



Case Studies of Telehealth Programs in New York



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PREFACE

In order to better understand best practices in telehealth in New York State, the Center for Health Workforce Studies (CHWS) conducted a series of case studies of health care providers within the state who regularly use telehealth applications in service delivery. This report synthesizes information from the programs to identify common themes and findings relating to the impact of telehealth services on both the provider organizations and the patient populations served.

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Established in 1996, CHWS is an academic research center, based at the School of Public Health, University at Albany, State University of New York (SUNY). The mission of CHWS is to provide timely, accurate data and conduct policy relevant research about the health workforce. The research conducted by CHWS supports and promotes health workforce planning and policymaking at local, regional, state, and national levels. Today, CHWS is a national leader in the field of health workforce studies.

The views expressed in this report are those of CHWS and do not necessarily represent positions or policies of the School of Public Health, University at Albany, SUNY, or the New York State Department of Health.

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BACKGROUND

New York, like many other states, has a health workforce that is not well distributed.¹ This impacts populations living in underserved areas, both rural and urban, who have more limited access to needed primary and specialty care services. Consequently, high-quality, efficient, and cost-effective health care delivery strategies that improve access to care for underserved populations are required. Telehealth technologies are being used to bridge gaps in workforce capacity by overcoming distances between patient and provider.² Initially focused solely on medical care and referred to as “telemedicine,” telehealth’s scope has expanded beyond the patient-to-provider relationship to include information exchange in health care delivery processes, supervisory oversight of personnel, health care administration, and education of health practitioners and patients.³

A previous study of telehealth use by the state’s hospitals and federally qualified health centers (FQHCs) conducted by the Center for Health Workforce Studies (CHWS) found variation in use and applications among the providers studied, with rural providers having greater need for and use of telehealth than their urban counterparts.⁴ Providers in this earlier study generally agreed that telehealth applications effectively increased access to needed services and prevented the worsening of medical conditions. While the study found that telehealth successfully linked patients to primary and specialty services, the study’s purpose was to provide an overview of hospital and FQHC use rather than a detailed analysis of specific choices or comparisons of individual applications.

In order to obtain a better understanding of best practices in telehealth in New York State, CHWS conducted a series of case studies of health care providers within the state who regularly use telehealth applications in service delivery. In the summer of 2016, CHWS researchers conducted 8 site visits covering 7 telehealth programs. The programs were selected on the basis of geographic location and services provided to ensure a broad representation of telehealth applications, settings, and populations, including:

- A home care program in which homebound patients’ vital signs and changes in condition are tracked
- A long-term care program in which residents with wounds and other conditions are assessed and treated, in order to reduce the amount of unnecessary emergency department use
- A community-based program at a day care center where physician consultations determine treatment needs

- An acute care program for patients needing specialty services not available in the local area
- A federally qualified health center (FQHC) operating a program to provide a range of oral health services to underserved populations residing in dental shortage areas

The information from these programs was synthesized to identify common themes and findings relating to the impact of telehealth services on the provider organizations and the patient populations served. These findings are summarized below.

KEY FINDINGS

Telehealth is an effective strategy to provide care to people with limited access to needed health services.

Case study participants adopted telehealth technologies to address the local needs of patients and improve access to care. Health workforce availability combined with geographic distances and patients' lack of adequate transportation created sufficient need for a different model of care delivery. Informants added that given travel time, especially for specialty care providers, telehealth services were crucial for efficient care delivery for underserved populations across the state.

Telehealth applications are uniquely configured to address local issues.

A wide array of telehealth service modalities was used to address patients' unique health care needs and the technology chosen was designed to facilitate access to services. Examples included chronic disease management for homebound patients, preventive pediatric care in child care centers, and linking behavioral health patients in isolated rural communities with psychiatrists. The strategies differed to accommodate local need.

Telehealth programs facilitate and strengthen relationships between patients and providers.

Informants used the process of educating patients about telehealth services as a means of helping patients to establish a positive relationship with a primary care, oral health, or specialty provider. Informants found that the technology facilitated face-to-face interaction between patients and providers regardless of the application or patient population. Telehealth services were said to have built "safe" connections between providers and underserved patients.

Telehealth infrastructure varies by organization and level of available resources.

Differences existed among the case study participants, and not just in services and patient needs, but also in how organizations developed and financed infrastructure supporting telehealth services. Telehealth programs were designed to meet the needs of patients and were often shaped by local circumstances and resources. Each of the programs studied was somewhat different from the others, making comparisons difficult and suggesting that efficacy of approach was related to the ability of an organization to design an application that met a particular set of needs.

Patient acceptance is critical for successful implementation of telehealth programs.

Demonstrating the value of telehealth required gaining patient acceptance. For patients receiving care in the home, initial training and ongoing technical assistance were necessary to help patients become familiar and comfortable with the equipment. The literature supported the need for patient education that included an explanation of the value of the technology and its role in better outcomes. Informants indicated that once patients and their families had used the technology successfully, they requested telehealth services because of its convenience.

Regardless of the modality, telehealth implementation generally requires education of providers in its use and ongoing technical support for operational success.

The use of telehealth technologies required skill in operating devices that were often new to providers. Even when a provider was acquainted with a specific type of technology, such as a digital camera, learning positioning and lighting was important for effective use. Depending on the type of technology used, there were instances in which the provider needed to operate equipment outside of an office or institution or to advise a patient on use, both of which required a working knowledge of the technology. Having technical support available was valuable for establishing and maintaining connectivity as well as troubleshooting any problems that arose. Clinical staff needed to focus on the patient or other providers when consulting, and technical problems could interrupt the session. The pace of technological change coupled with security requirements may increase the need for technical support for telehealth programs over time.

Services provided through telehealth are not consistently integrated into health information systems; there is no standard approach to integrating telehealth service delivery into the patient record.

Case study participants noted that telehealth tended to operate in parallel with existing health care delivery information channels and, depending on the application and service sites, data documenting telehealth service delivery may not be accessible to all involved in care. Providers often used different data systems and didn't usually share a single electronic health record. Study participants expressed a need for better integration of the information generated by telehealth services to optimize patient outcomes. Several participants noted that the regional health information exchanges did not facilitate telehealth data transfer.

Funding sources and reimbursement levels for telehealth programs are variable and create challenges for providers to cover the full cost of program implementation.

Case study participants reported need for sufficient capital to make the initial telehealth investment. Some covered the costs with existing revenues or the margins generated from services; others used philanthropic or public grants. However, lack of access to capital often deterred or delayed implementation of telehealth programs.

Inadequate reimbursement levels for telehealth services frequently caused providers to limit telehealth use. Case study participants also reported that in some instances payer approvals limited the number of telehealth visits which prohibited adequate follow-up care for chronically ill patients.

Case study participants reported that reimbursement levels for telehealth services were often inadequate to cover many of the costs associated with a successful telehealth program – including system security, software and hardware upgrades, training of providers in technology use, technical support, and data capacity requirements.

There is confusion among providers regarding payment rules for telehealth as they apply to originating and receiving sites.

Efforts to expand telehealth programs in the state have sometimes led to confusion among providers as to what type of transmission is reimbursable. As more than one state agency has responsibility for licensing providers, rules limiting the eligibility of originating sites (ie, where the patient is located) may apply.

Organizations that are both payer and provider can more easily adopt and cover the costs associated with telehealth programs.

When a health care service provider operated a managed care program, it was easier to implement telehealth programs for covered populations. Being financially at risk for a group of patients and having access to integrated patient data creates a “closed system” of care that facilitates the use of telehealth. Value-based payment and other reimbursement models that emphasize reductions in avoidable hospitalizations and better patient outcomes have the potential to support greater use of telehealth programs.

While the benefits of telehealth programs are widely recognized, the programs tend to be uniquely tailored to local need, making it challenging to undertake broad evaluation designed to measure return on investment.

Case study participants reported that payers were willing to support telehealth programs, provided that there was sufficient evidence that these programs could achieve savings. While a measurable return on investment was understandably important to payers, the variability of telehealth programs uniquely designed to meet local need make it difficult to conduct broad evaluations of these programs.

Technical Report

BACKGROUND

New York State's health care delivery system is undergoing transformation, driven in large measure by the state's initiatives to improve the health of its population. Strategies include increased access to primary and preventive services, behavioral health integration, and increased care coordination in support of effective management of chronic disease. These changes to the delivery system are increasing the demand for accessible, cost-effective, and high-quality health care services.

