealth, healthcare system readiness, and health outcomes in rural areas.

Definitions

Consistent definitions are important to rural telehealth quality measurement efforts. The definitions below provide clarity on the services that telehealth consists of, as well as the key elements of healthcare system readiness. In addition, it is important to accurately classify communities as rural versus non-rural in order to define and specify the population for performance measures or measurement programs.

Terminology relevant to this work includes the following terms:

Telehealth. Telehealth involves the delivery of medical care at a distance (e.g., a physician or other practitioner in one location uses a telecommunication infrastructure to deliver care to a patient at another site), as well as additional processes.[23] The term *telemedicine* refers solely to the medical component of telehealth but is commonly used interchangeably with the term *telehealth*. Related to reimbursement, CMS distinguishes between Medicare telehealth services; Communication Technology-Based Services (CTBS), which include virtual check-ins, electronic (e-) visits, and remote evaluation of patient videos/images; and remote physiologic monitoring (RPM).[24] The Health Resources and Services Administration (HRSA) defines *telehealth* as electronic information and telecommunication technologies that support the delivery of long-distance clinical care, education, public health, and administration.

Telehealth technology. Technologies used in telehealth include video conferencing, the internet, store-and-forward imaging, streaming media, and terrestrial and wireless communications, including short message service (SMS).[1]

Rural. *Rural* is often used as a catch-all phrase to describe areas that are nonurban; as such, it does not capture the nuance between rural and urban communities.[25] There are many definitions for *rural* used across the federal government. The Census Bureau defines *rural* as population, housing, and territory that is not included within an urban area; urban areas include both Urbanized Areas (UAs), areas with 50,000 or more residents, and Urban Clusters (UCs), which have at least 2,500 and less than 50,000 residents.[26] The Office of Management and Budget (OMB) uses a different classification, designating counties as metropolitan, micropolitan, or neither. A metropolitan area includes a core urban area with a population of 50,000 residents or more. A micropolitan area has at least 10,000 (but less than 50,000) residents. Counties outside of a metropolitan or micropolitan area are considered rural. Components of the two definitions are used by HRSA's Federal Office of Rural Health Policy (FORHP) to classify geographic regions. As of February 2021, the FORHP definition is being revised; its updated definition will become operational in fiscal year 2022. The FORHP seeks to average the Census Bureau's overcount of the rural population and the OMB undercount.[26] For purposes of Medicare reimbursement eligibility, CMS defines *rural sites* as sites in areas designated as rural health professional shortage areas under section 332(a)(1)(A) of the Public Health Service Act, sites in counties that are not part of a Metropolitan

Statistical Area as defined in section 1886(d)(2)(D) of the Social Security Act, or sites that participate in federal telemedicine demonstration projects funded or approved by the Secretary of Health and Human Services.[27] Other definitions of *rural* exist from the U.S. Department of Agriculture (USDA) and the Veterans Health Administration (VHA).[28,29]

Readiness. Readiness is a concept that ensures medical care is effectively delivered during public health emergencies. Specifically, readiness involves being prepared for, identifying, mitigating, evaluating, reacting to, and recovering from public health emergencies. Healthcare systems must be ready for all types of events, which is termed as an *all-hazards approach*.[22]

Methods

The environmental scan was conducted using several interrelated approaches. NQF reviewed literature on telehealth use in rural areas during emergencies and on healthcare system readiness in rural areas. With Committee input, NQF also conducted an internet search to identify recent policy changes, mainly due to COVID-19, that have an impact on telehealth and emergency response in rural areas. A measure scan was then performed to identify measures pertinent to conditions for which telehealth has shown promise, as well as measures related to healthcare system readiness. Each of these approaches is outlined below.

Literature Review

A PubMed search of available literature published in English from January 2017 through January 2021 was conducted to identify studies related to the delivery of care via telehealth and barriers to healthcare system readiness in rural areas. The time frame criterion was established to capture articles published since NQF released the Telehealth Measurement Framework in 2017. In order to capture the breadth of conditions or use cases for which telehealth has been studied, NQF used a broad search strategy using the individual terms *rural telehealth* and *rural preparedness*. The resulting 1,630 articles were then screened for relevance to the project scope based on the following inclusion and exclusion criteria:

Inclusion Criteria:

- Literature focused on the U.S. healthcare system
- Literature focused on rural populations
- Literature in which telehealth is used to provide emergency, acute, or behavioral healthcare or in which telehealth is used to provide any type of care in response to/during a public health emergency (including COVID-19)
- Literature focused on barriers to telehealth or healthcare system readiness

Exclusion Criteria:

- Literature published prior to 2017
- Literature not focusing on or not inclusive of the U.S. healthcare system
- Literature focused on urban populations
- Literature focused on outpatient care or care for chronic diseases delivered via telehealth outside of a public health emergency or disaster
- Literature consisting of comments, statements, or guidelines
- Studies that are in progress

NQF decided to include all articles related to behavioral health (even if the focus is on the outpatient setting) due to the elevated prevalence of reported adverse mental and behavioral health conditions associated with the COVID-19 pandemic.[30]

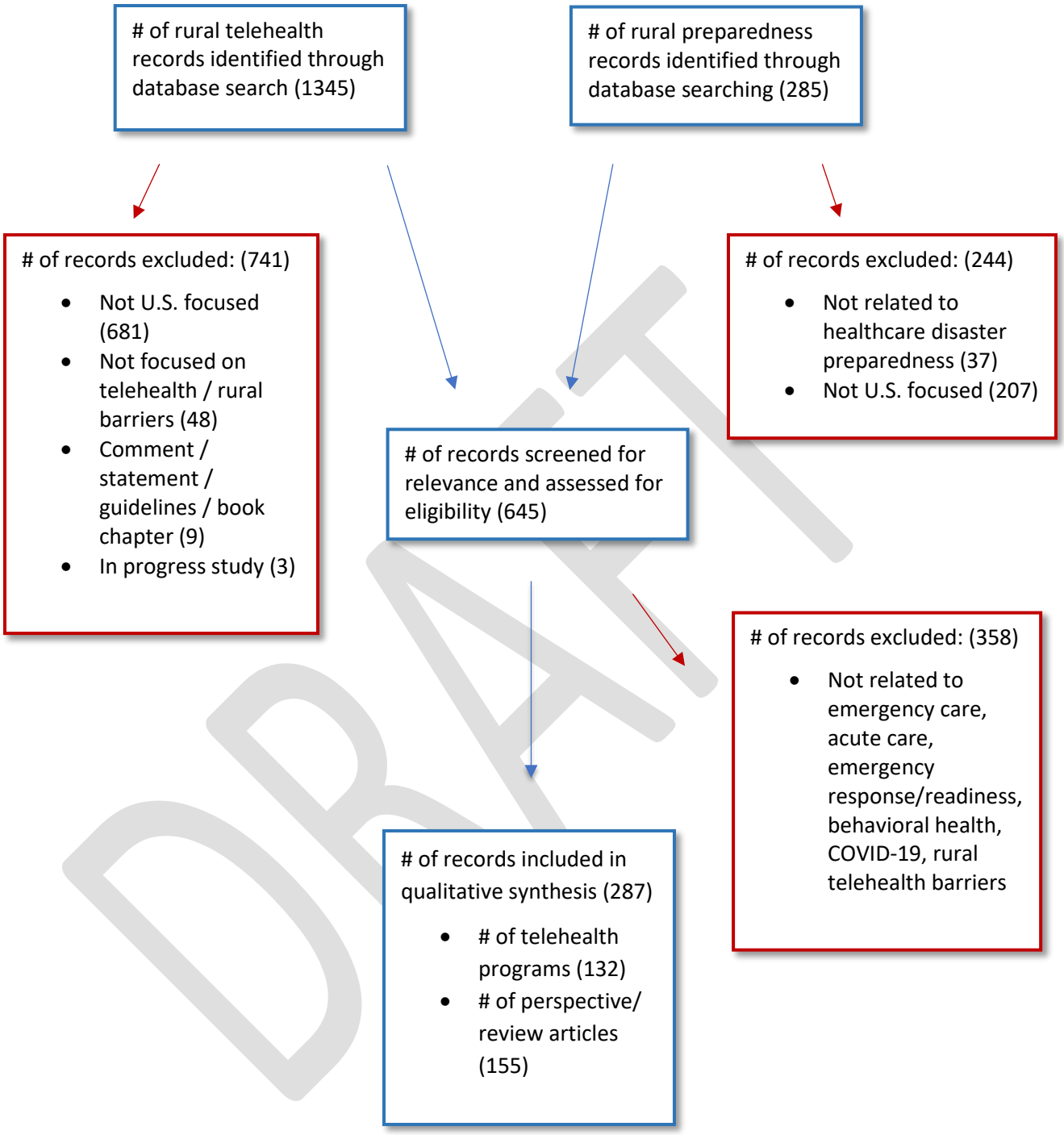
Two-hundred and eighty-seven articles were deemed eligible for inclusion in the qualitative synthesis. NQF categorized literature as either (1) articles that refer to telehealth programs or (2) articles that are broader reviews or commentaries discussing telehealth use or healthcare system readiness. Articles were classified as telehealth programs if they described telehealth as an intervention for a particular condition, care process, or patient population. NQF included briefs, commentaries, and perspective pieces in order to capture a broad variety of barriers, solutions, and innovative ideas from the field. NQF abstracted the following data from included articles:

