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What Does a Successful, Sustainable Telemedicine Program Look Like? An Inside View of Six Telemedicine Programs in Maine

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What does a Successful, Sustainable Telemedicine Program look like?

An Inside View of Six Telemedicine Programs in Maine

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Masters of Science (MSc) Health Policy and Management

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Abstract

The purpose of this capstone is to better understand the successes and lessons learned in the development and implementation of successful programs to help guide future decision making when planning a new program. The study relies on semi-structured interviews with Telehealth forum members and staff from a select number of telemedicine programs for its primary data source. Initially, secondary data sources and members from the Maine Telehealth Forum were used to inform the development of the list of programs to be interviewed. The programs interviewed include; a behavioral health, two specialties, a home health, a primary care, and a hospital site spread across a wide geographical rural area.

Each program has its own individual mix of factors that contributed to its own success and all had their own way of defining what success is to them. Common themes such as relationship building, a shared vision of the reduction of barriers to care, finding efficiencies and creative solution to improve services and new sources of income coupled with the need for multiple champions and a high functioning health care team did emerge along with a number of individual contributory and/or inhibiting factors that all programs could learn from.

The key factors to emerge that were of value to this health care delivery model was the importance given to building and nurturing relationships, trust, rapport and respect with good open communication. This was the bedrock some programs used to establish agreements on the long term goals and expectations for the program, how it was run on a day-to-day basis and for some, revenue sharing. These were considered to be the foundation of a successful program.

Personal Statement

The Maine 2006-07 State Health Plan created a Telemedicine Workgroup charged with assessing the status of telemedicine and developing recommendations to foster the growth of a telemedicine infrastructure that best serves the needs of Maine communities. The workgroup found that while certain communities had adopted telemedicine, in other communities there was a lack of interest on the part of doctors, patients, and employers. This lack of interest was due, in part, to a lack of information about telemedicine, including the lack of a well-developed evidence-base regarding its costs and benefits and thus a well-documented “business case” for various services. To address this and other issues, the workgroup’s core recommendation was the creation of an ongoing forum in which telemedicine providers worked together to increase the capacity of telemedicine in Maine. The Maine 2008-09 State Health Plan assigned the DHHS/ME CDC Office of Rural Health and Primary Care (ORHPC) the role of convener of a telemedicine forum.

In my role as the rural manager of the ORHPC, I convened the forum in 2010. The forum membership includes representatives from; the four largest healthcare systems in the state; the Veteran’s Administration (VA); the NorthEast Telehealth Resource Center; the Maine chapter of the New England Rural Health Roundtable; and representatives from Maine’s behavioral health providers, home health and others. The forum members work collaboratively to advance telemedicine in the state by sharing best practices, updates on new and emerging technology, engaging stakeholders and policy makers on how best to advance telemedicine in Maine and educating providers and patients alike about telemedicine. In 2010, the forum established an annual telemedicine conference to facilitate the education of providers and public alike on the value of telemedicine and create a venue for all stakeholders to network and build working relationships. With no other similar model in New England, the event attracted a New England wide attendance.

As the chair/convener of the forum and to further the mission of the Office of Rural Health and Primary Care, I brought stakeholders together in 2011 to apply for a Telehealth Resource Center grant from the Office for the Advancement of Telehealth. The proposal was designed to support efforts to use telemedicine to support access to quality health care services for rural and underserved populations throughout the New England region. Maine was awarded the funding in September 2011. The newly formed NorthEast Telehealth Resource Center is housed at Medical Care Development Augusta Maine.

Telemedicine has the ability to enhance the delivery of healthcare in rural Maine and increase access in a cost effective and efficient way. If the state is to fulfill the vision of the 2006-07 State Health Plan Telemedicine Workgroup to improve access to care where it is needed most using telemedicine, then it must be done in a coordinated and collaborative way to maximize available resources and build on the successes and lessons learned from previous efforts. To do this, we must consider why some programs have been successful and are still there and what do these programs look like?

This capstone project will attempt to identify the factors that contribute to a successful and sustainable program and how these lessons can be used to expand the use of telemedicine services in Maine?

Introduction and Background

The American Telemedicine Association (ATA 2013) defines telemedicine as *the use of medical information exchanged from one site to another via electronic communications to improve a patient's clinical health status*. Telemedicine includes a growing variety of applications and services using two-way video, email, smart phones, wireless tools and other forms of telecommunications technology. The ATA treats "telemedicine" and "telehealth" as synonyms and uses the terms interchangeably.

Telemedicine is used to provide health care services to patients who have physical or geographic difficulties in accessing services from physicians or other health care providers. Telemedicine services constitute an appealing health care delivery model for large areas of rural Maine due to their geographic isolation, scarcity of local primary and specialty medical care, prolonged periods of hazardous winter driving conditions, and poor road infrastructure. It is difficult for poor elderly residents in much of rural Maine to travel for care.ⁱ Residents in some isolated areas, such as off-shore islands, have difficulty accessing even primary health care. This is especially true with time sensitive diagnoses – for example acute stroke – in which treatment windows are very short, and specialty providers are critical to the chain of survival and recovery.ⁱⁱ

The aging demographic in Maine, combined with increased chronic disease morbidity in the 45+ age group, particularly in rural areas, is imposing an increasing burden on the healthcare system and threatening the ability of Maine's healthcare system to serve all patients.ⁱⁱⁱ Evidence shows that tele-home-health services enhance self-care, medication management, and chronic disease management, therefore improving health and reducing re-hospitalization rates.^{iv} More commonly, telephone education has long been used to help patients learn how to better manage their diabetes.^v

The Maine 2006-07 State Health Plan created the Telemedicine Workgroup *“to develop strategies to help Maine achieve an appropriately-developed, utilized and reimbursed telemedicine infrastructure that serves the best interest of patients.”*^{vi} To better understand who had what technology, capacity, and resources around the state the workgroup put together an inventory of Telemedicine programs and technology around the state and developed recommendations. This would *“focus investment in services with the highest need and the most potential to improve patient health outcomes, so that telemedicine technology and services are deployed in a systematic way.”*

In 2006, on behalf of the workgroup funded by the Maine Health Access Foundation, Mike Edwards, director of the Maine Telemedicine Services conducted the inventory. It attempted to gather information on what clinical telemedicine services were being provided around the state and who was providing those services, either as the end use (originating) site where the patients are located or the provider of services (distant) site where the clinicians are located ([See Appendix 1](#)). It also gathered information on the number of encounters, the technology used and any type of assessment tool on outcomes. The methods used to send out the survey were by email and mail. Unfortunately the return rate was disappointing with some of the major telemedicine providers not responding. The inventory provided valuable information on usage in the state by end user (originating) spoke site or the provider of services (distant) hub site and the clinical service type and level of usage.¹

Since this study, Maine has been the recipient of a significant amount of federal money to support the expansion of the broadband infrastructure over which telemedicine is transmitted as well as the investment in telemedicine technology and programs. **In 2007;**

- The New England Telehealth Consortium received a three-year \$24.6 million grant from the Federal Communications Commission to lay down the broadband lines necessary to

¹ **Distant or Hub site:** Site at which the physician or other licensed practitioner delivering the service is located at the time the service is provided via telecommunications system

Originating or Spoke site: Location of the patient at the time the service being furnished via a telecommunications system occurs. As defined by Medicare (42 CFR 410.78).

create telemedicine connectivity between teaching centers, Critical Access Hospitals, Federally Qualified Health Centers, and Rural Health Clinics.

- The Connect ME agency was established to facilitate the universal availability of broadband to all Maine residents and help them understand the valuable role it can play in enriching their lives and helping their communities and businesses thrive. Maine's hospital and healthcare systems took advantage of increased federal funding supporting the advancement of telemedicine.