New York, like many other states, has a health workforce that is not well distributed.¹ This impacts populations living in underserved areas, both rural and urban, who have more limited access to needed health care services. Telehealth applications are being used to bridge gaps in workforce capacity and overcome distances between patients and providers. Telehealth, as defined by the Center for Connected Health Policy, is "a collection of means or methods for enhancing health care, public health, and health education delivery and support using telecommunications technologies."³ There are 4 distinct types of telehealth applications in use:

- Synchronous, occurring in real time, in which face-to-face, 2-way connections between parties occur using audiovisual telecommunications technology
- Asynchronous, or store-and-forward, which uses electronic communications to securely transmit patient information (eg, history, x-rays) to a practitioner who uses the information for clinical purposes such as diagnosis, consultation, or care planning
- Remote patient monitoring (RPM), which involves the collection and regular transmission of personal health or medical data (eg, vital signs) from an individual in one location to a provider in another location via electronic communication technologies
- Mobile health, which uses mobile communication devices such as cell phones, tablets, and other personal digital assistants to collect and transmit information, to educate and coach consumers, or to send wide-scale alerts for public health purposes

A previous study of telehealth use by the state's hospitals and federally qualified health centers (FQHCs) conducted by the Center for Health Workforce Studies (CHWS) found variation in use and applications among the providers studied, with rural providers having greater need for and use of telehealth than their urban counterparts.⁴ Providers in this earlier study generally agreed that telehealth applications effectively increased access to needed services and prevented the worsening of medical conditions.

This study presents a variety of technologies, applications, and populations through case studies, providing a broad sample of the strategies in use by providers in New York State. To obtain a better understanding of best practices in telehealth in New York State, CHWS conducted 7 case studies of health care providers in New York that regularly use telehealth applications in service delivery. The case studies were intended to demonstrate how and why providers have integrated telehealth applications into service delivery; the effectiveness of these programs in increasing access to needed services; and the benefits of, barriers to, and facilitators of their use. This study was designed to advance a broader understanding of telehealth's role in health care in New York State through:

- Understanding provider rationale for adopting telehealth
- Learning how telehealth enables providers to address unmet needs
- Identifying the benefits of telehealth and the ways in which telehealth applications are sustained
- Identifying perceived barriers to and facilitators of the provision of telehealth services

History of Telehealth Development

As part of this study, a literature review was completed. It is important to note that, although telehealth is not new in the delivery of health care, it does not yet have broad uptake across all settings or providers. Moreover, while CHWS identified a large body of literature on the subject, these studies suffer from numerous limitations, including small sample sizes, brief study periods, and heterogeneity of interventions, making broad evaluations challenging.

The use of telehealth technology dates back to the 1920s, when radio-linked, shore-based medical specialists were used for medical emergencies at sea.⁵ A 1924 issue of Radio News Magazine featured a drawing of a physician communicating with his patient over a radio with a television screen and speaker.⁶ In 1951, cross-state demonstration of telemedicine was held in New York, and by the end of the decade, a tele-education and telepsychiatry program was operating at the Nebraska Psychiatric Institute.⁶ The first reference to telemedicine in the medical literature occurred in 1974, and much of the development is owed to the manned spaceflight program under NASA that required monitoring of the physiological functions of the astronauts while in space.⁷

During the 1960s and early 1970s, the federal government funded a number of telemedicine research and demonstration projects. These projects demonstrated the feasibility of using such programs and their

value as a substitute for travel. They also appeared to increase coordination and extend medical and administrative functions within large institutions and established a vital link in emergencies where access to a physician was difficult or impossible to realize. The literature of the 1970s also reflects the use of telehealth to bring specialists (eg, in anesthesia, dermatology, cardiology, psychiatry, radiology, critical care, and oncology) to a larger number of patients.⁷

Telehealth programs are found in a variety of settings, including, but not limited to, hospitals, physicians' offices, outpatient clinics, child care centers, and patients' homes. Providers use audio and video forms of technology to transfer information and to consult with, diagnose, and develop treatment plans for patients. Additionally, telehealth devices may be used to effectively monitor patients in their homes and to collect, store, and forward data to providers for regular analysis and follow-up as needed. Home-based telehealth has been found to be particularly useful for monitoring patients with limited mobility and/or who have chronic conditions.^{8,9} Diagnostic psychiatric interviews conducted via telehealth have proven reliable and effective, with both patients and clinicians reporting high levels of satisfaction.¹⁰⁻¹³ Health promotion education has been successfully offered remotely for chronic conditions.¹⁴ When used for purposes of diabetes education, telehealth has been found in some studies to be as effective as in-person patient education in improving glycemic control.^{15,16}

The viability of telehealth continues to grow with demonstrated success in treating a wide array of conditions and reaching underserved patients. The Care Coordination Home Telehealth (CCHT) program, introduced by the VHA in 2003,* is one of the largest applications of telehealth technology in the country, connecting thousands of veterans to practitioners and targeting diabetes, congestive heart failure, hypertension, post-traumatic stress disorder, and other conditions. The CCHT program uses RPM devices to capture and transmit biometric data that are monitored remotely by staff. A recent comprehensive review of studies regarding the Veterans Health Administration's (VHA) telehealth interventions found that for the majority of the VHA's applications, telehealth was an effective mode of care delivery, especially for chronic health and mental health conditions.^{17,18}

Evidence exists for clinical effectiveness of home telehealth monitoring in the general areas of mental health, high-risk pregnancy, heart failure, and cardiac disease.^{19,20} Telehealth has also been shown to provide rapid responses to potential medical emergencies, based on a study of high-intensity telehealth services for older adults in a senior living community.²¹

A 4-year[†] demonstration in New York State funded by the Centers for Medicare and Medicaid Services, the Informatics for Diabetes Education and Telemedicine (IDEATel) Project used telehealth for chronic disease

* The CCHT program was implemented between 2003 and 2007 following testing of telehealth applications that began in 1994.

† IDEATel began in 2000, and funding was renewed in 2003 for another 4 years through the Medicare Modernization Act.

management. Participants were Medicare beneficiaries with diabetes residing in federally designated medically underserved areas.²² One thousand five hundred participants were randomized, half in New York City and half in other areas of the state. The intervention group received a home telemedicine unit that allowed synchronous videoconferencing with a project-based nurse, electronic transmission of home finger-stick glucose and blood pressure data, and access to a project website with educational materials. Endpoints in the study were glycosylated hemoglobin (HbA1c)[‡] levels, blood pressure, lipid levels, patient satisfaction, health care service utilization, and costs.^{22,23} The IDEATel Project demonstrated net improvements in lowering HbA1c, low-density lipoprotein (LDL) cholesterol, and blood pressure over 5 years.^{24,25}

A systematic review of the benefits of tele-home care for frail elderly found that the most effective telehealth interventions were automated monitoring of vital signs and telephone follow-up by nurses.²⁶ In a systematic review focused exclusively on home telemonitoring, tele-home care was found to empower homebound patients with chronic diseases to make informed decisions and to assist in relieving caregivers of some of the burdens of care.^{27,28} Patients reported an increased sense of security and reassurance along with improved access to clinicians.

Telehealth is helpful in the treatment of depression and other behavioral health disorders and has been shown to achieve clinical outcomes comparable to those when treatment is provided face to face.²⁹ A telehealth-based collaborative care model that connects with primary care practices was found in a comparative effectiveness trial to result in reductions in depression severity, higher treatment response rates, and lower remission rates when compared with a similar population of primary care providers who did not have collaborative relationships with behavioral health specialists.³⁰

The use of telehealth in pediatrics has been shown to have multiple benefits, and several research studies have demonstrated a significant increase in access to health care by children and their families.³¹ A study of 5 inner-city child care centers that connected the children to an office-based clinician using a digital camera and electronic stethoscope reduced child absences due to illness and allowed parents to remain at work.³²

Telehealth has been successfully used in rural settings for a variety of health service needs. The Southeast Health District (SEHD), the largest public health district in Georgia composed of 16 rural counties, used telehealth for pediatric and medical specialty consultations, chronic disease prevention, epidemic and emergency preparedness training, and health promotion, among other services. In a longitudinal study of SEHD, researchers found that successful usage depended on extensive internal and external collaboration, local champions, and external funding.^{33,34}

[‡] Also referred to as simply A1c.