1. Condition/Topic: captures the area of health being studied. Categories include generic health relevance, mental health, emergency care, neurological, COVID-19, cancer and neoplasms, healthcare system readiness, reproductive health and childbirth, infectious diseases, stroke, intensive care unit (ICU) care, surgery, renal and urogenital, respiratory, and cardiovascular.

2. Care Setting: describes a situation in which an individual receives care. Categories include inpatient, outpatient, emergency, or general. *General* refers to articles that are not setting specific or that span multiple care settings.

A flow diagram of the literature review process is outlined below (Figure 1).

Figure 1. Literature Flow Diagram



Policies and Practices

NQF conducted an internet search to identify major changes to telehealth policy, primarily focusing on federal policies from major providers and payers. NQF reviewed the U.S. Department of Health and Human Services' (HHS) waivers and flexibilities for healthcare providers and resources that are available on the websites of agencies identified by the Office of the National Coordinator for Health Information Technology (ONC) as involved in "[leveraging] health information technology to assist providers practicing in rural and tribal areas," including CMS, HRSA, the Indian Health Service (IHS), the Department of Veterans Affairs (VA), USDA, and the Federal Communications Commission (FCC).[31] NQF also consulted experts in the field, including the Committee, to identify additional policies for inclusion.

Measure Scan

NQF identified measures relevant to rural populations (listed below) that could be applicable to telehealth and system readiness measurement. These measures were identified from prior scans of rural, telehealth, and system readiness-relevant measures and include measures listed in public repositories and implemented in major programs with publicly available information on their use. In total, 324 measures potentially relevant to telehealth and system readiness in rural areas were identified after duplicates were removed (refer to Appendix C: Measure Inventory for the full list of measures).

- Two-hundred and fifty-two measures were included from a 2020 environmental scan for rural-relevant measures implemented in select CMMI programs, as well as quality reporting and value-based purchasing programs included in the Measure Applications Partnership (MAP). These measures were originally pulled from the CMIT and included all measures actively implemented in the following programs: Bundled Payments for Care Improvement Advanced Model, Next Generation ACO Model, Oncology Care Model, Comprehensive Primary Care Plus, Ambulatory Surgical Center Quality Reporting, End-Stage Renal Disease Quality Incentive Program, Home Health Quality Reporting, Hospice Quality Reporting, Hospital-Acquired Condition Reduction Program, Hospital Inpatient Quality Reporting, Hospital Outpatient Quality Reporting, Hospital Readmissions Reduction Program, Hospital Value-Based Purchasing, Inpatient Psychiatric Facility Quality Reporting, Inpatient Rehabilitation Facility Quality Reporting, Long-Term Care Hospital Quality Reporting, Medicare and Medicaid Promoting Interoperability Program for Eligible Hospitals and Critical Access Hospitals, Medicare Shared Savings Program, Medicare Part C Star Rating, Medicare Part D Star Rating, Merit-Based Incentive Payment System (MIPS) Program, Prospective Payment System-Exempt Cancer Hospital Quality Reporting, Skilled Nursing Facility Quality Reporting, and Skilled Nursing Facility Value-Based Purchasing. (The implemented measures were included in the scan if they addressed at least one of the following rural-relevant conditions: behavioral and mental health, substance abuse, medication management, diabetes, hypertension, chronic obstructive pulmonary disease (COPD), readmissions, perinatal care, pediatric care, advance directives and end of life, patient hand-offs and transitions, access to care, immunizations and vaccinations, cancer screenings, pneumonia, heart failure (HF), acute myocardial infarction (AMI), stroke, venous thromboembolism (VTE), healthcare-associated infections, patient experiences of care, ED use, surgical care, asthma, obesity, or cross-cutting [non-condition-specific] measures.)
- Twenty measures were included from a 2018 report identifying a core set of best available rural-relevant measures. This core set of measures addressed both the hospital and ambulatory

settings. Many of these measures are cross-cutting or resistant to low case-volume, and the MAP Rural Health Workgroup characterized these measures as highly relevant and applicable to most rural patients and providers.

- Seventeen measures were included from the 2017 Telehealth Framework report, in which the Telehealth Committee put forth an initial list of measures recommended for use with the Telehealth Framework. This list of measures included NQF-endorsed measures that address clinical areas that can be positively affected by telehealth according to literature reviewed as part of the framework report (e.g., mental and behavioral health, dermatology, chronic disease, rehabilitation, and care coordination).
- Fifty-nine measures were included from the 2019 Healthcare System Readiness report. While creating the Healthcare System Readiness Framework, the Committee identified a list of 59 measures that can be used to assess system readiness. Of note, most of these measures are not NQF-endorsed and have not been rigorously evaluated for feasibility, reliability, and validity.

For each of these 324 measures, NQF recorded characteristics relating to basic measure identification, rural relevance, relevance to telehealth framework domains, and relevance to system readiness framework domains. CMIT ID numbers, measure titles, and a link to measure specifications, including description, numerator, denominator, and exclusions, were recorded in the scan based on information from the CMIT. NQF measure ID number and endorsement status were also noted for measures that have been submitted for endorsement; this information was pulled from measure endorsement submissions as displayed on the NQF Quality Positioning System (QPS) as of January 2021.

Each measure was labeled as rural-relevant if it addressed at least one topic area identified as important to rural populations based on the MAP Rural Health Workgroup's report on rural-relevant measures susceptible to low case-volume in 2020. As previously described, this included behavioral and mental health, substance abuse, medication management, diabetes, hypertension, COPD, readmissions, perinatal care, pediatric care, advance directives and end of life, patient hand-offs and transitions, access to care, immunizations and vaccinations, cancer screenings, pneumonia, HF, AMI, stroke, VTE, healthcare-associated infections, patient experiences of care, ED use, surgical care, asthma, and obesity, as well as cross-cutting (non-condition-specific) measures.

Measures were also labeled as addressing a telehealth-appropriate condition if they addressed one of the following clinical areas identified as telehealth-relevant in the literature review: care coordination, mental health and substance use, chronic diseases (e.g., asthma, COPD, hypertension, diabetes, and congestive HF), ED use, surgical care, stroke, trauma, AMI, VTE, acute care pediatrics, pneumonia, and patient experience. Measures were also tagged if they had the potential to provide information on one of the four domains identified in the original telehealth framework: access to care, cost of care, experience, and effectiveness. (Note: Measures may have been tagged as relevant to one of these domains, even if the measure developer or steward has not provided clear guidance that telehealth encounters can be used in the measure calculation.)

Lastly, measures were tagged as relevant to healthcare system readiness if they specifically addressed the domains of staff, stuff, structure, or system. Where available, measures were also tagged with the relevant phase of system readiness: mitigation, preparedness, response, or recovery.