This expansion of funding coincided with the availability of emerging telemedicine technologies that offered increasingly affordable, high definition multimedia systems. The convergence of funding and increasingly affordable technology allowed providers to expand their geographic reach and implement clinical programs such as tele trauma, tele Homecare, tele psychiatry, e-ICUs, e-EDs, and specialty consults in endocrinology, dermatology, and genetics.^{vii} It also allowed the use of technology to expand primary care access to residents of Maine's coastal islands.^{viii}

In 2010, a Maine Health Information Technology (HIT) survey was conducted funded by the Maine Office of the State Coordinator for Health Information Technology. The survey included a number of questions on telemedicine. Under a contract with the Maine Office of Rural Health and Primary Care, Maine CDC, staff at the Muskie School of Public Service conducted an analysis of the telemedicine questions ([See Appendix 2](#)). The following are the key findings related to telemedicine issues:

- Telemedicine is used throughout Maine.
- It is more likely to be used in hospitals than other settings.
- Services most likely to be provided thru telemedicine include;
 - Specialty care;
 - Behavioral care;
 - Shared decision making; and
 - Home monitoring.

- The most common barriers to adoption included:
 - Reimbursement;
 - Bandwidth; and
 - Hardware.

The Telehealth Network Grant Program (TNGP) is a key telehealth program administered by the Office for the Advancement of Telehealth (OAT). OAT is part of the Office of Rural Health Policy (ORHP), located within Health Resources and Services Administration (HRSA) at the U.S. Department of Health and Human Services. In 2013, OAT produced a report on the performance of their grantees for the period 2004-2010. According to the report, fifty five types of healthcare services were offered in communities using telehealth technology. The most commonly offered services included: adult psychiatry; chronic disease counseling; clinical pharmacology/clinical pharmacy; computerized tomography (CT) and magnetic resonance imaging (MRI) interpretations; diabetes clinical services; general radiology; home health; pediatric/adolescent psychiatry; and routine adult cardiology. The most frequently used settings for telemedicine encounters were hospital outpatient departments (34.6%), patient homes (32.1%), and non-hospital clinics (12.7%). These settings accounted for approximately 80% of all telemedicine encounters during the reporting period.^{ix}

Summary of Key Events

- 2006** — *The Maine Telemedicine Workgroup created to develop strategies and recommendation to achieve a robust telemedicine infrastructure in Maine.*
 — *Inventory of Telemedicine programs and technology in Maine conducted.*
- 2007** — *The New England Telehealth Consortium established to create telemedicine connectivity between teaching centers and rural providers.*
 — *The Connect ME agency established to facilitate the universal availability of broadband to all Maine residents*
- 2010** — *The Maine Telehealth Forum convened.*
 — *Maine Office of the State Coordinator for Health Information Technology conducted an analysis of telemedicine services.*

The Problem

Historically, telemedicine services in Maine come and go and information on services that are currently available is at its best fragmented and anecdotal, an opinion expressed by members of the Telehealth Forum ([See Appendix 3](#)). Healthcare organizations that provide telemedicine services may not include program information on their websites and public materials or keep this information up to date when changes are made to the program. Similarly, they may not share this information with other stakeholders given the siloed nature of our health care system.

Telemedicine programs differ in the medical problems addressed, staffing and settings of care, the diagnostic and therapeutic strategies employed, and the organizational and cost implications of these strategies.^x In the current healthcare environment, which is undergoing tremendous change, reimbursement for telemedicine varies across third party payers. As a result, hospitals and healthcare systems have found it increasingly difficult to maintain telemedicine services that are not profitable.

In 2013, MaineHealth announced the closure of their e-ICU telemedicine services which resulted in significant gaps in ²e-ICU services for rural communities in Androscoggin, Knox, Kennebec, Franklin, Lincoln, Waldo and Cumberland counties. At the Telehealth Forum meeting in June 2014, there were a number of announcements from the members about their Tele health programs. Eastern Maine Medical Center announced the closure of its e-ICU service impacting Penobscot, Aroostook, Washington, Somerset and Kennebec Counties. Sweetzer announced a new collaboration with DFD Russell, a federally qualified Health center, (FQHC)³ in Monmouth, Maine to deliver telepsychiatric services to DFD Russell's patients.

² e-icu is a program that provides information to a command center that is monitored by specially trained physicians and nurses 24 hours a day. Staff at the center can communicate with hospital staff through a video connection at the patient's bedside.

³ Federally Qualified Health Centers (FQHCs) are community-based organizations that provide comprehensive primary care and preventative care regardless of insurance status. FQHCs are called Community/Migrant Health Centers (C/MHC), Community Health Centers (CHC), and 330 Funded Clinics.

Right now we have a very muddled picture about the state of telemedicine services in Maine. More importantly we do not understand why some programs are successful and sustainable while others fail. In order to help guide future decision making when planning a new program it is important to analyze past projects to understand why some programs have been successful and are still there? What do these programs look like?

Approach

The Telehealth Network Grant Program's (TNGP) definition of success is *"a program is able to be sustained once HRSA grant funding ceases."* Data obtained from TNGP grantees indicate that telehealth services were sustained by 98% of TNGP grantees. This high percentage of sustainability among formerly funded TNGP grantees is a significant accomplishment, particularly in a challenging economic climate.

For the purpose of this project, successful and sustainable programs are those that:

- *Continue to provide services once their start-up funding ends.*
- *Receive ongoing third-party reimbursement for services provided.*
- *Use innovative thinking to overcome barriers and create efficiencies.*
- *Secure additional sources of funding to support the program.*

The purpose of this capstone is to better understand the successes and lessons learned in the development and implementation of successful programs to help guide future decision making when planning a new program.

Nationally, some government and private organizations recognized the need to understand these issues better. According to the Institute of Medicine's (IOM) guide to Assessing Telecommunications in Health Care (1996), *"Sustainable telemedicine programs need an organizational business and strategic plan coupled with an understanding of the project features and results necessary for a sustainable program"*.^{xi} In 2000, the DHHS Office of the Assistant Secretary for Planning and Evaluation (ASPE) contracted with The Lewin Group to assess current approaches to evaluating telemedicine. The Assessment of Approaches to Evaluating Telemedicine report^{xii} built on the work of the IOM to identify the different issues

and characteristics on which telemedicine can be evaluated. In addition, programs must have an understanding of the challenges and barriers that are unique to the environment in which the program will be implemented including geographical challenges, broadband availability and provider/patient acceptance of telemedicine services. In 2004, the Office of Technology Policy, U.S. Department of Commerce conducted a study on the factors that impact the adoption and application of telemedicine. The goal of the study was to analyze the state of telehealth and to describe the impact policy and process issues had on innovation, demand and investment. The principal findings of the report described the legal, financial, regulatory, organizational and process barriers to telemedicine use.^{xiii} The intention of this capstone project is to conduct a similar analysis of telemedicine projects in Maine.

Method

The Maine Telehealth Forum and The NorthEast Telehealth Resource Center⁴ are both invested in expanding the capacity of telehealth in Maine. This capstone proposal was presented to Forum members at their June 2014 meeting. Members were supportive of the project, reinforced the need for this type of information and agreed to be available as a resource for the project. The Forum's steering committee served as an advisory committee for the project (See Table 1).

Table 1. Maine Telehealth Forum Steering Committee.

Name/Role	Health Care Organization
Lynn Suggs Telehealth Program Manager	Maine Health Systems MHS
Damon Wilson Telehealth Program Manager	Eastern Maine Health Systems EMHS
Dean Bailey Director of Special Projects	Sweetzer
Cari Bilboa Rural Manager	Maine Office of Rural Health, Maine CDC.
Danielle Louder Program Manager	Medical Care Development Augusta.

⁴ Funded by grant number G22RH22699 from the Office for the Advancement of Telehealth: HRSA / DHHS to advance access to quality health care services for rural and underserved populations through Telehealth in the New England region

Primary data sources-for this project came from semi-structured interviews with forum members and staff from a select number of telemedicine programs.

Secondary data sources- USDA Rural Development grant program and The Telehealth Network Grant program (TNGP), Office of the Advancement of Telehealth.