Telehealth has demonstrated its potential to encourage more effective use of workforce resources by linking appropriate experts at central sites to patients and practitioners in more remote areas.³⁵ Telehealth is being used in more than 26 state departments of correction, and slightly less than half of federal facilities have active telehealth programs treating inmates with a range of medical and behavioral health diagnoses.³⁶ Using a hub-and-spoke model, the Federal Bureau of Prisons found a high level of patient acceptance of the technology and the mode of service delivery, enabling access at rural and urban facilities without needing health personnel on staff.³⁶

Telehealth training is a crucial component of the design and implementation of effective workforce models to reach the underserved.³⁷ Currently, standard professional medical education does not include telehealth, and the cost of preparing medical teams to offer these services becomes part of the overall cost of operationalizing a telehealth project. The Agency for Healthcare Research and Quality (AHRQ) undertook a literature review of telehealth and remote patient monitoring, particularly for the chronically ill. This work produced an “evidence map” that identified areas in which conclusive primary evidence and systematic reviews highlight the benefits, areas in which sufficient primary studies constitute a body of evidence, and those areas or topics that would benefit from new or additional systematic reviews.³⁸ RPM for chronic conditions, communication and counseling for chronic conditions, and psychotherapy for behavioral health were found to be areas for which both primary studies and systematic reviews affirm the benefits. Consultation, acute/intensive care unit (ICU) care (including RPM and telemonitoring), and maternal and child health were areas in which AHRQ’s review found sufficient evidence through primary studies but required further research.³⁸

Telehealth strategies are constantly evolving alongside developments in technology and health care delivery changes that emphasize increased care management and coordination. There are professional, ethical, technological, regulatory, legal, organizational, and risk management issues that apply to new technologies when implemented.³⁹ Barriers to launching telehealth applications remain, including access to sufficient capital to obtain and maintain the technology, a centralized system of regulation and reimbursement, the training of practitioners, and reorganization of care across providers. Other clinical, social, and legal barriers remain, such as the quality of the interaction, access to broadband, and credentialing and privileging requirements.⁴⁰ While there is now a body of evidence confirming the benefits of telehealth for providers and patients, there is still a need to learn more about the factors that influence the acceptance of telehealth across settings, as well as successful strategies for implementation and which applications are best suited to which populations. Moreover, integration into routine processes—one of the definitions of sustainability—requires collaboration, compliance, and participation among providers across multiple health care settings, which is necessary for team-based interdisciplinary care.

The Regulatory and Reimbursement Context

Medicare and Medicaid have significant influence over the establishment, expansion, and financing of telehealth applications due to the size of the population they insure. Medicare's rules for telehealth have evolved over time, beginning with the Balanced Budget Act (BBA) of 1997, which authorized Medicare payment for telemedicine consultation under the physician fee schedule starting in 2001, but only within a narrow set of requirements.⁴¹ Patients had to be located in a rural Health Professional Shortage Area (HPSA) or a county outside of a Metropolitan Statistical Area (MSA), referred to as the "originating site." In addition, originating sites were limited to offices of physicians or practitioners, hospitals, critical access hospitals (CAHs), rural health clinics, and federally qualified health centers (FQHCs). Fee sharing between the consulting physicians and referring physicians was required. Store-and-forward modalities were reimbursed only in demonstrations in Alaska and Hawaii.⁴¹

In 2000, the Benefits Improvement and Protection Act (BIPA) made numerous improvements in telehealth coverage; however, the originating site requirement remained the same, and coverage for RPM continued to be excluded. BIPA also authorized a fixed payment fee of about \$25 for the originating site.^{§42} The Medicare Improvements for Patients and Providers Act (MIPPA) of 2008 expanded the originating sites to include community mental health centers, skilled nursing facilities, and renal dialysis centers based in hospitals. The Medicare Access and CHIP Reauthorization Act (MACRA) of 2015 again modified the Medicare telehealth rules, allowing providers participating in certain new payment models to use a broad array of telehealth and other modalities to deliver multiple services at a distance regardless of where the clinician or patient is located.

Two new laws—the 21st Century Cures Act and the Expanding Capacity for Health Outcomes Act—contain provisions that would require studies and reports to Congress on telehealth activities. The legislation also includes language that supports expansion of originating sites as well as collaboration by a variety of federal agencies on improvement of mental health and substance abuse services through telehealth applications.

Medicaid reimbursement varies greatly, with states and insurers allowed to determine the type of clinical services and payment for telehealth. Currently, 48 state Medicaid programs provide some level of telehealth coverage, and 32 states have telehealth parity laws that require private insurers to reimburse telehealth services at the same rate as in-person consultations. Recently finalized rules for Medicaid home health services authorize the use of video calling/conferencing applications such as Skype for the face-to-face encounters required under the Medicare and Medicaid home health rules.^{18,43}

§ Known as the telehealth facility fee.

Additionally, current Federal regulation 42 CFR 438(3)(e) allows the use of cost-effective alternative services (referred to as “in lieu of services”) and enables Medicaid Managed Care (MMC) plans to offer services to members that were not previously included in the MMC plan benefit package as a Medicaid State Plan service. Under this regulation, services delivered in settings (such as a patient’s home) not covered under New York State Public Health Law, Article 29-G, may be reimbursed. Under these guidelines, New York State required MMC plans to submit a Telehealth Innovation Plan by December 1, 2017 “outlining how its telehealth projects are expected to result in meaningful improvements in access, quality, and outcomes...”^{ll}

New York has covered telehealth in fee-for-service Medicaid since 2006, paying only for live, interactive, audiovisual communication, and Medicaid managed care plans have the option to cover telehealth. In 2014, New York became the 22nd state to pass telehealth reimbursement parity. The following year, amendments defining telehealth and telemedicine as well as eligible providers and originating sites passed. A number of practitioners[#] and sites^{**} are eligible, and originating sites can be both “hub” sites and “spoke” sites. A patient’s home may be a “spoke” site when receiving RPM. Telehealth coverage is not extended to audio-only phone communications, fax, or electronic messaging alone, although these modalities may be used in conjunction with telemedicine, store-and-forward technology, and RPM.

New York State expanded its definitions of eligible practitioners, originating sites, and modalities and added mental health facilities in a law enacted in 2015. Additional regulations governing the use of telepsychiatry were instituted and initial guidance pertaining to the 2015 law was replaced in 2016. Under a new section in the New York regulations, telepsychiatry was defined as “the use of two-way, real-time interactive audio and video equipment to provide and support mental health services at a distance.”[‡] Telepsychiatry services may be authorized by the Office of Mental Health (OMH) for assessment and treatment by physicians or nurse practitioners. While the regulations delineate the process for obtaining authorization from OMH and allow for the use of telepsychiatry between any OMH-licensed setting and any New York State Medicaid-enrolled setting, the patient must be at an OMH-licensed site at the time the telehealth encounter occurs.

ll For more information on these guidelines, visit: https://www.health.ny.gov/health_care/managed_care/plans/docs/guidance_telehealth_innovation_plans.pdf.

Practitioners eligible for payment under the telehealth parity law in New York State include physicians, physician assistants, dentists, nurse practitioners, podiatrists, optometrists, psychologists, social workers, speech pathologists, audiologists, midwives, certified diabetes educators, certified asthma educators, genetic counselors, hospitals, home care facilities, hospices, and registered nurses (when receiving data by means of RPM).

** Eligible originating sites are those at which the patient is located at the time health care services are delivered by means of telehealth and include hospitals, nursing facilities, diagnostic and treatment centers, FQHCs, hospices, home care services agencies, mental hygiene facilities, private physician offices, and patient residences (when receiving services by means of RPM).

‡ 14 NYCRR Part 596.

Medicare rules often form the framework for Medicaid and commercial payers, and the Medicare billing codes have increased incrementally, with the rural site requirement often influencing state reimbursement decisions.⁴⁴ The emphasis on rural areas is likely related to the hope that telehealth could be used to overcome a lack of local providers in rural areas.⁴⁵ However, it is also possible that the incremental expansion of sites, payment rates, and covered services failed to encourage expansion despite reductions in provider requirements.⁴⁵

METHODS

In the summer of 2016, CHWS researchers conducted 8 site visits covering 7 telehealth programs. The programs were selected on the basis of geographic location and services provided to ensure a broad representation of telehealth applications, settings, and populations, including :

- Home care settings, where homebound patients' vital signs and changes in condition are tracked
- Long-term care settings, where residents with wounds and other conditions are assessed and treated, in order to reduce unnecessary emergency department (ED) use
- Community-based settings such as day care centers, where physician consultation determines treatment needs
- Acute care settings, where needed specialty services not available locally are accessed
- School clinics and FQHCs where a range of oral health services are provided to underserved populations

The services delivered via telehealth and the types of providers associated with those services that participated in the case studies were:

Behavioral Health—Project ECHO, *University of Rochester Medical Center* in Rochester, New York

Behavioral Health—Telepsychiatry Outpatient Services, *St. Joseph's Hospital Health Center* in Syracuse, New York

Dental Care—Teledentistry Program, *Finger Lakes Community Health* in Geneva, New York

Home Care—At Home Care, *Bassett Healthcare Network* in Oneonta, New York

Home Care—House Calls Telehealth Program, *New York City Health and Hospitals Corporation* in New York, New York

Pediatric Care—Health-e-Access Program, *Golisano Children's Hospital and Ibero Early Childhood Services Center, University of Rochester Medical Center* in Rochester, New York

Wound Care—Wound Healing Center, *Rochester Regional Health* in Rochester, New York

The researchers conducted individual and group interviews of administrative and clinical staff at each of the case study sites. Informants included medical and oral health professionals, pharmacists, behavioral health specialists, information technology (IT) staff, operations and financial managers, and executive leadership. The interviews lasted between 1 and 2 hours, depending on the number of participants in each group. A protocol of suggested questions was provided to all informants, though only those questions relevant to the practice of the informants were raised. A copy of the interview protocol is contained in the appendix of this report. Interview questions focused on:

- The general population served by the organization and the population specifically served via telehealth
- Identification of telehealth technologies and modalities used
- Rationale for selecting the telehealth application and identified benefits
- Site experience with implementation and use of telehealth technologies, including facilitators and barriers
- Factors that support and sustain the use and, if planned, the expansion of telehealth services

CASE STUDIES

University of Rochester Medical Center Rochester, New York

Key Findings:

- Project ECHO utilizes telehealth to improve health outcomes and health care experiences for patients.
- The initiative addresses an unmet need for mental health services targeting elderly residents of the Finger Lakes region of New York State.
- The program provides consultations with providers, among others, to help develop effective strategies to address the psychiatric needs of elderly patients.
- A program evaluation found that participating providers reported more confidence in their ability to assess and treat psychiatric symptoms in elderly patients.