Based on the characteristics recorded for each measure in the scan, NQF identified an initial list of 31 measures to be considered for use with the updated Rural Telehealth and Healthcare System Readiness Framework (Table 6). This 31-measure list represents measures from the original 324-measure list that address at least one rural-relevant condition, one telehealth-appropriate condition, one domain from the 2017 Telehealth Framework, and one domain of the 2019 Healthcare System Readiness Framework.

Findings

Literature Review

The PubMed search identified an initial pool of 645 peer-reviewed articles that described telehealth use or healthcare system readiness in rural areas. Table 1 shows the condition/topic area of focus for the articles initially identified. Each article was classified under one category that best described its primary focus. Articles that could fit in multiple categories were classified under a specific condition when possible (e.g., a study on cardiovascular surgery was categorized as *cardiovascular* rather than *surgery*). Nearly one-fourth of the articles were not condition-specific but were generically relevant to health. The most frequently addressed condition was mental health (n=112, 17 percent of the initial article pool), followed by emergency care (n=51, 8 percent), and neurological conditions (n=34, 5 percent).

Table 1. Initial Article Pool by Condition/Topic (N=645)

Condition/Topic	Number of Articles
Generic Health Relevance	157 (24%)
Mental Health	112 (17%)
Emergency Care	51 (8%)
Neurological	34 (5%)
COVID-19	30 (5%)
Cancer and Neoplasms	28 (4%)
Healthcare System Readiness	26 (4%)
Reproductive Health and Childbirth	25 (4%)
Infectious Diseases	24 (4%)
Stroke	24 (4%)
Metabolic and Endocrine	22 (3%)
Skin	15 (2%)
Intensive Care Unit (ICU) Care	14 (2%)
Surgery	13 (2%)
Renal and Urogenital	11 (2%)
Eye	10 (2%)
Respiratory	10 (2%)
Ear	9 (1%)
Cardiovascular	7 (1%)
Dentistry	6 (1%)
Inflammatory and Immune System	5 (1%)
Oral and Gastrointestinal	5 (1%)
Musculoskeletal	3 (<1%)
Injuries and Accidents	3 (<1%)
Congenital Disorders	1 (<1%)

After NQF further screened the initial pool of articles for relevance and eligibility, 358 articles that were unrelated to emergency care, acute care, emergency response and readiness, behavioral health, COVID-19, or implementation of rural telehealth systems were excluded. In this final pool of 287 articles, the most frequently addressed conditions included mental health (n=85, 30 percent), emergency care (n=47, 16 percent), and COVID-19 (n=30, 10 percent) (Table 2). A summary table of articles is included in Appendix B: Literature Review References Summary.

Table 2. Included Literature by Condition/Topic (N=287)

Condition/Topic	Number of Articles
Mental Health	85 (30%)
Emergency Care	47 (16%)
Generic Health Relevance	40 (14%)
COVID-19	30 (10%)
Healthcare System Readiness	26 (9%)
Stroke	18 (6%)
ICU Care	13 (5%)
Reproductive Health and Childbirth	11 (4%)
Infectious Diseases	8 (3%)
Surgery	2 (<1%)
Cancer and Neoplasms	2 (<1%)
Neurological	2 (<1%)
Renal and Urogenital	1 (<1%)
Cardiovascular	1 (<1%)
Respiratory	1 (<1%)

Of the 287 included articles, 132 were categorized as describing telehealth programs or interventions for a particular condition, care process, or patient population (Table 3). These telehealth programs occurred most commonly in the emergency and outpatient settings. The remaining 155 articles consisted of reviews or commentaries discussing telehealth barriers or healthcare system readiness in broader detail, most frequently in the emergency or general settings.

Table 3. Literature by Care Setting and Article Type (N=287)

Care Setting	Telehealth Program (n=132)	Perspective/Review (n=155)
Emergency	57 (43%)	69 (45%)
General[a]	13 (10%)	48 (31%)
Inpatient	16 (12%)	12 (8%)
Outpatient	46 (35%)	26 (17%)

[a] This includes articles that are not setting-specific or that span multiple care settings.

The telehealth programs most frequently addressed mental health (n=50, 38 percent), emergency care (n=30, 23 percent), and stroke care (n=16, 12 percent) (Table 4).

Table 4. Number of Telehealth Programs by Condition/Topic (N=132)

Condition/Topic	Number of Telehealth Programs
Mental Health	50 (38%)
Emergency Care	30 (23%)
Stroke	16 (12%)
Generic Health Relevance	10 (8%)
ICU Care	9 (7%)
Infectious Diseases	5 (4%)
COVID-19	4 (3%)
Reproductive Health and Childbirth	3 (2%)
Healthcare System Readiness	2 (2%)
Neurological	2 (2%)
Cardiovascular	1 (<1%)

Policies and Practices

To help curb the spread of COVID-19, many healthcare providers have adopted or expanded the use of telehealth as a safe and effective way of delivering care without putting patients and caregivers at risk of exposure to the novel virus. Several policies and practices have been put in place to facilitate and address barriers to accessing telehealth. As part of the $2.2 trillion Coronavirus Aid, Relief, and Economic Security (CARES) Act passed on March 25, 2020 and enacted into law on March 27, 2020, aid was provided to support telehealth adoption, implementation, and success. The CARES Act included continuous funding for telecommunications initiatives and funding for new telehealth initiatives, which enabled HHS to temporarily lift originating and geographic restrictions on Medicare's coverage of telehealth-enabled services and encourage remote patient monitoring for home health services in Medicare.[32] The findings below summarize the adjustments that have been made to telehealth-related policies and practices to ensure that patients and healthcare providers have continued access to these services during the pandemic.

Policies Related to Telehealth During COVID-19

In 2020, HHS announced multiple waivers and flexibilities for use during the state of emergency from COVID-19. Below is a brief description of some of these waived requirements:

- Physician Visits in Skilled Nursing Facilities/Nursing Facilities: CMS waived the requirement to provide in-person care for nursing home residents and allowed physicians and practitioners to provide treatment via telehealth when appropriate.[29]
- Hospice: CMS allowed the use of telehealth so that a hospice physician or nurse practitioner could meet the requirement to conduct an in-person encounter to determine continued eligibility for hospice care and allowed hospice providers to render routine home care via telehealth.[33]
- Frequency Limitations: CMS removed frequency limitations on certain services provided via Medicare telehealth (i.e., subsequent inpatient visits no longer limited to once every three days,

subsequent skilled nursing facility (SNF) visits no longer limited to once every 30 days, and critical care consults no longer limited to once per day).[33]

- Physician Supervision Requirements: For services requiring direct supervision by a physician or other practitioner, CMS allowed supervision to be provided via telehealth (e.g., using real-time audio/video).[34]
- Out-of-Pocket Costs/Co-Pays: The HHS Office of Inspector General granted healthcare providers flexibility to reduce or waive fees.[35] Medicare waived the payment of co-pays/coinsurance and deductibles for COVID-19 testing and vaccines.[33]
- Hospitals & Originating Site Fee: CMS allowed physicians or nonphysician practitioners who typically render professional services in the hospital's outpatient department to provide care via telehealth. The hospital can bill the associated originating site facility fee for these services under the Physician Fee Schedule.[33]
- Hospital-Only Remote Outpatient Therapy & Education Services: CMS allowed hospitals to bill for behavioral health and education services provided via telehealth by hospital-employed professionals who cannot bill Medicare directly. This included services provided to the patient at home.[34]
- Medicaid and Children's Health Insurance Program (CHIP): As part of a 2019 Medicaid Frequently Asked Questions (FAQ) document on COVID-19, CMS provided guidance on telehealth services to state Medicaid and Children's Health Insurance Program (CHIP) agencies. CMS advised that state programs could utilize telehealth instead of in-person services as long as certain conditions were met, and this could be allowed via an Appendix K emergency waiver amendment.[36]
- HIPAA Enforcement: CMS issued a temporary suspension of HIPAA enforcement and removed noncompliance penalties, thus allowing the use of telehealth services via nonpublic facing communication platforms (e.g., Apple FaceTime, Facebook Messenger video chat, and/or Skype).[37]
- Licensure: Certain states expedited and expanded emergency/temporary licensure for physicians already licensed in other states (e.g., through participation in the Interstate Medical Licensure Compact).[38]