Analytical framework of the project

An analytical framework is a useful tool used to define and link evidence and data as they relate to outcomes.⁵ An example of this type of framework is a S.W.O.T (strengths, weaknesses, opportunities and threats) analysis which examines the factors that affect the success of any enterprise. While not sticking to the exact framework of the S.W.O.T. this capstone project analyzed the factors that affect sustainability and success.

Research Questions

1. *What are the factors that contribute to a successful sustainable telemedicine program in Maine? This may also provide us with insight into the factors/barriers that may inhibit success.*
2. *What are the lessons learned from successful telemedicine programs?*
3. *How can these lessons be used to expand the use of telemedicine services in Maine?*

Goal of the project: To attempt to determine why some telemedicine programs are successful and sustainable while others are discontinued in Maine.

Objective of project: Provide policymakers and telemedicine program with information to support the implementation of successful and sustainable programs.

Method of Data Collection

The study required a number of information gathering steps before interviews could be conducted.

1. Compilation of a potential list of long term programs⁶ in Maine. The majority of telemedicine programs in Maine use grant funding to fund their start up activities. As a result, the project had a readily available list of programs. The project used data from the USDA Rural Development grant program and the 2013 TNGP report, the 2010 report and the Forum

⁵ Definition by the Agency for Healthcare Research and Quality (ARHQ)

⁶ A program that continues to provide services once their set-up funding ceases.

members to inform the development of the list. The criteria used to select programs for inclusion in the list was that the programs were continuing to provide services following the termination of their start-up funds.

2. Programs identified to be interviewed. Telemedicine programs all differ in their set-up, implementation and management.^{xiv} Six programs from a cross section of successful telemedicine program types across a wide geographical rural area were identified. This included a behavioral health, two specialties, a home health, a primary care, and a hospital site. Telemedicine services all require a distant (hub) and originating (spoke) site to operate. As such, they are interdependent. For this reason, associated distant and originating sites were interviewed for each telemedicine service.

Table2. Characteristics of programs interviewed

Program Type	Hub	Spoke	Operating within a larger system	Payment Source
Behavioral Health	Physician @ BH agency	FQHC	No	Hub under contract for services with spoke. Spoke Medicare, Mainecare
Specialty 1	Physician @ outpatient specialty clinic	Critical Access Hospital	Yes	Hub Medicare
Specialty 2	Physician @ outpatient specialty clinic	Non-healthcare settings Patient's home	Yes	Hub MaineCare Private Ins
Home Health	Home monitoring with RN visits	Patient's home	Yes	Hub Medicare Episodes of care
Primary Care	RN @ rural sites, Physician@ primary care clinic.	Mobile telemed equipment with RN@ multiple sites	No	Hub bills for services.
Hospital ED	Physician @ outpatient specialty clinic	Critical Access Hospital	Yes	Hub under contract for services with spoke for unlimited access to service Spoke bills for services.

3. A protocol describing this study was submitted to and approved by the University of Maine Institutional Review Board. A set of semis-structured interview questions were sent to the interviewees in advance for planning purposes and to allow them time to collect needed information. Interviews were conducted onsite at telemedicine programs, face-to-face by Edwina Ducker. The interviews started with an overview of the goals of the project, why they were chosen for the interview, if they had any questions and signing of the consent form (see [Appendix 4](#)). The key informants are not listed by name or agency and the information gathered and any direct quotes used in the report are not attributed to any specific participant or agency.
4. Question Development. Too often it is the failures that are analyzed to attempt to determine why we do not succeed. Instead this study looked at what's working and what are the factors that contribute to the program's success. The **Appreciative inquiry (AI)** method of analysis was used as the bases for framing the questions. This is a model for analysis, decision-making and creation of strategic change. It often relies on interviews to qualitatively understand the organization's potential strengths by looking at an organization's experience and its potential to elucidate the assets and personal motivations that are its strengths. Appreciative inquiry is similar to the recent work of Dan and Chip Heath on focusing on "BRIGHT SPOTS"^{xv}. The project used data from the secondary data sources and the forum members to inform the development of the questions and are divided in to five broad areas:
 - Access** – refers to the timely receipt of appropriate care or, the right care at the right time without undue **burden (IOM 1996.)**
 - Technical Properties** – including data transmission speed or bandwidth, data quality (e.g., resolution), system functions and features, ease of use, reliability, and service or maintenance requirements.
 - Cost and Operational Issues**—some of the common issues are costs associated with: patient time and productivity; transportation; capital, maintenance, and communications; utilization of health care services; and staffing levels and productivity of health professionals
 - Appropriateness** – The appropriateness of a technology refers to a judgment about whether the technology should be used in particular circumstances.

Clinical Acceptance – according to the Assessment of Approaches to Evaluating Telemedicine acceptance of telemedicine by physicians, nurses, and other health personnel is considered of high importance in any telemedicine assessment.^{xvi} Included in this section are questions on the role of the champion in the implementation of a telehealth program.^{xvii} A full list of the interview questions is presented in ([Appendix 5](#)).

The Value of the Analysis

With the implementation of the Affordable Care Act and Accountable Care Organizations (ACO) in Maine, healthcare systems must develop new strategies to extend care more effectively and efficiently. Telemedicine is believed to improve access to more cost effective health care particularly in rural areas. Providing decision makers and healthcare systems with an up to date picture of the factors that impact the long term sustainability of a state wide system of telemedicine services will support their goal of providing access to high quality health care in rural, underserved areas.

Potential Users of the Study Results:

- Providers in Maine as they identify opportunities to collaboration and cooperation to address a need will have a framework to help align program strategies and steps for development and implementation. The Telehealth forum convenes telemedicine providers and stakeholders from all across Maine for the purpose of advancing the capacity of telemedicine in Maine. This information will be useful to them as they continue this work.
- Policymakers and third party payers seeking evidence of success to start conversations on how this method of healthcare delivery can be supported.

Suggested Uses of this Information:

- To gain a better understanding of the successes and lessons learned in the implementation of a successful and sustainable telemedicine programs.
- Provide policymakers and third party payers with information on how successful programs can be supported.
- Provide a springboard for a deeper investigation of the capacity of telehealth services in Maine and across the New England region.

Findings

This is an exploratory study and there were two factors that affected the final number of programs interviewed. First, there were a limited number of telemedicine programs that were considered eligible to be interviewed. Secondly, due to the individual set-up of the programs, time and travel constraints for both the interviewees and interviewer, I was unable to interview all related hub and spoke sites which reduced the total number of participants I could include in the study. Every site/person interviewed brought their own, unique insight and experience to the interview and losing even one reduced the richness and depth of the information gathered and the ability to be more definitive about commonalities across programs. Six different telemedicine programs across a broad geographical area with their associated distant and originating sites were identified to be interviewed.

Table 3. Number of sites and people interviewed

Site type	Hub Site	Spoke Site	Number of People Interviewed
Behavioral health	1	1	2
Specialty 1	2	5	7
Specialty 2	1	0	1
Home Health	1	0	1
Primary care	0	1	1
Hospital ED	0	1	1
Total	5	8	13
Total number of different programs interviewed = 6			

The interview questions were designed to answer the three research questions;

- 1. What are the factors that contribute to a successful sustainable telemedicine program in Maine? This may also provide us with insight into the factors/barriers that may inhibit success.*
- 2. What are the lessons learned from successful telemedicine programs?*
- 3. How can these lessons be used to expand the use of telemedicine services in Maine?*

The overall themes captured from the interviews as well as some specific responses from some of the participants have been used to answer the questions.

1. What are the factors that contribute to a successful sustainable telemedicine program in Maine? This may also provide us with insight into the factors/barriers that may inhibit success.

Each program has its own individual mix of factors that contributes to its own success and all have their own way of defining what success is to them. Common themes did emerge along with a number of individual contributory and/or inhibiting factors that all programs could learn from. All of the programs provide services to rural communities.


The Overall Themes that emerged are;

The impetus for the program is important to its success according to most of the participants.