Project ECHO

In 2014, the University of Rochester Medical Center (URMC) implemented the first Extension for Community Healthcare Outcomes (ECHO) model in New York State—Project ECHO Geriatric Mental Health (GEMH)—in order to increase access to care for older adults with mental health needs in upstate New York. Project ECHO GEMH is an academic telementoring hub-and-spoke model that connects specialists with clinicians and nonclinicians in local communities based on the ECHO model developed at the University of New Mexico School of Medicine. Project ECHO GEMH helps “fill the supply gap” by delivering support to practitioners in managing aging patients with mental health needs. By helping health care providers to develop skills and knowledge to treat complex patients in their own practices, ECHO aims to improve health outcomes for geriatric patients with mental health issues while also improving the health care experience of the patient and family and reducing the cost of care. The URMC Project ECHO program employs a multidisciplinary team-based approach, using 7 specialists (at the time of the interview) with backgrounds in psychiatry, psychiatric pharmacy, geriatric medicine, nursing, social work, and geropsychology.

University of Rochester Medical Center

URMC was founded in 1921 and its health care delivery network is anchored by Strong Memorial Hospital, which is an 800-bed University-owned teaching hospital. URMC's mission is "to be nationally recognized by 2020 for improving community health through transformative approaches in compassionate care, education, and research."

Rationale for Adopting Telehealth Services

The Finger Lakes region community needs assessment indicated higher rates of ED use and rehospitalization among patients with psychiatric illness. URMC had significant interest in developing a Project ECHO program for mental health consultation and education. Older patients in particular were at higher risk for increased health care service utilization, especially those diagnosed with dementia, depression, and anxiety. In addition, the shortage of geriatric mental health care providers in the Finger Lakes region limited access to mental health services for older patients.

Benefits of Telehealth

A program evaluation of ECHO GEMH conducted by the New York Academy of Medicine found that the program improved participants' confidence in providing effective geriatric mental health care, especially in medication management. Providers noted that the didactic lessons and discussions helped them develop strategies to reduce psychiatric symptoms and improve patient quality of life, and that the program influenced the treatment they would likely provide to patients in the future. Finally, providers highlighted their appreciation for improved access to a professional support community through ECHO and the ability to interact with an interdisciplinary team of specialists to develop care plans for complex cases.

Funding and Sustainability

URMC Project ECHO is not supported through provider reimbursement. It has received grant-based support through the New York State Health Foundation, the Health Foundation of Central and Western New York, and the Greater Rochester Health Foundation. Additional support was provided through the University of Rochester Office for Aging Research and Health Services (OARHS) and the US Health Resources and Services Administration (HRSA) through its Geriatric Workforce Enhancement Program, which funded initiatives at the Finger Lakes Geriatric Education Center (FLGEC). Initial infrastructure support was provided through the University of New Mexico School of Medicine.

Facilitators and Barriers

Barriers include participants' lack of time to participate given busy clinical schedules. If presentations or discussions extend beyond the allotted time, the chances of participation are reduced due to time constraints. Participants may also struggle to maintain an adequate Internet connection to allow full participation in the video clinics. While the services are free, participants are largely responsible for developing and maintaining a viable Internet and phone connection. If participants lose Internet connectivity, they have the option of calling into the Project ECHO office, where ECHO IT staff are available to troubleshoot technical difficulties. The major challenge to the sustainability of this model is that the majority of primary care reimbursement in New York State is still fee-for-service (volume based), though case study participants indicated that a value-based payment model would resolve the issue.

Long-term Goals

Project ECHO staff explained that providing educational training and consultation services will help participating nursing homes and primary care practices to operate with increased independence and self-sufficiency. The long-term goal is to have these spoke sites become regional centers of excellence in serving geriatric patients with mental health conditions.

St. Joseph's Hospital Health Center

Syracuse, New York

Key Findings:

- The telepsychiatry program is part of a comprehensive Behavioral Health Center operated by St Joseph's Health Care System
- The program is designed to expand access to psychiatric services in an area with a limited number of psychiatric providers.
- The program eliminates the need for patients to travel long distances to receive care.
- Virtual clinic sessions are conducted using face-to-face videoconferencing with cameras that allow the psychiatrist to assess the patient.
- A comparative analysis of the telehealth program indicates that patients' participation levels and engagement are comparable to those receiving traditional face-to-face clinical services.

Telepsychiatry Outpatient Services

The telepsychiatry program at St. Joseph's Outpatient Behavioral Health Office in Syracuse, New York, began in March 2015 and serves 5 primary care sites. The virtual clinic was established to provide psychiatric consultation and medication reconciliation. It does not provide psychotherapy services. Access to telepsychiatry services is initiated when a participating primary care provider makes a patient referral and requests a patient assessment. Virtual clinic sessions are conducted using face-to-face videoconferencing with cameras that allow the psychiatrist to assess the patient and his or her interactions, reactions, and comfort level with the process.

St. Joseph's Health Care System

St. Joseph's Hospital is a nonprofit regional health care system based in Syracuse that serves patients throughout Central New York and northern Pennsylvania. St. Joseph's Hospital has 431 beds. The hospital's Behavioral Health Center provides a full range of inpatient and outpatient behavioral health services, with nearly 77,600 outpatient psychiatric visits in 2014. St. Joseph's Hospital serves predominantly Medicaid and Medicare patients, representing 70% of their patient population, with the remainder either covered through commercial insurance or self-pay.

Rationale for Adopting Telehealth

St. Joseph's Hospital operates a licensed Comprehensive Psychiatric Emergency Program (CPEP), which serves individuals from the greater Syracuse area and Onondaga and Madison Counties. CPEP is staffed 24 hours a day, 7 days a week, and provides evaluation and treatment for patients of all ages who are in acute mental crises. CPEP is part of a network of mental health services with other area hospitals and outpatient providers. There was a recognized need to provide an efficient means of serving patients with mental health issues who were unable to travel to the hospital's clinics in order to better serve the surrounding rural counties.

Benefits of Telehealth

The telepsychiatry program allows access to psychiatric assessment, eliminating the need to travel long distances for psychiatric consultation. Between the launch of the program in March 2015 and June 2016, the outpatient psychiatric program conducted nearly 300 telehealth psychiatric visits. The growing interest and use of the telepsychiatry clinic led hospital staff to compare differences in patient responsiveness to providers in virtual and traditional clinical settings. To date, evidence-based in-house tracking indicates that patients' participation levels and engagement with the telepsychiatry program are comparable to traditional face-to-face clinical services.

Funding and Sustainability

The Fort Drum Regional Health Planning Organization provided a grant for the purchase of computer equipment as well as assistance in building affiliations with primary care providers in the surrounding regions, serving as spoke sites for the hospital's outpatient hub. Commercial insurers cover the time the psychiatrist is conducting clinical sessions with patients in a face-to-face modality and provide the spoke sites with a nominal facility fee. Medicare covers the telepsychiatry services for its beneficiaries, given that the program provides face-to-face services via live videoconferencing and records are transmitted via secure store-and-forward methods. Medicare covers patient consultations, the remote office visits, and pharmacologic management.

Facilitators and Barriers

Despite hospital and provider support and high levels of patient satisfaction, reimbursement remains a challenge. Reimbursement for telehealth services varies by insurer. The clinic does not receive reimbursement for telephone consultations when poor Internet connections limit the "visit" to a telephone call between the psychiatrist and the patient. Additionally, OMH guidelines create a barrier to reimbursement by requiring that the sending and receiving facilities hold comparable licenses.

St. Joseph's Hospital, as an Article 31 OMH-licensed facility, is not reimbursed for services to patients in Article 28^{‡‡} DOH licensed facilities. For the program to continue to grow, the hospital needs reimbursement from all payers. Lack of clinicians also limits the program; St. Joseph's Hospital has only one full-time psychiatrist who provides telehealth services 1½ days per week. Although there is support for telehealth initiatives as evidenced through grant funding for technologies, participants noted that rural primary care providers are still in the process of learning about telemedicine's benefits and roles in improving population health and access to care.