HHS Waivers: Expansion of Telehealth With 1135 Waiver

Effective March 6, 2020, under the new 1135 Waiver, Medicare expanded locations for reimbursable office, hospital, and other types of visits furnished via telehealth across the country. Included in this expanded payment are Medicare telehealth visits, virtual check-ins, and e-visits rendered to beneficiaries in all settings where the patient is residing.[39] In addition, a range of providers, including doctors, nurse practitioners, clinical psychologists, licensed clinical social workers, physical therapists, occupational therapists, and speech language pathologists, are able to offer telehealth to their patients.[39] Prior to this waiver, Medicare would only pay for telehealth on a limited basis, specifically when the person receiving the service is in a designated rural area and when they leave their home and go to a clinic, hospital, or certain other types of medical facilities for the service.[39]

For the duration of the COVID-19 public health emergency, Medicare will continue to make payments for telehealth services furnished to patients and beneficiaries in all areas of the country and in all settings, including residential healthcare facilities and individual patient residences. Prior to the pandemic, the Medicare coinsurance and deductible would generally apply to these services. However, the HHS Office of Inspector General provided flexibility for healthcare providers to reduce or waive cost sharing for telehealth visits paid by federal healthcare programs.[39] Finally, HHS announced that it will

postpone audits verifying an existing patient-practitioner relationship for Medicare claims submitted during the COVID-19 emergency.[39]

CMS Flexibilities for Rural Health Clinics and Federally Qualified Health Centers During COVID-19

In response to the COVID-19 public health emergency, CMS waived the requirement that limited the number of beds in Critical Access Hospitals (CAHs) to 25 and the length of stay to 96 hours. Rural Health Clinics (RHCs) and Federally Qualified Health Centers (FQHCs) are able to provide visiting nursing services at a beneficiary's home with fewer requirements, making it easier for beneficiaries to receive care in their home.[33] The FQHC Home Health Agency's shortage requirement for visiting nursing services was also revised; in areas with a shortage of home health agencies, FQHCs can bill for visiting nursing services rendered by registered nurses or licensed practical nurses at the patient's place of residence. However, homebound patients are required to have a written plan of treatment.[40]

During COVID-19, CMS maintained the requirement that at least one physician, nurse practitioner, physician assistant, certified nurse-midwife, clinical social worker, or clinical psychologist be available to provide patient care service during all clinic or center hours of operation. However, CMS temporarily relaxed restrictions on the amount of time that specific types of professional staff needed to be available, and the requirement that a nurse practitioner, physician assistant, or certified nurse-midwife be available for at least 50 percent of operation hours was waived. The waiver will assist in addressing potential staffing shortages by increasing flexibility regarding staffing mixes during the public health emergency.[40]

CMS also modified the requirement that a physician must supervise a nurse practitioner in RHC and FQHC but only to the extent permitted by state law. The physician, however, either in person or through telehealth and other remote communications, remains responsible for providing medical direction for the clinic or center's healthcare activities, consultation for the healthcare staff, and medical supervision of the remaining healthcare staff. This allows RHCs and FQHCs to fully use nurse practitioners.[40]

IHS Telemedicine Services

The IHS is an agency within HHS that is responsible for providing federal health services to American Indians and Alaskan Natives belonging to 574 federally recognized tribes in 37 states.[41] IHS currently offers access to telehealth technologies "…to support and promote long-distance clinical healthcare, patient and professional health-related education, public health, and health administration."[42] In addition, the mission of the IHS Telebehavioral Health Center of Excellence (TBHCE) Telebehavioral Health Program is to provide, promote, and support the delivery of high quality, culturally sensitive telebehavioral health services to American Indian/Alaska Native people.[33]

During the COVID-19 pandemic, IHS announced the expansion of its telehealth services across IHS federal facilities to reduce the risk of exposure to COVID-19 for patients, caregivers, and healthcare workers. On April 8, 2020, IHS issued additional guidance that allowed clinicians to use certain additional, nonpublic facing audio or video communications technologies to augment all clinical activities related to providing care to patients during the COVID-19 public health emergency. This applied to telehealth provided for any clinical reason, regardless of whether the telehealth service is related to the diagnosis and treatment of health conditions related to COVID-19.[44]

USDA Telemedicine

The Distance Learning and Telemedicine (DLT) program helps rural communities overcome the effects of remoteness and low-population density through the use of unique telecommunication capabilities that facilitate connection between rural communities and the world.[45] Recently, the program announced that it had $72 million available to help beneficiaries (i.e., rural residents) gain access to healthcare and educational opportunities. The program accepts funding applications once a year but due to the COVID-19 public health emergency, USDA opened a second application window. The extended deadline provided more time for applicants to complete their funding requests.[46] Access to distance learning and telemedicine provides efficient and effective options to healthcare and educational opportunities without having to travel long distances or the risk of exposure to COVID-19 among large groups of people.[47] An additional $25 million from the CARES Act was allocated to the USDA Rural Development mission area to provide loans and grants to rural residents, businesses, and communities affected by the COVID-19 public health emergency.[48]

On May 4, 2020, USDA released a summary of key service changes to expand the use of telehealth in response to the COVID-19 public health emergency. The summary outlines changes that will help to ensure that more rural residents can access care both when and where they need it during the public health emergency.[49]

VA Telemedicine

The 2018 Maintaining Internal Systems and Strengthening Integrated Outside Networks (MISSION) Act prompted the VA to expand the implementation of telehealth services to increase access to care for veterans. As part of this push, the VA Digital Divide Consult has helped more than 12,000 Veterans obtain internet access or a video-capable device for their healthcare needs. In the program, VA providers refer Veterans to a VA social worker for determination of eligibility for various programs and to assist with acquiring the internet service or technology needed for VA telehealth. The program pays specific attention to ensure the participation of older Veterans, those living in rural areas, and Veterans who are homeless or residing in temporary housing.[50] A study conducted by the Journal of the American Medical Informatics Association reported that Veterans with lower incomes, more severe disabilities, and more chronic conditions were more likely to use virtual care during the pandemic; in contrast, Veterans older than 45 years of age and Veterans who are homeless or who reside in rural areas were less likely to use video care.[51] The Digital Divide Consult offers a solution for these Veterans to access video care when needed.

The VA's Digital Divide Consult and other initiatives have been attributed to the rise in the use of telehealth services by Veterans. As of mid-November 2020, a total of 196,116 telehealth video visits to Veterans in their homes or other off-site locations were completed over a seven-day period, representing a 1,653 percent increase in weekly VA Video Connect visits since the end of February 2020. The number of video appointments held per day peaked at more than 41,000.[50]

ONC Resources

The ONC is within the Office of the Secretary for HHS and is responsible for coordinating the adoption and use of advanced health information technology (IT) and electronic exchange of health information.[52] ONC encourages health IT development in rural areas and adoption of telehealth by convening advisory groups and providing reference resources, such as implementation guides and summaries of best practices, for implementing various forms of health IT. ONC emphasizes that interoperability is key to advancing the nation's healthcare system and promoting access to information and care; it coordinates

information on interoperability and implementation of health IT systems through its Interoperability Standards Advisory.[53]

ONC's resources on telehealth emphasize the importance of consumer-centered systems that are easy for patients to use, allow patients secure access to their own health data, and meaningfully combine data across multiple sites and modes of care. ONC also recognizes that social determinants of health affect care and encourages that these data be collected in electronic health records (EHRs) and used to inform care.[54] While challenges such as limited integration between care platforms, medical devices, and health records persist, ONC released a 10-year interoperability roadmap with guiding principles and calls to action for stakeholders to achieve a learning health system (in which data is automatically generated and captured during care provision) by 2024.[55]

HRSA Resources

One of the goals of HRSA, an agency of HHS, is to improve healthcare for people who are geographically isolated, economically disadvantaged, or medically vulnerable. Rural residents represent one group that is burdened with all three of these challenges.[1] The use of telehealth in rural and remote areas helps to address the challenges of access to sufficient healthcare services, including specialty care. HRSA's Office for the Advancement of Telehealth (OAT) champions the use of telehealth technologies to improve healthcare delivery, education, and health information services. The OAT also funds programs that support the promotion and improvement of telehealth services in rural areas. Current programs include the Telehealth Network Grant Program, Evidence-Based Tele-Behavioral Health Network Program (EB THNP), Telehealth Resource Center Program (TRC), Telehealth Centers of Excellence (COE), Flex Rural Veteran Health Access Program (RVHAP), Licensure Portability Grant Program (LPGP), and the Telehealth Focused Rural Health Research Center Cooperative Agreement.[1] HRSA has awarded substantial funding to rural organizations across the country to enhance quality care and telehealth access for those in rural communities.[56] Organizations such as the Rural Health Research Gateway, which is funded by HRSA's FORHP, also provide meaningful policy updates and research that target telehealth efforts.