Establishment of the need for care and the evidence of how the service can reduce/remove barriers to care create a shared vision for everyone involved. I found that for most of the sites, the need for services was the paramount reason for starting the program rather than any business decision and the ability to improve access to a service not previously available is a great motivator for staff.

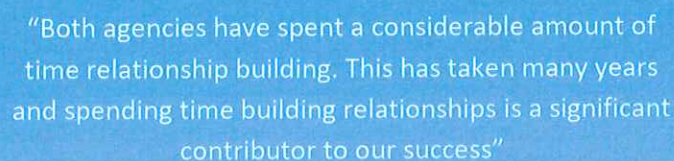
Table 4. Impetus for startup of programs

Program Type	Impetus
Behavioral Health	Shared vision by both sites of lack of access to services due to the burden of travel for patients with high rate of no shows at distant BH site.
Specialty 1	Need for services clearly identified but necessary to create efficiencies with an expensive inefficient onsite delivery of services.
Specialty 2	Need for rehab specialty services driven by patients and non-healthcare settings.
Home Health	Telemedicine equipment included with EMR purchase. Pilot project in rural area for 12 months resulted in reducing cost of care with quality outcomes for patients and the program continues to date.
Primary Care	The need for primary care and preventative services identified for multiple sites in geographically isolated areas.
Hospital ED	The spoke site could not afford to pay a full time physician but there was still the need for services for a distinct group of patients using the ED.

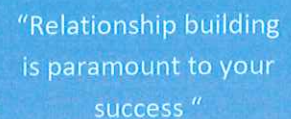


"Patient need
was the impetus"

Relationship building and the maintenance of those relationships and good communication were common themes that emerged. All of the interviewees agreed that taking time to develop and nurture relationships with all parties involved in the program coupled with good open communication is time well invested and is the foundation for the long term success of the program. It creates a shared vision and buy-in for all the staff and builds trust and rapport. One program considers relationship building so important to its success that it has developed communication training for all staff to ensure the introduction of their program into a new site is built on a solid foundation of trust, transparency and honest, respectful communication.



"Both agencies have spent a considerable amount of time relationship building. This has taken many years and spending time building relationships is a significant contributor to our success"

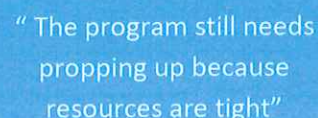


"Relationship building is paramount to your success "

Champions are widely regarded as essential contributors to the success of a telemedicine program but they are not the whole answer to sustainability. What my research found was that once the program got established and was providing services beyond its start-up funds, it needed the presence of a champion to continue to grow and hopefully achieve sustainability, necessary for its survival. *"If the program is organizationally strong it should need minimal attention to operate on a daily basis."* This champion was usually the program manager but not always and essential to success. While they are *"not the whole answer to sustainability"* they are an essential part of it and programs often had more than one which contributed to its success. Examples of types of champions typically seen were in information technology, administration, leadership and clinical. One program champion has documented the savings achieved compared to the face-to face alternative for payers. Another has used the evidence of effectiveness to drive the growth of other service lines.




" The champion is needed to drive improvement and growth"



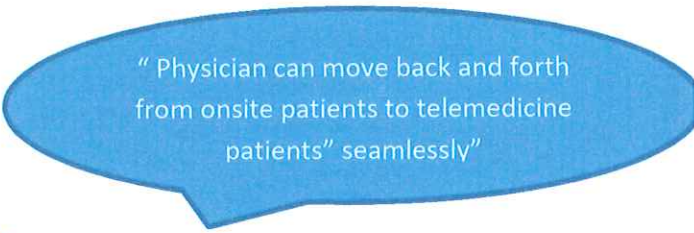
" The program still needs propping up because resources are tight"

All of the programs attempted to integrate their telemedicine services into the overall service mix of the healthcare facility. Having a well trained staff comfortable with equipment that was easy to use was considered important if the program was to be accepted by staff and patients. This meant that programs were more likely to be used within the overall service mix and *"considered the norm in the organization"*

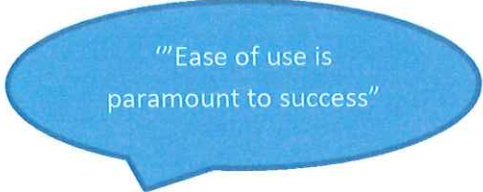
Generally all the programs had managed to achieve this by embedding the program into the culture of the organization and becoming known *"as the way we do business"*.



"Great tool to augment our onsite services and enhance care"



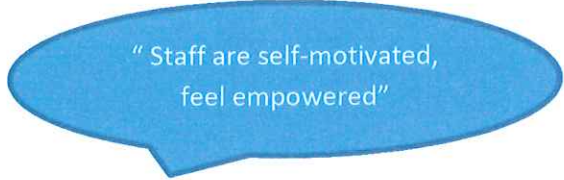
"Physician can move back and forth from onsite patients to telemedicine patients" seamlessly"




"Ease of use is paramount to success"

Optimal telemedicine health care is best delivered by a high functioning health care team.

A well trained staff that could identify the opportune time for its use and *"effortlessly execute the technology with minimal interruption of care"*. This coupled with good program organization is considered an important contributory factor to success. An example of this was in the emergency room setting where the equipment was not used routinely with every staff shift and there is no room for mistakes. All the programs conducted regular trainings with staff coupled with ongoing support by the program manager to instill confidence and familiarity with the equipment.



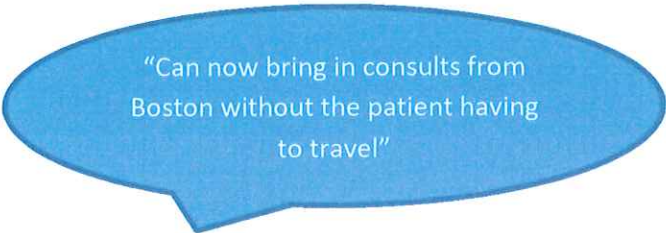
"Staff are self-motivated, feel empowered"




"The program fitted seamlessly into the other services"

Telemedicine is believed to provide high quality care and be cost effective. Some programs have made a concerted effort to document and market their quality outcomes coupled with the savings achieved compared to the face-to-face alternative. This helps to identify them as a preferred provider and bring in new revenue streams.

Examples of outcomes include; reduced hospitalizations, reduced cost of care, improved quality of life for patients, access to more services with decreased travel time and increased satisfaction for patient. As a result of good outcomes the behavioral health program with the FQHC is now using telemedicine to conduct assessments and supervision which has increased access to services.




"Can now bring in consults from Boston without the patient having to travel"



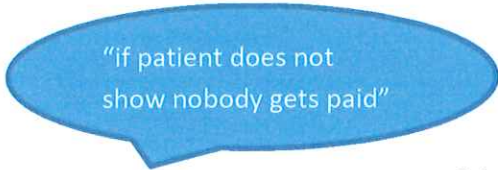
"Using our excellent outcomes as a marketing tool is part of our business plan"

Shared decision making between the spoke and hub on the logistics of the telemedicine encounter with revenue sharing is considered by some to facilitate a successful program.

The programs spent a considerable amount of time building relationships, documenting responsibilities and building agreements on the long/short term goals and expectations for the program and how they will be achieved. From scheduling to handling no shows to ensuring all parties concerned have access to important patient information is believed to create the environment for continuity of care across the continuum and efficiencies for all. This shared decision making and responsibilities model included revenue sharing. An example of this is how one program developed a system where the hub has access to the spoke's electronic medical record (EMR) which creates the environment for continuity of care across the continuum and the ability to respond nimbly to emergencies. Why revenue sharing is important *"If the hub does the billing then the spoke does not share in the benefits and only gets the facility fee despite the resources it uses to get the clinic running"*.