Long-term Goals

There is continued need for improving coordination between the hospital and primary care settings in delivering behavioral health services in rural areas. Despite growing provider and patient interest in participating in the virtual clinics, sustainable, long-term growth remains a challenge. St. Joseph's Hospital has an ongoing commitment to expand capacity and increase access to care for patients in rural areas of the state who need psychiatric services.

‡‡ Article 31 of the Public Health Law of the State of New York defines mental health facilities as comprehensive psychiatric emergency programs, psychiatric inpatient units in a general hospital, and outpatient (nonresidential) programs such as clinics, day treatment, partial hospitalization, and intensive psychiatric rehabilitation treatment. Article 28 facilities are defined as "hospitals," which include but are not limited to dental clinics, diagnostic and treatment centers, nursing homes, outpatient departments, and chronic disease hospitals.

Finger Lakes Community Health

Geneva, New York

Key Findings:

- FLCH telehealth programs were designed to meet the needs of their patients, including local farmworkers and their families with limited access to health and oral health services.
- The health center enables real-time consultations between patients and specialists but also uses a store-and-forward modality to allow providers to review images and medical/dental records at a later time.
- Positive outcomes of the FLCH teledentistry program included shorter wait times, higher treatment rates, and lower no-show rates for appointments.
- One challenge of the teledentistry program is the difficulty encountered in sharing patient records with specialty providers across systems. This is attributed, in part, to inconsistent participation of provider organizations in regional health information networks.

Teledentistry Program

Telehealth and teledentistry services are well developed at Finger Lakes Community Health (FLCH) in Geneva, New York. Teledentistry is the most commonly used telehealth service at FLCH, offering care specifically to children, many of whom are under age 6 and experiencing serious dental decay. The health center enables real-time consultations between patients and specialists but also uses a store-and-forward modality to allow providers to review images and medical/dental records at a later time. If more invasive dental services are needed, patients are referred to an offsite dentist by the FLCH center for necessary treatment or surgical services. In addition to providing care to patients, the videoconferencing technology is used to enable continuing medical education, clinical mentoring, and distance education for staff at the various sites at which FLCH provides care. The quantity of telehealth services being delivered to patients required FLCH to hire an IT position to work at least half time on telehealth applications and to also hire a scheduler to manage the large volume of services for the various telehealth programs.

Finger Lakes Community Health

FLCH was established in 1989 to serve migrant and seasonal farm workers in the Finger Lakes region of New York. FLCH is currently both an FQHC and a migrant health center. FLCH has 9 primary care clinics offering medical, dental, behavioral health, and pharmacy services, as well as a broad range of telehealth services. In addition, FLCH has both mobile medical and mobile dental service programs across a large geographical catchment area, serving agricultural workers and their families at housing sites, Head Start centers, schools, and summer school sites. Additionally, FLCH has an extensive community dental program that provides comprehensive dental services at several school systems and county jails.

Rationale for Adopting Telehealth

Prior to 2004, FLCH was providing mobile health and oral health services to farm workers and their families. However, very few of the patients treated in the mobile programs ever completed specialty referrals made during those visits, and those who did required costly assistance from FLCH to reach their appointments. The need for telehealth services became increasingly apparent as FLCH considered the needs of their patients, especially the farmworkers and their families, many of whom were undocumented and unable to access health services. The barriers to specialty care were numerous and included lack of insurance, limited transportation options coupled with considerable geographic distances to specialty providers, cultural and language differences, and inability to take time from work during the day.

Benefits of Telehealth

To date, more than 550 children have received teledentistry services through FLCH. Teledentistry has increased the capacity of the pediatric specialists who participate in the program by improving workflow and expediting the initial consultation. The benefits of teledentistry were most evident when considering impacts on participants such as shorter wait times for obtaining specialty consultations, higher treatment completion rates, lower no-show rates for appointments, and improved workflow efficiencies for patients, providers, and support staff. Children and parents who first had a teledentistry visit in the presence of a familiar dental hygienist along with a specialist were more comfortable when they actually met the specialist in person for services than if they were meeting for the first time without a prior teledentistry visit.

Funding and Sustainability

FLCH built a network of specialty providers willing to consult with and/or treat clinic patients and developed a bridge system to enable teleconsultation between FLCH's health clinics and specialty providers. FLCH began providing telehealth services in 2004 with grant money from HRSA. Funding for teledentistry services was a concern for FLCH, as the health center must cover the costs for management and delivery of the services. The technology was funded through US Department of Agriculture grants, while the workforce is mainly funded through reimbursement for services. In New York, teledentistry is a covered service; however, not all sites at which teledentistry is provided are reimbursed for supporting and providing resources for the teledentistry service.

Facilitators and Barriers

Telehealth services have changed the practice of medicine and dentistry in the health center's clinics by engendering frequent and regular communication between primary care providers, general dentists, and specialists. FLCH observed that the use of telehealth applications is expanding as an essential tool in providing value-based care for patients. Interoperable information systems would further increase the opportunities for collaboration between health networks and allow for expansion in the telehealth arena. Information exchange between health systems remains cumbersome and problematic because regional and statewide health care information networks are not yet fully developed, and specialty providers in the telehealth and teledentistry networks are not all connected to regional health information networks.

Long-term Goals

FLCH's telehealth and teledentistry services are considered value-added initiatives that provide needed access to specialty care for rural communities. Teledentistry was viewed by FLCH as an especially promising modality to deliver services to special-needs populations, including the developmentally disabled, nursing home patients, rural residents, and preschool and school-aged children.

Key Findings:

- AHC telehealth services extend the capacity of the home care nursing staff, facilitating the monitoring and management of more patients compared with traditional home visits.
- The AHC program places telecommunication devices in patients' homes to take and monitor their vital signs, to remind patients when to take their medication, and to answer patients' questions about their condition.
- While reimbursement for this program is limited, it is considered cost-effective because it reduces inappropriate ED visits and/or re-hospitalizations for the patients it serves.

At Home Care

At Home Care (AHC) was established in 1987 through a partnership with Bassett Healthcare Network (BHN). AHC provides in-home professional and paraprofessional services for patients in Herkimer, Delaware, Otsego, Chenango, and Schoharie counties. In 2002, AHC began using telehealth to assist their patient population, who are primarily aging, low income, homebound individuals with chronic conditions living in rural or remote areas. AHC places telecommunication devices in patients' homes to take and monitor their vital signs, to remind patients when to take their medication, to answer patients' questions about their condition, and to transmit heart rate, blood pressure, weight, oxygen saturation, and blood glucose levels back to AHC. Connectivity is established using telephone lines and/or cellular or wireless transmission of data, though it may be limited due to the isolated nature of many of the rural areas that AHC serves. Patients are given electronic medication dispensers (E-dispensers) that are prefilled by the AHC nursing staff and timed to remind the patient when to take their medication. The patient takes premeasured doses from a dispensing cup, and the machine calibrates to prepare for the next dose at the scheduled time. E-dispensers are tamper-proof and prevent overuse or prescription abuse. An alarm reminds the patient of missed medication and will transmit alert messages to AHC nursing staff if a required dose of medication is not taken.

Bassett Healthcare Network

Bassett Healthcare Network is an integrated health care system that provides care and services to people living in an 8-county rural region in upstate New York. The health system includes 6 hospitals, along with skilled nursing facilities and community and school-based health centers.

Rational for Adopting Telehealth

Home care agencies in rural areas face challenges related to recruiting and retaining nursing staff and increasing numbers of homebound patients with acute and chronic disease. The leadership of AHC believes that telehealth could support more efficient use of nursing staff and offer better observation of patients after discharge from the hospital for conditions such as chronic obstructive pulmonary disease, diabetes, and coronary heart disease, which benefit from routine monitoring.

Benefits of Telehealth Adoption

The use of telehealth extends the capacity of the home care nursing staff, enabling AHC nurses to monitor and manage many more patients than they otherwise could do by traveling to their homes. Patients are trained on how to use the equipment, and most patients report that they are comfortable using it. Patients, family members, and other caregivers view telehealth as a “lifeline” connecting them to home care nursing staff should a need arise while enhancing the quality of the home care they receive and providing additional “care coverage.” Patients and their families are able to establish more routine contact with AHC, to have better prescription maintenance, and to receive timely interventions to avoid ED visits and re-hospitalizations.