Additional Policies and Practices

In addition, Committee members noted the following policies and practices as important to discuss or re-emphasize due to their relevance to telehealth in rural areas:

Changes passed in H.R.133 – Consolidated Appropriations Act, 2021. The Consolidated Appropriations Act added rural emergency hospitals (e.g., critical access hospitals and other rural facilities with fewer than 50 beds) as originating sites eligible for reimbursement for telehealth services under Medicare. The Act also expands access to mental health services (i.e., diagnoses, treatment, and evaluation) via telehealth by waiving geographic restrictions and allowing services to be delivered at the home of Medicare beneficiaries. However, beneficiaries must have one in-person visit during the six-month period prior to the telehealth encounter in order to be eligible. As part of the Consolidated Appropriations Act, the Federal Communications Commission (FCC) received funding to restart the COVID-19 telehealth program, which in 2020 provided funding for broadband expansion and other connected health resources to healthcare programs across the country.[57]

Grants established in H.R.1319 – American Rescue Plan Act of 2021. As of early March 2021, the American Rescue Plan Act of 2021 has passed in the House and Senate. Section 1002 of H.R. 1319, "Emergency Rural Development Grants for Rural Health Care," establishes grants to fund an emergency

pilot program for eligible facilities in rural areas where the median household income is below the poverty line or state, nonmetropolitan median household income. This program would provide funding of up to $500 million towards rural development related to COVID-19 response, such as "[increasing] telehealth capabilities, including underlying health care information systems."[58]

Improving efficiency in hospital credentialing systems. Current hospital credentialing systems inhibit the ability to rapidly adapt to integrate telehealth providers into the workforce, especially specialty providers. This is essential to meet the unexpected demand during public health emergencies. While delegated credentialing and proxy credentialing can sometimes expedite the credentialing process, these can still face challenges, such as site-specific differences in required documentation and data tracking.[59] Several payers have developed expedited credentialing systems (e.g., Blue Cross Blue Shield (BCBS) Massachusetts' 72-hour Public Health Emergency Provider Credentialing and Enrollment Process),[60] but these are generally for time-limited credentialing during the COVID-19 emergency only.

Action from private payers. Policy changes from private payers are also a major consideration for providers and systems considering the expansion of telehealth services. While third-party payers will usually align with CMS, payers may have developed additional innovative models to provide telehealth during the COVID-19 crisis that can encourage telehealth use. During COVID-19, payers made temporary changes, including waiving member cost-sharing for in-network telehealth visits and reimbursing providers at the same rates for in-person and telehealth provision of services.[61] These changes may become permanent in states that successfully pass payment parity bills. Payers also expanded coverage for mental/behavioral health services; physical, occupational, and speech therapy; and dental services via telehealth. The number of providers participating in telehealth platforms also increased; this was sometimes assisted by incentive programs (e.g., increased reimbursement rates for child psychiatrists).[61]

Other actions from payers include the creation of online risk assessment tools and telemedicine provider directories; partnerships to provide members with access to tools such as video workouts and emotional wellness apps; distribution of kits, including monitoring equipment (e.g., thermometers, blood pressure monitors, and fitness trackers); and Internet-enabled devices with prepaid data to facilitate telehealth appointments. Some payers have also developed programs to connect members with social services (e.g., the Supplemental Nutrition Assistance Program and Women, Infants, and Children program). These programs provide free Wi-Fi at community health centers or community resource centers and coordinate volunteers to transport patients as well as medicine and food.[61]

Limited extension of policies allowing audio-only telehealth visits. Policy changes allowing provision of care via telephone visits helped to increase access to care during COVID-19.[62] However, most states that are looking to make these changes permanent are only extending these changes to mental and behavioral health services. California is an exception and may enact broader changes; as of early March 2021, the State Assembly is considering a bill that would amend the Business and Professions Code to directly specify audio-only visits as part of telehealth services and would require any medically appropriate telehealth services to be reimbursed by Medi-Cal at the same rate as in-person services.[63]

Electronic prescriptions. E-prescribing is a key component of telehealth provision and noted possible challenges in prescribing medications across state lines (e.g., safely prescribing controlled substances). During COVID-19, state and federal actions have allowed changes, including the prescription of controlled substances via internet and relaxed substance-related regulatory requirements (e.g., opioids

and controlled substances) related to good-faith use of telehealth.[64] Other notable changes to prescribing include waivers of early refill limits on prescription maintenance medications and increased mail-order delivery of prescription medications through private payers.[65]

Measure Scan

In total, 324 measures relevant to rural populations, telehealth, and system readiness were identified from sources such as CMIT and prior rural, telehealth, and healthcare system readiness frameworks. Almost all the measures identified in the scan (n=322, 99 percent) addressed at least one rural-relevant priority topic. Fifty-one percent of the measures were cross-cutting measures, which are measures that can be relevant across multiple clinical conditions, settings, or procedures/services (e.g., patient experience) as opposed to condition-specific measures, which are only relevant to a specific clinical condition (e.g., hemoglobin A1c control measures for diabetes treatment). The most addressed rural-relevant topics were patient experiences of care (13 percent), patient hand-offs and transitions (10 percent), surgical care (10 percent), and readmissions (10 percent).

Of the measures included in the scan, two-thirds of them (n=217, 67 percent) addressed at least one of the telehealth-appropriate conditions identified as part of the literature review. The most frequently addressed topic was care coordination (18 percent).

Almost all the measures in the scan (n=308, 95 percent) were relevant to at least one of the domains of the 2017 Telehealth Framework. The most common tag was effectiveness (65 percent), as most of the measures address some aspect of clinical effectiveness (e.g., improving symptoms of a condition, appropriate treatment). Access to care was also frequently tagged (41 percent), which includes measures assessing whether patients have received disease screenings, immunizations, etc.

Lastly, 18 percent of measures (n=76) were tagged as relevant to at least one of the system readiness domains; 59 of these 76 system readiness-relevant measures (78 percent) were identified from the 2019 Healthcare System Readiness Framework. None of the measures included from the 2019 Framework are currently NQF-endorsed, and few are used in CMMI models, quality reporting, or value-based purchasing programs. However, 17 additional measures were tagged as relevant to the “system” domain of system readiness during the scan. These were measures that addressed communication and transfer of patient information, plans of care, and other items between physicians and patients.