"Provides access to a physician at any time"

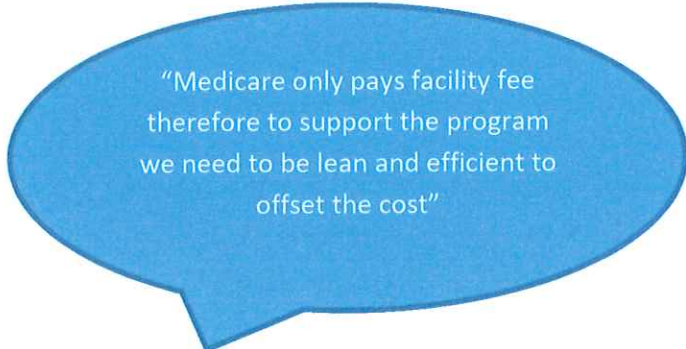


"if patient does not show nobody gets paid"

Using creative ways to overcome barriers and create efficiencies is considered important for the long term sustainability of programs. The programs constantly strive to find new solutions to improve the delivery of service and reevaluate processes to find efficiencies. For example, one site housed their equipment in a movable cabinet that was wheeled into the patient's room. Just by having a room dedicating to telemedicine changed the patient acceptance of the service and increased utilization by patients and staff. Faster and cheaper internet access makes for a more reliable service and can open up opportunities to provide additional services. Unanticipated or expanded applications are also important for sustainability as they bring in additional revenue. Examples of these are: finding new opportunities for the service outside the usual markets, e.g. providing services to different time zone, or internationally during the down time for staff, leveraging the use of existing technology for other needs e.g. education for external stakeholders on clinical competencies for telemedicine.



" Evaluate platform regularly looking for efficiencies this has resulted in 7k of saving in 2014"



"Medicare only pays facility fee therefore to support the program we need to be lean and efficient to offset the cost"

Suggested factors or barriers that may inhibit success

Some hub and spoke sites discussed some factors that they considered a possible inhibitor to the growth of their individual onsite program.

- A startup programs positioned within a larger healthcare system does not operate in a vacuum and its success is influenced by the larger system. For this reason, an agreement on the long term goals and expectations for the program and how they will be achieved must be agreed on otherwise significant differences may arise if and when priorities change or the program is not fulfilling the needs of the larger system.
- Lack of payment of the facility fee is still an issue with spoke sites. During conversations with one spoke site, it emerged that insurance companies as a rule do not pay this and

so they receive nothing for their part in providing services. It has also been confirmed by Mainecare that they do not pay the spoke/originating site a facility fee *“MaineCare does not reimburse for any charge related to the technical aspect of the telehealth service or for personnel at the originating or receiving site, nor may a member be billed for such charges”*. This was not mentioned at other spoke sites but there is some anecdotally evidence from forum members that this does occur. One program has adopted the shared decision making between the spoke and hub on the logistics of the telemedicine encounter with revenue sharing as a way to resolve this issue.

- Lack of staffing can inhibit success and growth. Constantly rescheduling and training part time telemedicine staff becomes onerous particularly to small facilities, is inefficient and reduces access.

2. What are the lessons learned from successful telemedicine programs?

Each program has its own individual mix of factors that contributed to its own success and all had their own way of defining what success is to them. The lessons learned that seemed to be unique to this health care delivery model are that most of the programs started because of the proven need for services in the community which drove staff engagement in the program. The programs put a lot of importance on building and nurturing relationships, trust, rapport and respect with good open communication. This was the bedrock used to establish agreements on the long term goals and expectations for the program, how it was run on a day-to-day basis and for some, revenue sharing. Finally the ability of the champion to drive program integration, improvement, growth and sustainability with additional champions in supporting roles contributed to the overall success of the programs.

3. Recommendations to expand the use of telemedicine services in Maine

All of the programs discussed promote the Triple Aim, improving the patient experience in quality and satisfaction, increasing access and reducing the cost of health care. For this reason these success stories merits further investigation and the lessons learned used to improve the delivery of health care in Maine. This could be done in any number of ways but what I consider most useful would be the investment in a deeper investigation of these commonalities for the purpose of producing a set of standardized guidelines to support the development and

implementation of successful programs and guide future decision making when planning a new program. Alongside this a review of how these programs are paid for services. Some of these programs used a shared decision making model between the spoke and hub for the logistics of the telemedicine encounter with revenue sharing to create buy-in by all and is a promising way forward for programs. Developing new models of payments to support this approach might be considered by policy makers and payers.

Conclusion

The Institute of Medicine's (IOM) vision of a sustainable program is *"Sustainable telemedicine programs need an organizational business and strategic plan coupled with an understanding of the projects features and results necessary for a sustainable program"*.

These programs all have a combination of these factors:

Some of the factors that were attributed to success such as the need for a high functioning health care team, good organizational infrastructure and the presence of a champion are factors considered important in any well run program.

The key factors to emerge that were of value to this health care delivery model was the importance given to building and nurturing relationships, trust, rapport and respect with good open communication. This was the bedrock some programs used to establish agreements on the long term goals and expectations for the program, how it was run on a day-to-day basis and for some revenue sharing. They considered this to be the foundation of a successful program.

One surprising factor was the level of importance attributed to the embedding of the program into the culture of the organization and it becoming known "as the way we do business"

All of the programs discussed promote the Triple Aim by improving the patient experience in quality and satisfaction, increasing access and reducing the cost of health care. For this reason these success stories merits further investigation and the lessons learned used to improve the delivery of health care in Maine.

Appendix 1

Summary on Telehealth Usage Volume by Maine Health Organizations

Summary on Telehealth Usage Volume by Maine Health Organizations

M. Edwards, Maine Telemedicine Services--carried out in June-July 2006 using both email & mail

What is the annual clinical usage on Maine's telemedicine networks? A brief survey was administered to most of known health care sites with videoconferencing. Combined with a verbal report and data from 2 hospitals provided to Maine Health Access Foundation, estimated volume of clinical usage is at least 3,000 consults per year. The return rate on surveys was disappointing. Major Telemedicine provider organizations known to be active that did not respond include Eastern Maine Medical Center, Acadia Hospital, Maine Coast Pediatrics, St. Mary's Hospital Wound Care Program, Aroostook Mental Health Center, MaineGeneral Hospital. Also, many hospitals and organizations use videoconferencing for continuing education and for administrative uses, data for which are not included here.

Estimated Clinical Telemedicine Usage per Month

Providers

Houlton Regional Hospital—2 -endocrinology/diabetes

Franklin Memorial Hospital—6 -wound care; 4 -case management/case review; 2 -provider to provider

Stephens Memorial Hospital--.5 -deaf interpretation; .2 -provider to provider

Pine Tree Society—26 -deaf interpretation (provider)

Spurwink Institute—1 -child abuse assessment

*The Aroostook Medical Center—10 -rehabilitation evaluation; 5 -genetics counseling; ~1 -trauma

*St. Joseph Healthcare - 5 -rheumatology; ~1 wound care, diabetes counseling, psychiatry

End users

Harbor Schools Aspenledge—4 -psychiatry/MH

Harbor Schools Winterport—4 -psychiatry/MH

Pines Women and Children—1.5 -psychiatry/MH

Mid-Coast Mental Health--.5 -psychiatry/MH (provider)

Oceanview Nursing Home (Lubec)—2 -mental health

Clover Manor (Auburn) - 2 -wound care

St. Joseph Nursing Home (Frenchville) --.2 -wound care

Foundation for Blood Research—1 -genetics counseling; 1 -provider to provider

Islesboro Health Center—.5 -wound care

Total annual clinical uses for patient clinical consults from this sample=960

Eastern Maine Medical Center/Acadia Hospital reported to me verbally in 2004 that they carry out about 2,000 telepsychiatry consults a year.