Funding and Sustainability

AHC patients’ insurance coverage includes Medicare, Medicaid, and commercial managed care, with AHC negotiating a monthly rate with commercial insurers so that their patients do not have daily copays for daily service. Additionally, some commercial payers still treat telehealth technology as an “add-on” service to traditional home care services. Coverage, reimbursement, and authorization (or reauthorization) times also vary by insurer. Schedules for certification or recertification of home care services vary depending on the payer—45 days for Medicaid or managed care patients and 60 days for Medicare patients—which adds to the difficulty of reimbursement for telehealth services. As a result of these variable rules by different insurers, adequate reimbursement for AHC services becomes challenging. Furthermore, Medicaid billing for telehealth is cumbersome and leads to a risk of error, which limits its use.

Facilitators and Barriers

AHC finds that despite the limited reimbursement by payers, the cost of the telehealth program is a worthwhile investment when compared with the potential costs of unnecessary ED visits and re-hospitalizations, making telehealth a more attractive program under a value-based payment arrangement. The cost of telehealth has decreased substantially over time, facilitating the expansion of its use. AHC now leases equipment rather than purchasing it, and the monthly fees are more reasonable.

Long-term Goals

In the future, AHC plans to blend its approaches and use both visual and remote monitoring. For example, higher-risk patients would have an interactive (visual) technology application to allow for better management of polypharmacy, behavioral health concerns, and palliative care and to provide patient education. AHC would like to integrate interactive video telehealth with primary care physicians' offices. AHC expects to soon have improved access to data, such as 30-day and 60-day readmissions by diagnosis, and the ability to compare patients who received telehealth with those who do not. These data will allow AHC to benchmark outcomes, negotiate for reimbursement, and calculate the return on investment.

Key Findings:

- The goals of the HHC House Calls Telehealth Program are to help chronically ill patients effectively manage their health issues and to encourage them to engage in a healthier lifestyle that will enable them to maintain their health.
- HHC providers and patients report success with the House Calls program in part because the telehealth team focuses on patient engagement through motivational interviewing and developing positive, respectful relationships with patients.
- Since 2006, the House Calls program has been supported by a local service contract negotiated by HHC with its own health plan, MetroPlus, enabling sufficient reimbursement for managing and providing care to patients.

New York City Health and Hospitals Corporation

HHC is the largest municipal health care system in the nation, serving 1.4 million patients (1 in 6 New Yorkers) annually. HHC has 4,500 acute care beds in 11 hospitals, 3,000 long-term care or skilled nursing facility beds in 4 long-term care facilities, 6 diagnostic and treatment centers, and 80 community health clinics. HHC's Certified Home Health Agency provides general in-home care services, including short-term nursing, nutrition services, medical social services, physical therapy, and home health aide services, among others.

Rationale for Adopting Telehealth

HHC developed telemedicine programs to improve the health outcomes of their patients with diabetes by addressing their medical issues efficiently and effectively and minimizing the need for acute care services. It is estimated that 2 million people in New York State, or 12.3% of the population, have diabetes; of these, it is estimated that more than 500,000 have diabetes but are unaware of their status. Diabetes rates in New York City vary by neighborhood and borough, with the Fordham/Bronx Park (14.6%), East New York (14.4%), and Bushwick (13.9%) neighborhoods having the highest rates. The borough of the Bronx has a hospitalization rate of 553.8 per 100,000 for diabetes-related conditions as compared with the statewide average of 386.2 per 100,000. HHC's network serves more than 50,000 adults with diabetes as well as many other children and adults who are at risk of developing the disease.

Benefits of Telehealth

In 2012, the telehealth program served nearly 1,200 patients with diabetes, with the goal of lowering high blood sugar levels and avoiding unnecessary hospitalizations and ED visits. More than 70% of the patients enrolled in the program for at least 6 months significantly reduced their blood sugar levels, and of those, nearly 40% reached recommended blood sugar goals established by their health care providers. Patients with diabetes enrolled in the telehealth program also experienced an 8% reduction in hospitalizations and a 6% reduction in ED visits. HHC providers and patients reported success with the House Calls Telehealth Program in part because the telehealth team focuses on motivational interviewing and developing positive, respectful relationships with patients. Patients experience empowerment from this model as they are encouraged to actively manage their chronic conditions. Telehealth team members teach patients to make gradual, sustainable changes over time concerning diet, medication, and activity levels, all of which can lead to more permanent and positive health outcomes.

Funding and Sustainability

The House Calls program has been sustained since 2006 by a local service contract negotiated by HHC with its own health plan, MetroPlus. This enables HHC to be paid to manage the participating patients and facilities where HHC is in charge of related reimbursement costs. Obtaining funding to support service delivery would be challenging if the program admitted patients who were not covered by MetroPlus. To date, only MetroPlus Medicaid or Medicare patients are able to participate in the telehealth program.

Facilitators and Barriers

Both HHC and MetroPlus have benefited from the House Calls program; MetroPlus is able to control costs, and the telehealth program establishes and maintains parameters designed to promote patient progress. In-house tracking data mined from the electronic health records and patient registries indicate success through reduced inpatient visits, reduced ED visits, improved medication adherence, and improved patient engagement with providers. While the telehealth program has been very positively received, some HHC providers are still hesitant to become involved. Some clinicians do not want to participate in the telehealth program because they believe that involvement will mean they are “always on call” and express concern that they would not be readily available to respond to emails sent through the secure telehealth network.

Long-term Goals

Offering telehealth services is one of many strategies to improve population health as well as quality of life in New York City. With provider support and in-house tracking data indicating improvement in patients' health outcomes, the House Calls Telehealth Program is a sustainable strategy to address the challenges of managing chronically ill patients.

University of Rochester Medical Center—Golisano Children’s Hospital and Ibero Early Childhood Services Center

Rochester, New York

Key Findings:

- The Health-e-Access program enables providers to diagnose and treat children with emerging health issues in community settings, which has reduced unnecessary ED visits.
- Sustainability is challenging in part because spoke sites such as Ibero Early Childhood Services Center are not reimbursed for their time and resources spent supporting telehealth service delivery.
- URMC envisions further integrating telemedicine into their primary care medical homes so that families and children will continue to have broader access to their providers in community-based settings.

Health-e-Access Program

In 2001, URMC integrated telemedicine into their primary pediatric medical home. The program, Health-e-Access, focuses on pediatric health and well-being by reducing ED visits through the use of telehealth technology to connect families and children with medical problems to medical services and pharmacies. The goal of this program is to reduce school and child care center absences due to childhood illness and help parents avoid losing time from work to care for their sick children. This pediatric telemedicine program connects the pediatric providers at Golisano Children’s Hospital, a division of URMC, to child care centers (such as Ibero Early Childhood Services Center) located in urban areas of Rochester, and allows primary care pediatricians to assess and treat their patients at the child care centers.

The telemedicine team consists of 2 experienced general pediatricians, 3 full-time equivalent telemedicine technicians who are either licensed practical nurses or medical technicians, and 1 full-time equivalent registered nurse coordinator. The technicians travel to 100 spoke sites, such as Ibero, throughout the Rochester metropolitan area to assist with telemedicine visits. During the telemedicine visit, the technician obtains the patient’s vital signs and the evaluation begins with a review of forwarded information from the technician. The telemedicine clinician guides the technician in real time to gather additional information for the assessment. The telemedicine clinician reviews records as well as audio and visual clips and provides real-time diagnosis and treatment instructions during the child’s

telemedicine visit. The attending clinician and technician discuss the recommendations, which are supplemented by handouts on common acute childhood illnesses. A summary of the telemedicine visit is also securely faxed to the child's regular primary care provider, if he or she has one. If necessary, a participating pharmacy will prepare and deliver the child's prescription to his or her school. In addition to providing telemedicine services, child care centers such as Ibero maintain health information on their students, such as health records, copies of parental consent for emergency medical treatment, results of health examinations and lead screenings, and immunization and medication records, as well as records of illness, injuries, and indicators of child abuse or maltreatment.

Golisano Children's Hospital

Golisano Children's Hospital at URM is a children's hospital in the Finger Lakes region of New York. Its mission is to provide comprehensive care for children and their families, to perform progressive research, and to educate future pediatric specialists and pediatricians. With upwards of 200 pediatric specialists in more than 40 areas, Golisano Children's Hospital serves some 85,000 patients and their families every year, including 825 pediatric ICU admissions and 27,000 pediatric emergency visits.

Ibero Early Childhood Services Center

The Ibero Early Childhood Services Center is a spoke site for the Health-e-Access program. Ibero provides Head Start, an all-day program for 3- and 4-year-old children that follows the academic school year, as well as Early Head Start, an all-day program for children between 6 weeks and 3 years of age. Ibero serves predominantly African American and Latino children and families in the city of Rochester, with a growing population that is classified as English as a Second Language (ESL). All participating families are low income and qualify for the Child and Adult Care Food Program (CACFP), a federal program that is administered by the state and provides meals and snacks to children and adults in child care centers, day care homes, and adult day care homes. Ibero also works with an onsite nutritionist, in collaboration with the American Heart Association, to teach parents and children about health and wellness, including lead poisoning awareness and parent involvement in formulating nutrition plans for children exposed to lead poisoning.