Table 5. Characteristics of Rural, Telehealth, and System Readiness-Relevant Measures Identified in Measure Scan (N=324)

Characteristic	n (%)
Addresses at least one rural-relevant priority topic	322 (99%)
Cross-Cutting	166 (51%)
Patient Experiences of Care	43 (13%)
Patient Hand-Offs and Transitions	32 (10%)
Surgical Care	32 (10%)
Readmissions	31 (10%)
Medication Management	26 (8%)
Behavioral/Mental Health	20 (6%)
Pediatrics	19 (6%)
Vaccinations/Immunizations	19 (6%)
Access to Care	18 (6%)
Diabetes	15 (5%)
Stroke	14 (4%)
Acute Myocardial Infarction	13 (4%)
Healthcare-Associated Infections	13 (4%)
Emergency Department Use	13 (4%)
Substance Abuse	9 (3%)
Advance Directives/End of Life	6 (2%)
Perinatal	5 (2%)
Pneumonia	5 (2%)
Venous Thromboembolism	5 (2%)
Asthma	5 (2%)
Hypertension	4 (1%)
Heart Failure	4 (1%)
Chronic Obstructive Pulmonary Disease	3 (1%)
Cancer Screenings	3 (1%)
Obesity	2 (1%)
Addresses at least one telehealth-appropriate condition	217 (67%)
Care Coordination	58 (18%)
Patient Experience	43 (13%)
Surgical Care	32 (10%)
Chronic Diseases	30 (9%)
Mental Health/Substance Use	29 (9%)
Stroke	14 (4%)
Emergency Department Use	13 (4%)
Acute Myocardial Infarction	13 (4%)
Acute Care Pediatrics	7 (2%)
Venous Thromboembolism	5 (2%)
Pneumonia	5 (2%)
Trauma	1 (<1%)
Relevant to at least one telehealth framework domain	308 (95%)
Effectiveness	210 (65%)
Access	133 (41%)
Experience	39 (12%)
Cost	2 (1%)

Characteristic	n (%)
Relevant to at least one system readiness domain	76 (23%)
System	60 (19%)
Stuff	9 (3%)
Staff	6 (2%)
Structure	1 (<1%)
Linked to at least one specific phase of system readiness	59 (18%)
Response	44 (14%)
Recovery	27 (8%)
Preparedness	20 (6%)
Mitigation	11 (3%)

NQF sought to identify measures that had overlap between all three topics: measures that were rural-relevant, telehealth-appropriate, and system readiness-appropriate. Overall, 31 measures were identified that address at least one rural-relevant topic, one of the telehealth-appropriate conditions identified in the literature review, one telehealth framework domain, and one system readiness domain. These are primarily measures that address communication and data transfer and are not condition specific.

This pool of measures includes a limited number of NQF-endorsed measures, outcome measures, and electronic clinical quality measures (eCQMs). Twenty-nine of these 31 measures (94 percent) are not NQF-endorsed. Eighteen of these measures are process measures, eight are structure measures, and five are outcome measures, including three patient-reported outcome performance measures (PRO-PMs). Lastly, four of the 31 measures (13 percent) are eCQMs.

Table 6. Preliminary List of Rural-Relevant, Telehealth-Appropriate, and System Readiness-Appropriate Measures (N=31)

CMIT ID	NQF ID	NQF Endorsement Status	Measure Title
0254 / 5796	0089 / 0089e	Endorsed	Diabetic Retinopathy: Communication With the Physician Managing Ongoing Diabetes Care
0311	0097	Endorsed	Medication Reconciliation Post-Discharge
0522	0650	Endorsement Removed	Melanoma: Continuity of Care – Recall System
0829	0495	Endorsement Removed	Median Time From ED Arrival to ED Departure for Admitted ED Patients
0835	0497	Endorsement Removed	Admit Decision Time to ED Departure Time for Admitted Patients
0916	0498	Endorsement Removed	Door to Diagnostic Evaluation by a Qualified Medical Personnel
0928	0489	Endorsement Removed	The Ability for Providers With HIT to Receive Laboratory Data Electronically Directly Into Their Qualified/Certified EHR System as Discrete Searchable Data
0930	0496	Endorsement Removed	Median Time From ED Arrival to ED Departure for Discharged ED Patients
0939	9999	Not Endorsed	Emergency Department Use With Hospitalization (OASIS Based)

CMIT ID	NQF ID	NQF Endorsement Status	Measure Title
0977	9999	Not Endorsed	Physician Notification Guidelines Established
0984	9999	Not Endorsed	Diabetic Foot Care and Patient Education in Plan of Care
1147	9999	Not Endorsed	Referral for Otologic Evaluation for Patients With Acute or Chronic Dizziness
2527 / 5826	9999	Not Endorsed	Closing the Referral Loop: Receipt of Specialist Report
2561	9999	Not Endorsed	Post-Anesthetic Transfer of Care: Use of Checklist or Protocol for Direct Transfer of Care From Procedure Room to Intensive Care Unit (ICU)
2700	0491	Endorsement Removed	Tracking Clinical Results Between Visits
2802	9999	Not Endorsed	Access to Care
2804	9999	Not Endorsed	Access to Specialists
2830	0006 *(similar)*	Not Endorsed	Care Coordination
3006	9999	Not Endorsed	Access to Medical Equipment
3501	9999	Not Endorsed	Transfer of Health Information to the Patient Post-Acute Care (PAC)
3503	9999	Not Endorsed	Transfer of Health Information to the Patient Post-Acute Care
5292	0295	Endorsement Removed	Physician Information
5295	0292	Endorsement Removed	Vital Signs
5650	9999	Not Endorsed	Transfer of Health Information to the Provider Post-Acute Care (PAC)
5762 / 1800	9999 / 0338	Endorsement Removed	Home Management Plan of Care (HMPC) Document Given to Patient/Caregiver
5772	9999	Not Endorsed	Stroke Education
6088	9999	Not Endorsed	Transfer of Health Information to Provider Post-Acute Care
N/A	0291	Endorsement Removed	Emergency Department Transfer Communication Measure (EDTC)
N/A	9999	Not Endorsed	Performance Measure 73 (formerly PM 66b) (Emergency Medical Services for Children)
N/A	9999	Not Endorsed	Performance Measure 74 (formerly PM 66c medical) (Emergency Medical Services for Children)
N/A	9999	Not Endorsed	Performance Measure 75 (formerly PM 66c trauma) (Emergency Medical Services for Children)

The full list of measures in the environmental scan is linked in Appendix C: Measure Inventory.

Discussion

Literature Review

In this review, NQF examined a wide variety of literature surrounding telehealth and how it has been deployed in rural communities to meet the distinctive needs of rural residents. While telehealth has

many different use cases in rural communities, this review focused on specific use cases related to readiness for disaster care—with the COVID-19 pandemic being the dominant example—as well as acute care delivered in hospitals. An example of acute care is tele-emergency; in this instance, emergency physicians can provide specialized care to physicians working in distant hospitals for diagnoses and treatment, and in particular, decisions about transferring patients, often across long distances.[66] In a prospective cohort study of six teleED networks in 65 hospitals in 11 states, a total of 4,324 teleED encounters were reported, and of the 2,248 encounters included in the analysis, 882 (39 percent) met the criteria for being an *averted transfer*, meaning they could be admitted to a local facility or discharged home.[67]

According to the latest U.S. Census, of the 3,143 counties in the U.S., 704 counties were noted as *completely rural*, and 1,185 were noted as *mostly rural*, together making up 60 percent of U.S. counties.[68] Furthermore, the literature demonstrated that residents of rural areas experience clear disparities in both morbidity and mortality. This is referred to as the *rural mortality penalty*.[69] Population trends demonstrate that this disparity is growing.[70] More recent data demonstrate that the COVID-19 pandemic itself has increased disparities, particularly for groups with lower socioeconomic status, limited access to care, and other vulnerabilities, including rural populations.[71]

The literature review identified studies demonstrating the specific healthcare risks of rural residents. In particular, residents of rural communities are more vulnerable for a variety of reasons, including considerably higher burdens of preventable conditions. This includes higher rates of obesity, cancer, diabetes and injury, along with higher rates of smoking as well as substance use disorders (SUDs).[72] Rural residents also demonstrate lower health literacy. This can contribute to both riskier behavior and more difficulties in managing acute and chronic health conditions.[73] Rural residents also have lower levels of physical activity and consume more calorie-dense diets that are lower in nutrients.[74] Furthermore, rural communities also often lack basic access to healthcare services, including primary care physicians and specialists.[75,76] Several factors contribute to this issue, including declining populations, economic stagnation, and shortages of physicians and other healthcare professionals. Cultural and financial barriers that reduce access to care also exist in rural areas. According to data from the University of North Carolina, 179 rural hospitals have closed since 2005.[77] These closures leave critical gaps in healthcare services for rural residents; they also have a negative impact on the local economy and jobs. During the COVID-19 pandemic, this trend accelerated with 18 such closures in the first nine months of 2020.[78]