** Source for these two hospitals was Telehealth Inventory carried out by Maine Health Access Foundation*

Appendix 2

Telemedicine Use in Maine

Telemedicine Use among Maine Hospitals and Ambulatory Practices

Stuart Bratesman, Jr., MPP, &
Martha Elbaum Williamson, MPA
Muskie School of Public Service
University of Southern Maine

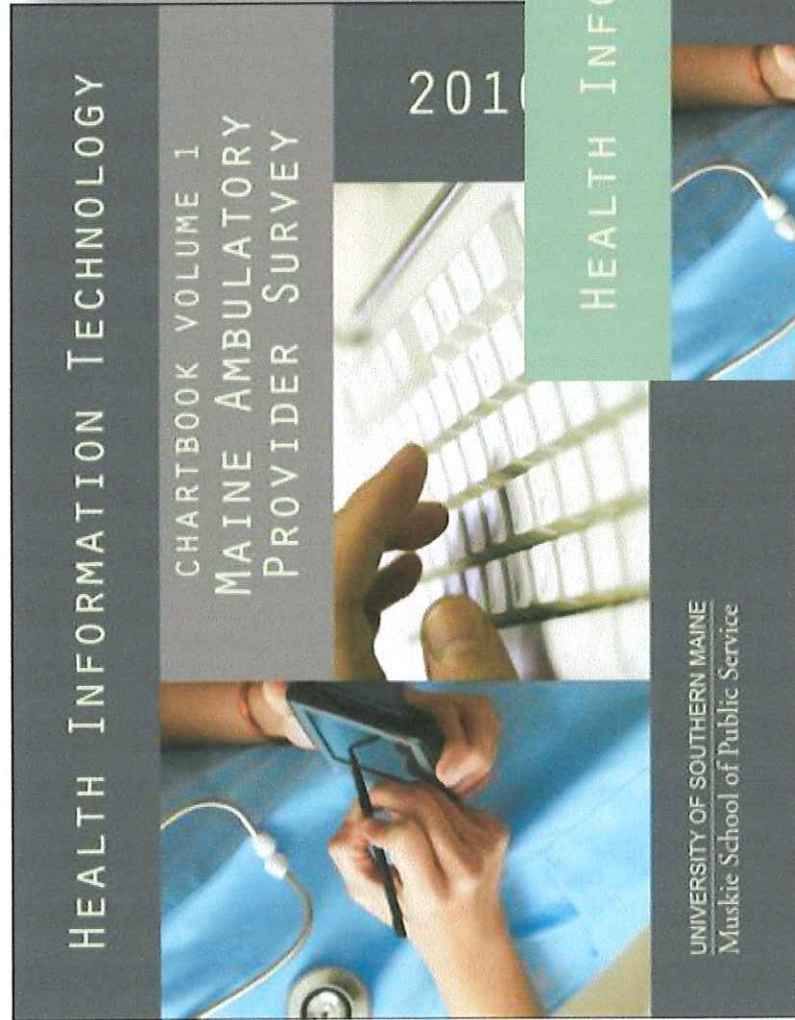
on behalf of the

Maine Office of Rural Health and Primary Care

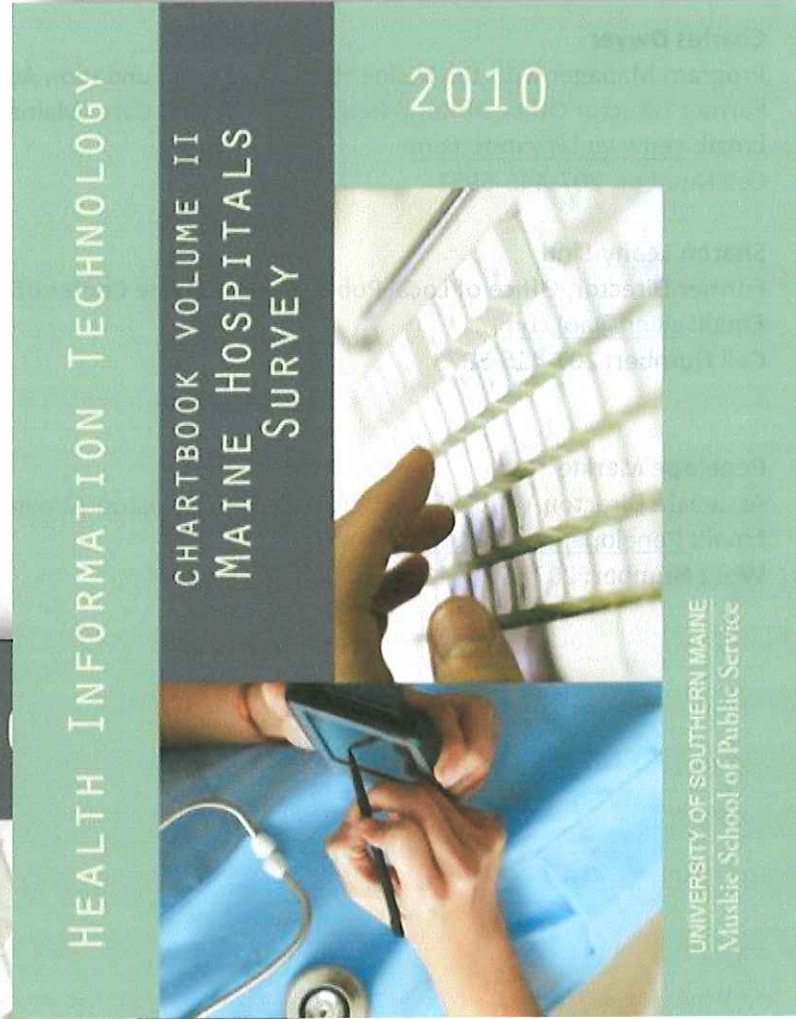
August 16, 2011

Background

- Maine Health Information Technology (HIT) Survey
 - A web-based survey administered in June 2010 to hospitals and physician practice sites throughout Maine
 - Used to determine the extent of EMR adoption and readiness to meet the federal meaningful use criteria
 - Funded by the Maine Office of the State Coordinator for Health Information Technology (HIT) and the Office of MaineCare Services, with health information technology funds from the *American Recovery and Reinvestment Act of 2009*
- The analysis for this telemedicine presentation funded by the Maine Office of Rural Health and Primary Care.



Click on a Chartbook
to download it
from the Muskie
School website at USM

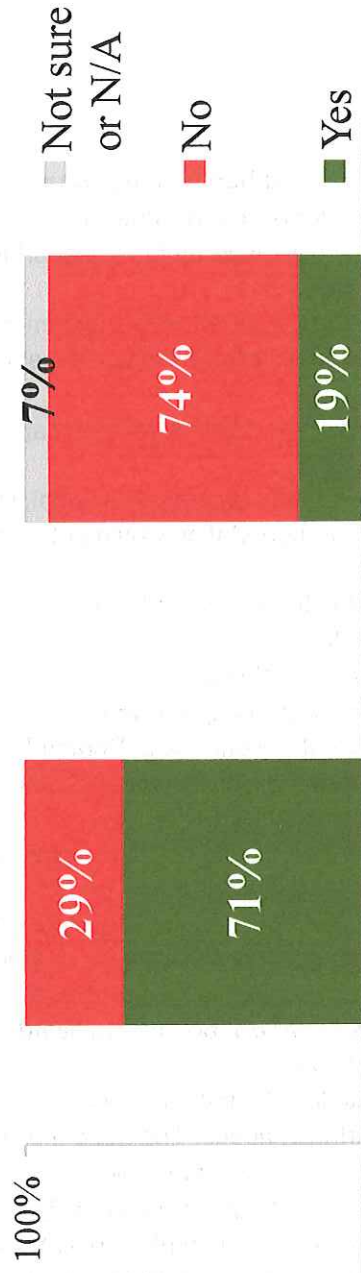


June 2010 Maine Health Information Technology (HIT) Survey

- 28 critical access and acute care hospitals (75%) responded to the hospital HIT survey
- 516 provider practice sites (41%) responded
 - Including solo practices, group practices, and community health centers
 - Each distinct location was counted as an individual practice site
 - Telemedicine questions only presented to the 276 provider practice sites that said they used an EMR

Telemedicine: Extent of Use

Does your hospital (N=28) or (EMR-equipped) provider practice site (N=276) use telemedicine?