Rationale for Adopting Telehealth

URM pediatric providers, along with Ibero and other spoke sites, recognize that urban underserved families in the greater Rochester area experience numerous challenges in their efforts to obtain needed services for their children. These include limited access to after-hours care, absences from work, juggling family responsibilities, language barriers, and unreliable public transportation. Evidence-based research indicates that 40% of all pediatric ED visits could be prevented by using more cost-effective and efficient

telemedicine visits. Telehealth visits enable effective diagnosis and treatment while allowing children, as appropriate, to remain in child care centers or in schools, permitting parents to meet work obligations.

Benefits of Telehealth

By 2011, a decade after the launch of the Health-e-Access program—more than 10,000 visits were provided in child care programs and elementary schools. Prior to the Health-e-Access program, 75% of parents with children in participating school and child care sites reported that their child’s primary care practice directed them to use the ED if they called about a child’s illness in the afternoon. URMC tracking data indicate a 63% reduction in absences due to childhood-related illnesses among children in urban child care programs, and a majority of parents say that the presence of the telemedicine program was a determining factor in choosing a child care center or school. There has been a 22% reduction in ED utilization for children with telemedicine access.

Funding and Sustainability

The Health-e-Access program initially received funding from AHRQ and HRSA’s Maternal and Child Health Bureau. It was also supported by a grant through the New York State Hospital–Medical Home program. The project is currently supported through reimbursement fees negotiated with local payers, which cover some but not all of the costs of services and staffing. As grant funding that supported telehealth services has declined or ended, the number of patient visits also has declined. Currently, Ibero does not receive reimbursement for visits or administration site fees for participating in the Health-e-Access program. URMC is in the process of developing a business plan to expand telehealth services to cover chronic care as well as acute care services for adults.

Facilitators and Barriers

Recent state legislation recognizes telemedicine as a covered service in New York. Despite this, spoke sites such as Ibero are not reimbursed for their time, creating challenges for the program. These agencies must cover their portion of the time and resources spent on telehealth activities. In addition, the costs at URMC associated with administration, technology support, and maintenance of the infrastructure are not currently covered by reimbursement. As URMC plans to expand the telehealth program, challenges regarding the time required for technicians to travel to the various spoke sites for appointments and support for the costs incurred by the spoke sites may become problematic.

Long-term Goals

The long-term vision of UPMC is to make telemedicine a valued tool in the primary care medical home such that families and children will not only utilize telehealth services but continue to seek integrated care that links telehealth services to their own provider. As interest and demand for pediatric telemedicine services grow in the community, providers will seek guidance on ways to standardize the delivery of telemedicine to all spoke sites and fully integrate telemedicine services into the ambulatory care delivery system, especially in underserved communities. In addition, UPMC hopes that efforts to share utilization and cost savings data through a reduction in inappropriate ED visits will lead to better reimbursement for telehealth services.

Rochester Regional Health

Rochester, New York

Key Findings:

- RRH offers telehealth services as a tool to reduce the cost of health care and increase patient access to care by supporting in-depth, real-time assessment and treatment of wounds.
- The wound healing telemedicine program allows providers to efficiently connect with patients, family, and staff at long-term care facilities in order to coordinate care and reduce unnecessary hospitalizations.
- The wound healing team develops a personalized treatment plan for each patient evaluated that is based on a wide array of treatment options.
- RRH considers the use of telemedicine as part of its transition from fee-for-service to value-based payment by enabling patients to connect with providers and effectively improve outcomes.

Wound Healing Center

Rochester Regional Health (RRH) offers advanced wound care treatment in nursing homes for patients with chronic complex wounds often related to diabetes, lack of mobility, poor circulation, underlying illnesses, and other issues. The RRH wound healing program is voluntary and uses a collaborative approach. The wound healing team develops a personalized treatment plan for each patient that may include compression therapy, total contact casting, negative-pressure wound therapy, and cellular tissue products. Hyperbaric oxygen therapy also may be used to enhance healing, either alone or in conjunction with other forms of treatment.

Rochester Regional Health

RRH serves the greater Rochester area and surrounding communities in Western and Central New York and was formed in 2012 with the merger of Rochester General Hospital and Unity Health System, a community hospital system located in Greece, New York. RRH includes 5 acute care hospitals (nearly 1,400 beds), 7 long-term care and post-acute care facilities, 9 ambulatory centers, and nearly 70 primary care sites, with a clinical staff of 2,300.

Rationale for Adopting Telehealth

RRH first initiated telehealth services in 2007 as part of its ICU services, which consisted of intensivist consulting services for ICUs and surgical ICUs. RRH offered telehealth as a tool to reduce the cost of health care, increase patient access to care, and improve outcomes. In addition, medical and administrative staff sought technological advances to support in-depth, real-time assessments and treatments. The wound care telehealth program is used to triage patients with chronic wounds, plan appropriate treatment, provide timely patient follow-up, and offer video consults with specialists (plastic surgery and vascular surgery) as needed.

Benefits of Telehealth

The wound healing program offers a means for providers at RRH to use alternative strategies to improve access to and quality of care. This telemedicine application allows providers to efficiently connect with patients, family, and staff at long-term care facilities in order to coordinate care and reduce unnecessary hospitalizations. Telehealth ensures that patients experience a seamless transition between assessment and treatment by reducing the need for hospital care, which can be especially difficult for older patients with mental health conditions such as Alzheimer's disease and their families, as removing them from a familiar environment may cause additional stress.

Funding and Sustainability

RRH considers the use of telemedicine applications as part of its transition from fee-for-service to value-based payment, with technology that enables patients to connect with providers and efficiently improve patient outcomes. The hospital administration, however, is concerned that demand for telemedicine services will outpace current reimbursement for provider and facility services. Increased demand and concern over reimbursement raises questions about maintaining a sustainable telemedicine model at RRH.

Facilitators and Barriers

There is concern that insurance providers, especially commercial insurers, view telemedicine applications and strategies as impersonal and lacking continuity. Telemedicine applications such as "doc in the box" and kiosks offer solutions to immediate health care needs but do not necessarily take into account the patient's medical history and do not connect back to the patient's usual source of care. Grouping these types of "one and done" strategies together with more comprehensive telehealth applications minimizes the importance of telemedicine as part of a comprehensive health care system. The tendency of insurers

not to recognize the different types of telemedicine applications could lead to missed opportunities to fully integrate telehealth into provider practices and, in so doing, better meet the needs of patients.

RRH has concerns about covering the cost of telehealth services, especially in treating chronically ill older patients on Medicare who require multiple telehealth visits for complex, recurring medical issues.

Medicare limits reimbursement for telehealth to patients who receive services in originating sites located in rural federally designated shortage areas. Additionally, Medicare will reimburse for 1 consultation per month per specialty, which may pose some difficulty for chronically ill patients in skilled nursing facilities, especially if their medical needs require more than 1 consultation per month.^{‡‡}

Long-term Goals

RRH plans to gradually expand these telehealth services to 14 other post-acute long-term care facilities, which will need to purchase mobile equipment and carts to be compatible with the mobile equipment and carts currently being used by RRH. The goal is to continue to expand services and improve provider capacity to facilitate telemedicine visits in the future.

^{‡‡} There can be more than 1 consult a month if the consults are for different specialties—only 1 per month for each specialty. Medicare will cover more than 1 telemedicine consultation if it is conducted in a location separate from the skilled nursing facility.

TELEHEALTH CASE STUDY FINDINGS

The information from these programs was synthesized to identify common themes and findings relating to the impact of telehealth services on the provider organizations and the patient populations served. These findings are summarized below.

Telehealth is an effective strategy to provide care to people with limited access to needed health services.

Case study participants adopted telehealth technologies to address the local needs of patients and improve access to care. Health workforce availability combined with geographic distances and patients' lack of adequate transportation created sufficient need for a different model of care delivery. Informants added that given travel time, especially for specialty care providers, telehealth services were crucial for efficient care delivery for underserved populations across the state.

Telehealth applications are uniquely configured to address local issues.

A wide array of telehealth service modalities was used to address patients' unique health care needs and the technology chosen was designed to facilitate access to services. Examples included chronic disease management for homebound patients, preventive pediatric care in child care centers, and linking behavioral health patients in isolated rural communities with psychiatrists. The strategies differed to accommodate local need.

Telehealth programs facilitate and strengthen relationships between patients and providers.

Informants used the process of educating patients about telehealth services as a means of helping patients to establish a positive relationship with a primary care, oral health, or specialty provider. Informants found that the technology facilitated face-to-face interaction between patients and providers regardless of the application or patient population. Telehealth services were said to have built "safe" connections between providers and underserved patients.

Telehealth infrastructure varies by organization and level of available resources.