Telehealth can solve some of the issues regarding access to care in rural areas, allowing patient-clinician or clinician-clinician communication over long distances. Before the COVID-19 pandemic, CMS only reimbursed telehealth visits delivered when the originating site (i.e., the patient location) was in a rural healthcare facility. The result of this restriction was a relatively low uptake of telehealth, even within rural communities. This was because rural clinicians, not patients, needed to initiate telehealth visits with authorized “distant” site consultants. In addition to CMS policies for Medicare, there was a wide range in telehealth reimbursement policies in states and private insurance, not excluding licensure issues that complicated patients’ or providers’ efforts to seek telehealth consultants outside their state.[79] Pre-pandemic requirements necessitating that telehealth visits include video for reimbursement created barriers for rural areas lacking robust broadband, and the cost of telehealth technology also hampered broad telehealth deployment.[80]

Despite the roots of telehealth being traced to the 1970s, the onset of the COVID-19 pandemic has coincided with major increases in telehealth. Prior to the pandemic, there were several predominant use cases for telehealth. This included direct-to-consumer platforms (e.g., Teladoc), which primarily sell to private employers, some of whose employees live in rural areas. In addition, some health systems, particularly larger ones, made investments in telehealth for either strategic reasons in the absence of a clear return on investment or to promote value-based models.[81] Telehealth also existed in capitated systems, such as Kaiser Permanente, which view telehealth as a value driver, and integrated health systems, such as VHA.[82–84] Telehealth was also successful for specific use cases, such as telestroke, which allows for rapid consultation with expert neurologists around time-dependent stroke treatments.[85] In addition, telepsychiatry was also a burgeoning use case for telehealth pre-pandemic, particularly in rural areas.[86,87] This was primarily due to the combination of large disparities in access to mental health services as well as the fact that psychiatric care, in general, solely requires talking to the patient, which can easily be achieved through a video connection as compared to other types of medical care that rely more heavily on physical examination.

Notably, some studies in the review raised concerns about the use of telehealth in rural areas. In a qualitative study of women living in rural South Carolina, telehealth could address reproductive health barriers, including cost, transportation, and long wait times that occur at local healthcare facilities.[88] However, participants voiced several concerns, including issues of confidentiality, in particular living in a small town; privacy; and perceived importance of relationship-centered care, which included patient-provider communication and ensuring that healthcare providers were approachable. Alternatively, telehealth may offer some benefits of care that in-person encounters may not. For example, telehealth can offer additional information about a patient's home environment to identify specific care issues (e.g., reconciling medications with a patient's own pill bottles at home and recommending discarding old pill bottles) or target interventions (e.g., showing a clinician the contents of a refrigerator may lead to specific recommendations about diet).

Early in the pandemic, stay-at-home policies and other public health interventions resulted in a major reduction in access to in-person care. Furthermore, individuals were frightened of seeking in-person care due to fears of COVID-19 contagion within healthcare settings.[89] The result was a rapid change in policies by CMS and other entities to promote the use of telehealth. This included facilitating policies regarding expanded reimbursement promulgated by government and private payers, reducing restrictions on medical licensure with expansion of the interstate license compact, and loosening restrictions on information privacy, which have expanded the types of technology platforms that can be used to deliver telehealth. The result was a dramatic increase in telehealth that had an impact on both urban and rural communities. In a study of the early stages of the pandemic in a sample of commercial and Medicare Advantage visits spanning from January to June 2020, 30 percent of all visits were provided via telemedicine, 23-fold higher compared to the pre-pandemic period.[90] However, telehealth has been unevenly deployed during the pandemic, with a high of 68 percent among endocrinologists to a low of 9 percent among ophthalmologists, likely due to differences in the need for in-person physical examination. Specifically, endocrinologists can rely more on laboratory test results, while most ophthalmology services would be challenging to deliver by telemedicine, given the requirement for detailed examination and advanced technology. Patient and clinician preferences can also contribute to uneven telehealth deployment.

Another theme that emerged from the review is that organizations that had a pre-existing telemedicine infrastructure in place were able to scale telehealth much more rapidly during the pandemic. An example is the VHA system, which developed an infrastructure for telehealth that was mandated by the MISSION Act of 2018. The Ralph H. Johnson VA Medical Center in South Carolina increased telehealth visits from 1,429 visits in January 2020 to 2,034 visits in March 2020.[91] This underscores the need to establish telehealth infrastructure and train staff to use telehealth systems before a disaster strikes, allowing programs to scale more easily during a disaster.

The literature review also demonstrated a large number of novel programs affecting rural residents that have developed since the onset of the COVID-19 pandemic. Specific use cases include telemedicine for SUDs,[92] hospital-based consultation services,[93] and critical care services.[94] These were likely sparked by the new ability to bill for telehealth services. Telehealth services also expanded to facilitate transfers from rural EDs. Tele-mental health was also increasingly tested in rural areas and expanded during the pandemic, particularly for emergency indications such as suicidal ideation or suicide attempts that require detailed assessments. A recent review summarized the results of 22 such rural telehealth interventions, demonstrating the broad effectiveness of such programs to improve access to psychiatrists.[95] Another pilot program described a rural telehealth intervention to target rural home and community-based Medicaid Waiver Program participants that involved a combination of asynchronous (i.e., remote patient monitoring) and synchronous services (i.e., nursing assessments of pain, mental health, and care coordination).[96]

A major emergent theme in the literature was rural residents experiencing technological barriers to telehealth. A central issue is access to broadband technology, which is required to achieve a high-resolution, real-time video connection between the patient and the clinician. A study of broadband internet service data from the 2018 American Community Survey estimates that for census tracts within the Navajo Nation, which is the largest American Indian tribe, 58–88 percent of households in the Navajo Nation census tracts lack broadband internet service, compared to 19.6 percent nationally.[97] Broadband access also differentiates the type of telemedicine service as well as where it can be delivered. In particular, the lack of broadband access affects homes more than rural hospital settings and has a greater impact on the ability to deliver specific care for indications that require visualizing a patient as opposed to solely using telephone. In addition, a considerable portion ($200 million) of the CARES Act's funding was invested in helping hospitals and health systems develop technical infrastructure for telehealth within facilities and in the community. However, while the funding did support the purchase of hardware for use within facilities and for home remote patient monitoring, it did not directly fund the development of broadband access in rural areas, which remains an inherent limitation for specific telehealth use cases. Additionally, lack of digital health literacy can be a barrier to telehealth, particularly in populations without access to smartphone technology or older populations.

Another theme in the literature was concerns about the uncertain future of telehealth reimbursement, particularly for continued investment in telehealth infrastructure that will be required to continue delivering services. A study of the Marshfield Clinic Health System (MCHS), a large rural healthcare system in Wisconsin, described the rapid adjustment to telehealth early in the COVID-19 pandemic.[98] In order for the MCHS to continue to provide telehealth services, it will require sustained investments and a continuing business model, which is currently uncertain given the unknowns of the future of telehealth billing and regulation.

Policies and Practices

Our review of telehealth-related policies and practices found that there were major policy changes facilitating telehealth use due to COVID-19, including expansions to the services and practitioners that can be reimbursed for telehealth services through federal programs, expanded and expedited licensure programs, and relaxation of certain staffing and supervision requirements. However, it is unclear how many of these flexibilities will be made permanent after the state of emergency ends. A few permanent federal-level changes have been confirmed in the Medicare 2021 Physician Fee Schedule, which permanently expands Medicare reimbursements for telehealth services, including group psychotherapy, psychological testing, and home visits; allows new providers, such as clinical social workers, physical and occupational therapists, and speech language pathologists, to be reimbursed for telehealth services; and increases the allowable frequency of nursing facility visits via telehealth.

Bills have been introduced in U.S. and state legislatures to permanently extend other changes implemented during the COVID-19 pandemic, including the national Permanency for Audio-Only Telehealth Act, New York's Proposal To Expand Access to Telehealth for All, California's Assembly Bill 32, Massachusetts' S.2984 – Bill promoting a resilient healthcare system that puts patients first, and Nebraska's LB15 Adopt the Occupational Therapy Interstate Compact.

A sense of stability is key in creating an enabling environment where providers can invest and plan for the long-term adoption of telehealth systems. The measurement framework should reflect the expansion of telehealth and practice changes due in part to the evolving telehealth policy landscape.