Differences existed among the case study participants, and not just in services and patient needs, but also in how organizations developed and financed infrastructure supporting telehealth services. Telehealth

programs were designed to meet the needs of patients and were often shaped by local circumstances and resources. Each of the programs studied was somewhat different from the others, making comparisons difficult and suggesting that efficacy of approach was related to the ability of an organization to design an application that met a particular set of needs.

Patient acceptance is critical for successful implementation of telehealth programs.

Demonstrating the value of telehealth required gaining patient acceptance. For patients receiving care in the home, initial training and ongoing technical assistance were necessary to help patients become familiar and comfortable with the equipment. The literature supported the need for patient education that included an explanation of the value of the technology and its role in better outcomes. Informants indicated that once patients and their families had used the technology successfully, they requested telehealth services because of its convenience.

Regardless of the modality, telehealth implementation generally requires education of providers in its use and ongoing technical support for operational success.

The use of telehealth technologies required skill in operating devices that were often new to providers. Even when a provider was acquainted with a specific type of technology, such as a digital camera, learning positioning and lighting was important for effective use. Depending on the type of technology used, there were instances in which the provider needed to operate equipment outside of an office or institution or to advise a patient on use, both of which required a working knowledge of the technology. Having technical support available was valuable for establishing and maintaining connectivity as well as troubleshooting any problems that arose. Clinical staff needed to focus on the patient or other providers when consulting, and technical problems could interrupt the session. The pace of technological change coupled with security requirements may increase the need for technical support for telehealth programs over time.

Services provided through telehealth are not consistently integrated into health information systems; there is no standard approach to integrating telehealth service delivery into the patient record.

Case study participants noted that telehealth tended to operate in parallel with existing health care delivery information channels and, depending on the application and service sites, data documenting telehealth service delivery may not be accessible to all involved in care. Providers often used different data systems and didn't usually share a single electronic health record. Study participants expressed a need for better integration of the information generated by telehealth services to optimize patient outcomes. Several participants noted that the regional health information exchanges did not facilitate telehealth data transfer.

Funding sources and reimbursement levels for telehealth programs are variable and create challenges for providers to cover the full cost of program implementation.

Case study participants reported need for sufficient capital to make the initial telehealth investment. Some covered the costs with existing revenues or the margins generated from services; others used philanthropic or public grants. However, lack of access to capital often deterred or delayed implementation of telehealth programs.

Inadequate reimbursement levels for telehealth services frequently caused providers to limit telehealth use. Case study participants also reported that in some instances payer approvals limited the number of telehealth visits which prohibited adequate follow-up care for chronically ill patients.

Case study participants reported that reimbursement levels for telehealth services were often inadequate to cover many of the costs associated with a successful telehealth program – including system security, software and hardware upgrades, training of providers in technology use, technical support, and data capacity requirements.

There is confusion among providers regarding payment rules for telehealth as they apply to originating and receiving sites.

Efforts to expand telehealth programs in the state have sometimes led to confusion among providers as to what type of transmission is reimbursable. As more than one state agency has responsibility for licensing providers, rules limiting the eligibility of originating sites (ie, where the patient is located) may apply.

Organizations that are both payer and provider can more easily adopt and cover the costs associated with telehealth programs.

When a health care service provider operated a managed care program, it was easier to implement telehealth programs for covered populations. Being financially at risk for a group of patients and having access to integrated patient data creates a “closed system” of care that facilitates the use of telehealth. Value-based payment and other reimbursement models that emphasize reductions in avoidable hospitalizations and better patient outcomes have the potential to support greater use of telehealth programs.

While the benefits of telehealth programs are widely recognized, the programs tend to be uniquely tailored to local need, making it challenging to undertake broad evaluation designed to measure return on investment.

Case study participants reported that payers were willing to support telehealth programs, provided that there was sufficient evidence that these programs could achieve savings. While a measurable return on investment was understandably important to payers, the variability of telehealth programs uniquely designed to meet local need make it difficult to conduct broad evaluations of these programs.

LIMITATIONS

The organizations identified and interviewed were selected for inclusion in the study by researchers based on geographic location and the telehealth services provided. Because the number of case studies was small, the findings from this qualitative research may have limited generalizability.

DISCUSSION

Telehealth is effective in monitoring chronic disease, educating practitioners, providing specialty consultations, and reaching patients whose access to care is limited. Providers in New York State utilize telehealth in various health care settings to reach underserved populations, and telehealth is a particularly important strategy for overcoming workforce shortages and geographic isolation. Telehealth modalities and uses are aligned with local needs.

Telehealth increases patients' opportunities for improved access to care, as it allows connections with a variety of health care providers regardless of location. In addition to improved access, patients benefit from the elimination of the need to travel for services, reduction in missed school or work, and decreased waiting time. Demand for telehealth services will likely continue to rise as the positive benefits of telehealth services are documented.

The return on investment for providers using telehealth services is more complicated. Providers face reimbursement challenges, and study informants indicated significant differences between the rates paid by commercial insurers despite the telehealth parity law. Provider understanding or interpretation of state regulations for originating and receiving sites has affected the use of the services. Reimbursement for the costs associated with planning, startup, maintenance, training, and upgrading could affect organizational decisions regarding telehealth. Organizations that are both payer and provider have more flexibility, and new payment models may encourage others to adopt or expand telehealth services.

CONCLUSIONS

Providers in New York State are using a wide array of telehealth applications for their patients. Greater support is needed for these telehealth programs to be sustained, and more research to study clinical outcomes is critical. Telehealth use in New York's health care delivery system is reflective of the manner in which telehealth has evolved nationally. The state's geography and the demographics and distribution of the health workforce are likely to encourage increasing use of telehealth. Continued integration and new models of payment have the potential to further increase use of telehealth services.

Appendix

CONSENT FORM AND SUGGESTED INTERVIEW QUESTIONS FOR TELEHEALTH PROVIDERS

Conducted by the Center for Health Workforce Studies

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This project is being conducted in order to learn more about how different provider types across New York State are utilizing telehealth technology to increase access to care for state residents who may live in rural or underserved regions of the state. The project is being conducted by the Center for Health Workforce Studies at the University at Albany for the New York State Department of Health. The interview is voluntary and requires your consent. We estimate that the interview will take approximately 45 minutes to 1 hour to complete. Please tell us at any time if you wish to or must discontinue the interview.

Although the following questions are meant to guide the interview process, only some of the questions may be asked depending on the time allotted. Any information provided during the interview will remain confidential. A final paper based on the interviews will be compiled when all interviews are complete. The paper will provide no information that could be specifically linked to you. The name of your organization and its location will be listed in the paper to provide information about the geographic and organizational diversity of interviewees. The paper will generally identify common themes from the interviews and describe implementation and use of telehealth services and patient access to care. If benchmark strategies in your organization are identified, they may be specifically described in the report, with your consent.

Do you have any questions or concerns about this interview before we begin?

Questions:

1. Please describe the type(s) of services that are being provided by your program. How long have you been providing these services?
2. Please describe your personal or professional interest in using telehealth strategies here in New York State.
3. Do you have concerns about lack of access to health care for certain populations? Who is at risk of not receiving health care services in your community? What geographic areas in the state might experience limited access to health care?
4. Please describe your current patient population and the average number of patients you see per week. How are patients referred to this program, and how do they learn about your services?
5. Prior to the implementation of the telehealth program, how would your patient population generally seek access to care?
6. Are patients affiliated with another type of health care provider while receiving telehealth services? If so, could you please describe the provider type?
7. Please describe patient reaction/response to the telehealth program.
8. Please describe reimbursement for telehealth services for Medicaid, Medicare, and commercial insurance.
 - a. Do current reimbursement procedures support telehealth services?
 - b. If not, what other resources are available to support the telehealth program?
9. Describe your perceptions of stakeholders' concerns around efforts to use telehealth services across New York. Are you aware of how health professionals have responded to the use of telehealth? What are some concerns expressed by health professionals around the implementation and regulation of telehealth services?
10. Have you conducted quality outcome assessments to determine whether utilizing telehealth strategies has helped to improve patient access to care? Do you conduct patient satisfaction surveys?

11. Are you aware of any telehealth initiatives or collaborations that successfully addressed the need for increased access to health services in the state? What strategies were employed by those initiatives to improve access to care?
12. Could you describe the coalitions who implement these telehealth services and strategies and the patients served by these initiatives? What type(s) of health care workforce were employed to work with patients using telehealth services?
13. Are you aware of or do you encounter regulatory barriers to the provision of telehealth services? Have recent legislative initiatives to utilize telehealth services in the state had a particular impact on access to health care services? Can you provide specific examples of regulatory impact on care with respect to telehealth?
14. What could be done by state government stakeholders, from a policy perspective, to encourage increased access to health care in the state?
15. Are there any issues that we have not discussed today that you feel are relevant to this discussion?

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