Measure Scan

The measure scan demonstrated that several measures exist that address rural-relevant and telehealth-appropriate conditions. However, these measures have limited overlap with measures geared towards system readiness. As a result, the pool of measures in which each measure captures all three aspects is narrowly focused on process measures that address reporting and transferring health information between providers and patients.

Ideally, many of the same quality measures can be used for both telehealth and in-person encounters. While telehealth is a different method for delivering care than in-person delivery, the ultimate goal of measurement is to provide comparable quality of care across all methods. Measure alignment can enable a fair comparison of quality across in-person and telehealth care, as well as reduce reporting burden for providers. For example, one paper identified a set of existing quality measures on ED care and telemedicine and noted that although many of the measures had not been extensively tested, they could be used to create a set of measures that would inform understanding of the value of teleED care.[99] Alignment can be achieved by adapting existing measures for conditions that can be treated via telehealth rather than creating new measures exclusive to telehealth. During the COVID-19 pandemic, some measure developers and stewards have already begun adapting measures to make them appropriate for use with telehealth. For example, the National Committee for Quality Assurance (NCQA) released updated guidance for 40 measures in the Healthcare Effectiveness Data and Information Set (HEDIS), clarifying the cases in which telehealth visits can be used in measure calculations and what type of telehealth visits (e.g., telephone visits, asynchronous visits) are eligible to be used in the measures.[100] CMS also released similar guidance for eCQMs used in federal quality reporting programs, providing a list of 42 eCQMs in which telehealth encounters are eligible for the denominator and five eCQMs that

are not telehealth-eligible.[101] Lastly, the Agency for Healthcare Research and Quality (AHRQ) has released an updated beta version of the Consumer Assessment of Healthcare Providers and Systems (CAHPS) Clinician & Group Visit Survey; the language has been updated to assess patient experience with any synchronous ambulatory care visit, including phone and video visits. AHRQ also notes that existing CAHPS items on health IT and access to care can be adapted to assess patients' experiences with telehealth visits.[102]

Based on the initial findings of the measure scan, NQF proposed a two-pronged approach to identify measures for use with the updated measurement framework for telehealth and system readiness in rural areas. In this approach, the Committee would provide expert feedback on which rural-relevant and telehealth-appropriate conditions are most important to measure as part of the framework; for each of these topics, the Committee would select several existing measures, prioritizing based on any preferred attributes (e.g., measure type, eCQM status, NQF endorsement, and developer guidance on telehealth use). Separately, the Committee would also identify which of the existing system readiness measures are most important to implementing telehealth systems (e.g., measures that address staff training on telehealth platforms or infrastructure measures), even if these measures were not yet NQF-endorsed. If existing measures did not sufficiently cover all aspects of the measurement framework, the Committee could review and prioritize measure concepts that address identified gap areas. (For reference, a list of relevant measure concepts, including 52 measure concepts identified in the 2017 Telehealth Framework report and 299 measure concepts identified in the 2019 Healthcare System Readiness report, is included in Appendix D: Measure Concepts.)

However, the Committee provided feedback, stating that a broader approach may be preferable to a condition-specific approach to selecting measures to use with the framework. The following considerations were shared:

The need to reflect the full spectrum of medical care across multiple types of emergencies. Certain clinical conditions may be "more ready" to measure at this time simply because they have been researched in more depth. However, a framework that focuses on these measures would only reflect current applications of telehealth and could exclude important future applications of telehealth that have not been well researched yet. Furthermore, the measures included in the framework should be applicable to a broad range of conditions since the specific conditions that are most important to measure may vary widely by emergency type (e.g., respiratory symptoms during COVID-19 versus trauma care during a mass violence event). In considering measures to use with the framework, the Committee should also consider their applicability across a variety of telehealth models, including direct-to-consumer platforms.

Organization in broad rather than condition-specific categories. Some of the cross-cutting topic areas identified as part of the measure scan (e.g., transitions of care, communication) could be useful categories to consider for the framework. Additional suggestions for broad categories or measurement topics included the following:

- Consolidating condition-specific measures into larger categories: mental and behavioral health, maternal health, patient experience, etc.
- Time-sensitive versus non-time-sensitive interventions

- Care delivery along the care continuum, including primary/preventative care, chronic disease management, urgent/emergent care, acute care, and end-of-life care
- Existence of baseline telehealth programming and system measures assessing the ability to scale programming in emergencies
- Access to care and avoidance of care interruptions across all conditions

Preferred measure attributes. There are some concerns that outcome measures may be burdensome for telehealth providers to use during emergencies. Providers have reduced control over patient outcomes during emergencies due to incomplete information, changes to staffing, and other resources; they may be unable to follow patients after the initial triage to assess outcomes. Therefore, process or structure measures may play an important role for this framework. Cross-cutting measures, or measures relevant across multiple clinical conditions or settings, should be considered in addition to condition-specific measures, which are only applicable to a single clinical condition. NQF-endorsed measures are preferred by the Committee, since NQF-endorsed measures have been rigorously reviewed and deemed important to measure, scientifically sound, usable, and feasible to collect. A Committee member stated that while non-endorsed measures should be considered, any measures included in the final framework should eventually seek endorsement. Measures included in the framework should also have a performance gap or opportunity for improvement.

Rural-specific measurement considerations. Rural facilities may face measurement barriers, such as low case-volume due to low population density and limited access to care, challenges reporting certain measure types (e.g., eCQMs), less advanced EHR systems, minimal in-house analytics expertise, and lack of infrastructure and resources.[103] When selecting measures for the framework, the Committee should also consider these factors to help ensure that performance results will provide sound and meaningful information to rural providers.

Based on these considerations, NQF will continue to work with the Committee to develop an updated approach to prioritize measures for use with the updated framework. This updated approach will be reflected in the final recommendations report and framework.

Conclusion

The literature review revealed that rural communities face significant health and healthcare challenges, including poorer health and barriers to care. Although telehealth has been available since the 1970s and has been deployed for specific use cases (e.g., telestroke), there has still been a slow uptake of telehealth. Telehealth uptake was limited by variation in state-level policies and restrictions on reimbursement based on location and service type. However, since the onset of the COVID-19 pandemic, telehealth has accelerated substantially into several new areas. Several policies have facilitated a meteoric rise in the use of telehealth in general and in rural areas. Specific policies have also expanded reimbursement, medical licensure, and reduced privacy regulations.

This acceleration has resulted in the development of telehealth programs that affect both rural and non-rural communities. Many programs directly address rural readiness, specifically whether the U.S. is able to deliver care during disasters such as COVID-19 in rural communities, as well as everyday emergencies requiring time-sensitive treatment. Many programs also work to directly address the disparities in care and outcomes present in rural areas. Healthcare systems that had telehealth programs in place before

COVID-19 were able to respond more quickly and effectively, underscoring the need for technology infrastructure to exist before emergencies. Despite these developments and many effective programs, technical and logistical challenges still exist. Limitations in broadband access in rural areas limit the use of telehealth, particularly video-based services to rural patients in their homes.

Given this expansion of telehealth, it is vital to address the quality of care and outcomes related to existing and novel programs. A wide variety of measures exist that apply to rural populations, telehealth, or readiness. Yet few measures exist that pertain to all three areas. The measures are heterogeneous and most commonly focus on patient experience, transitions in care, readmissions, surgical care, clinical effectiveness, and access to care; they are also overwhelmingly condition specific. However, fewer measures exist that directly pertain to readiness, and no readiness measures are currently endorsed by NQF. Given the impact of the COVID-19 pandemic in the last year and the development of new programs, this presents a potentially fruitful area for future measure development. Key findings from this environmental scan will inform the creation of a consensus-based framework to assess the impact of telehealth on rural healthcare system readiness, especially during emergencies.

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Appendices

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Appendix B: Literature Review References Summary

Please refer to Sheet 1 of Excel file, found here.

Appendix C: Measure Inventory

Please refer to Sheet 2 of Excel file, found here.

Appendix D: Measure Concepts

Please refer to Sheet 3 of Excel file, found here.