	Hospitals		Practice Sites	
	Number	Percent	Number	Percent
Used telemedicine	20	71%	53	19%
Did not use it	8	29%	205	74%
Not sure or N/A	0	0%	18	7%
Total	28	100%	276	100%

Telemedicine: Use by Type or Area

Hospitals

N=28

Does your hospital use telemedicine?

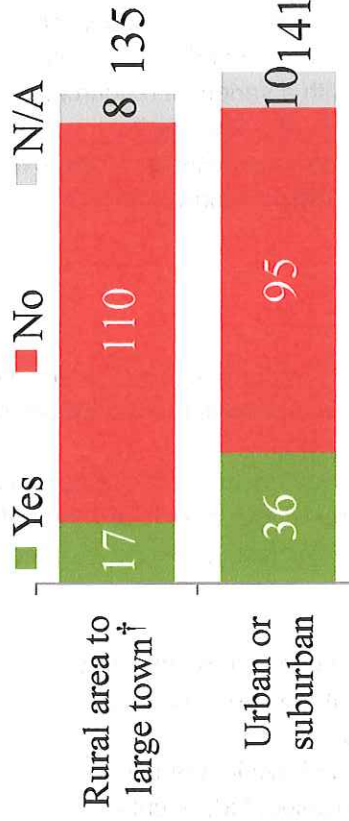


Hospital Type	Yes	No	Total
Critical Access	70%	30%	100%
Acute Care	72%	28%	100%
All Hospitals	71%	29%	100%

Provider Practice Sites

(that had EMRs) N=276

Do you use telemedicine?

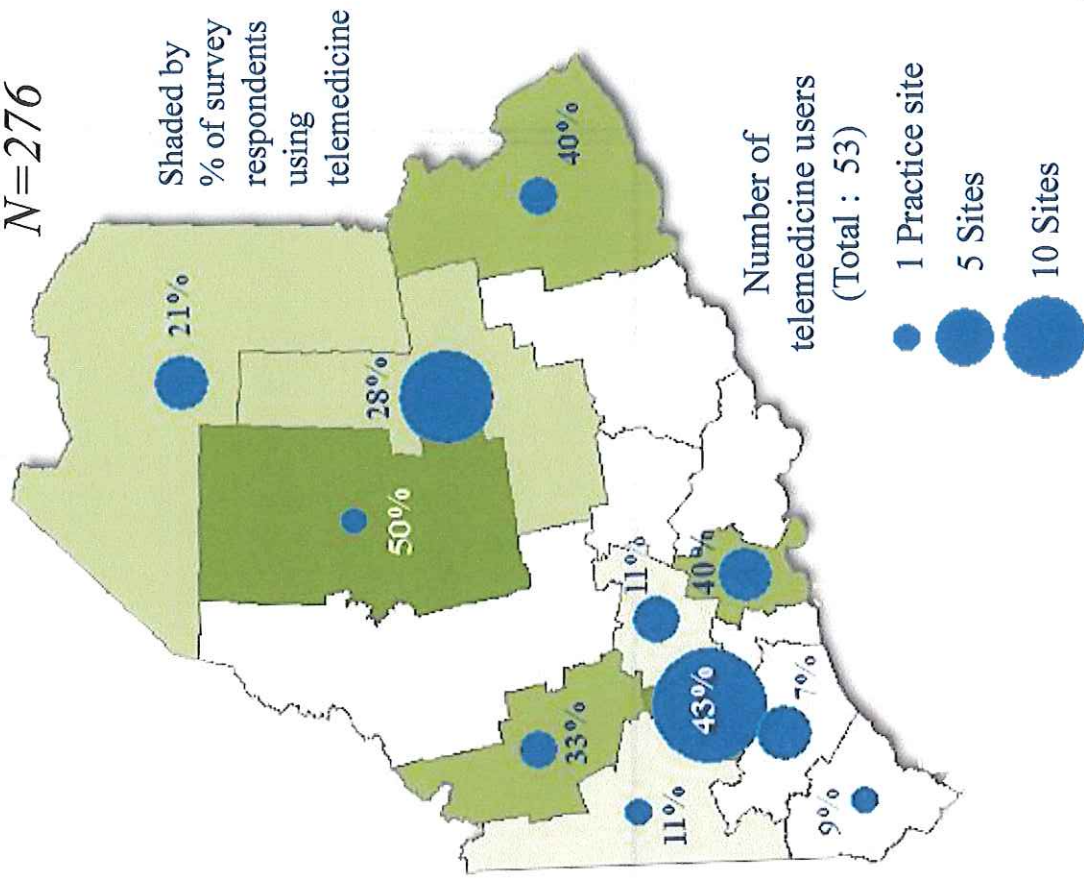
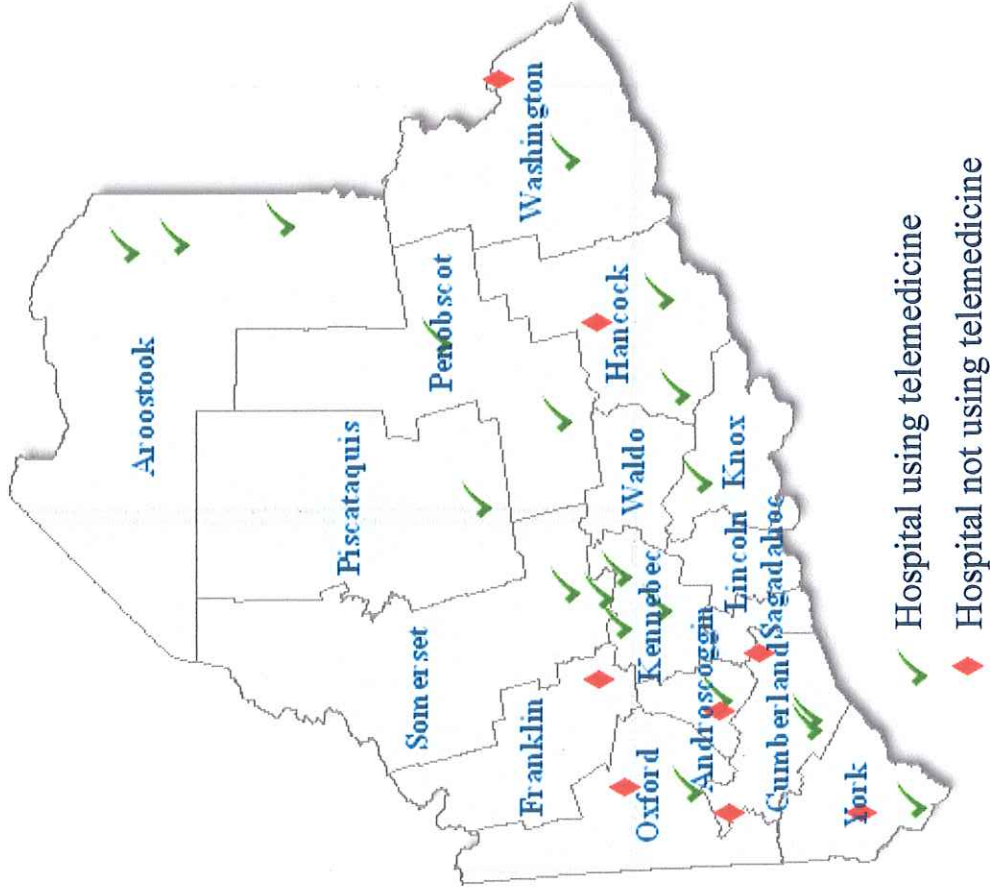


Practice Sites	Yes	No	Not sure or no answer	Total
Rural area to large town†	13%	81%	6%	100%
Urban or suburban	26%	67%	7%	100%
All sites	19%	74%	7%	100%

Telemedicine Distribution Among:

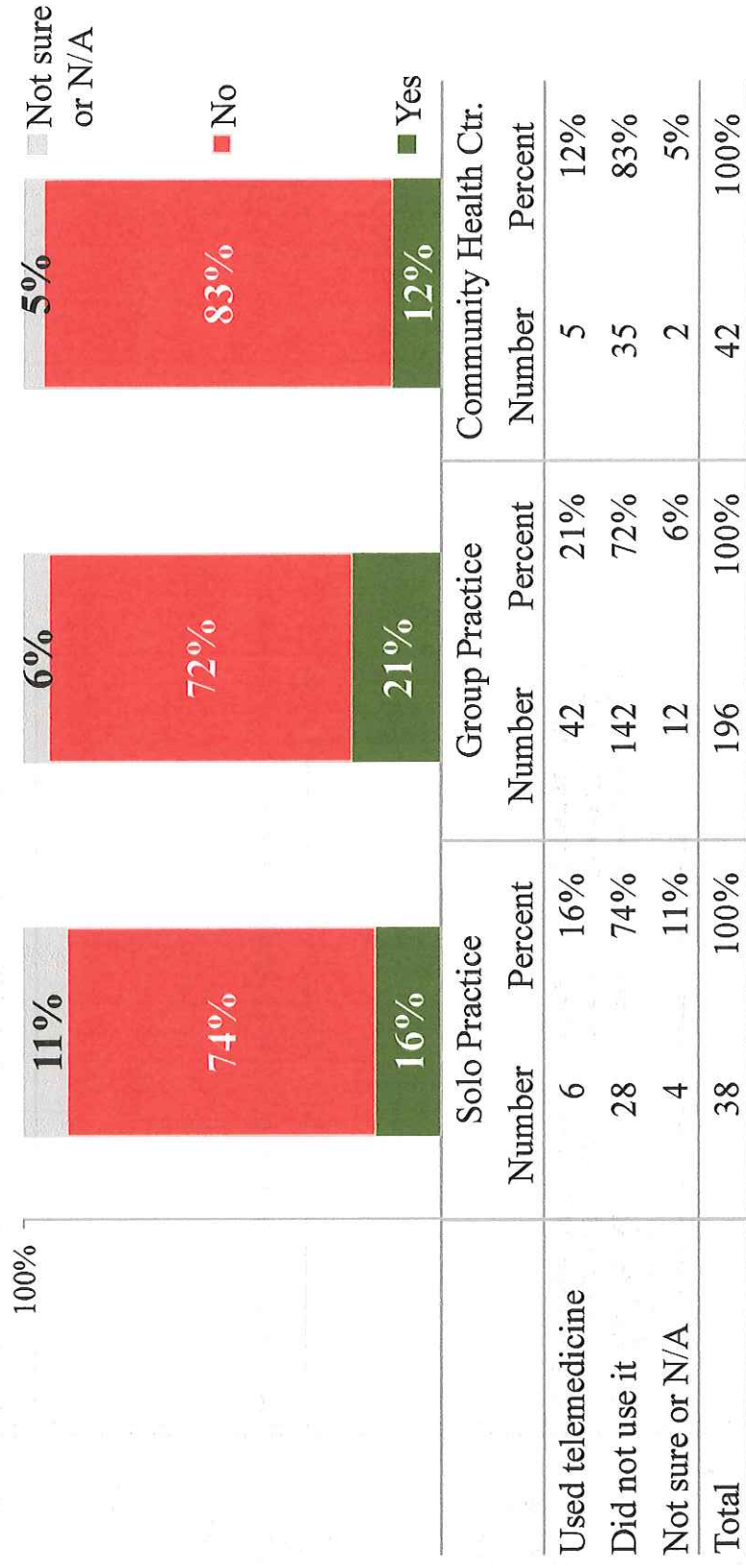
Hospitals $N=28$

Provider Practice Sites (*that had EMRs*)

$$N=276$$


Telemedicine Use by Practice Type

*asked of EHR-equipped provider practice sites
(N=276), by type of practice (solo, group, or CHCs)*



Telemedicine Use by Type of Ownership

asked of EHR-equipped provider practice sites (N=276)



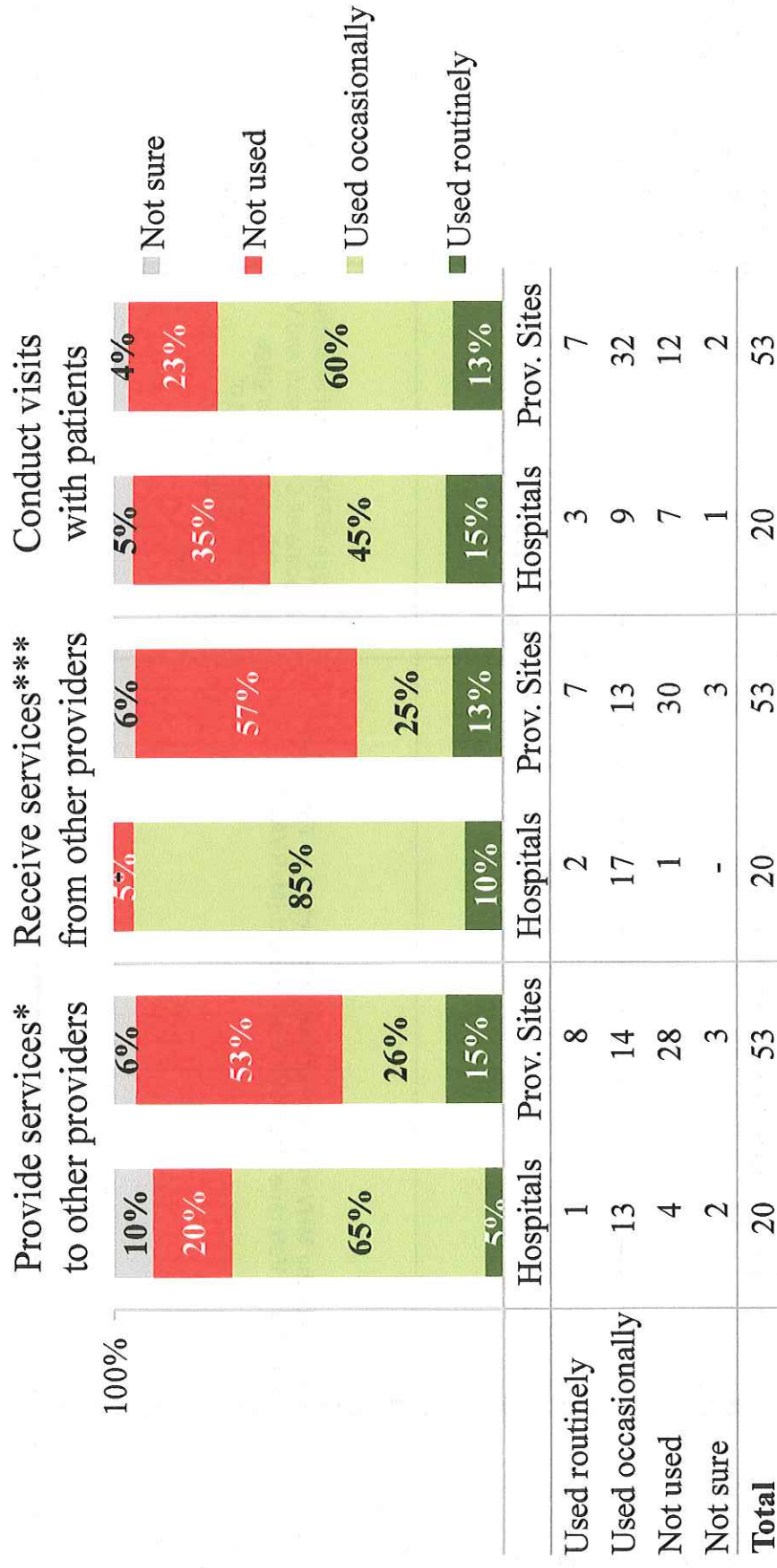
Telemedicine Use by Primary Care, Specialty, or Community Health Center

asked of EHR-equipped provider practice sites (N=276)



How Do You Use Telemedicine?

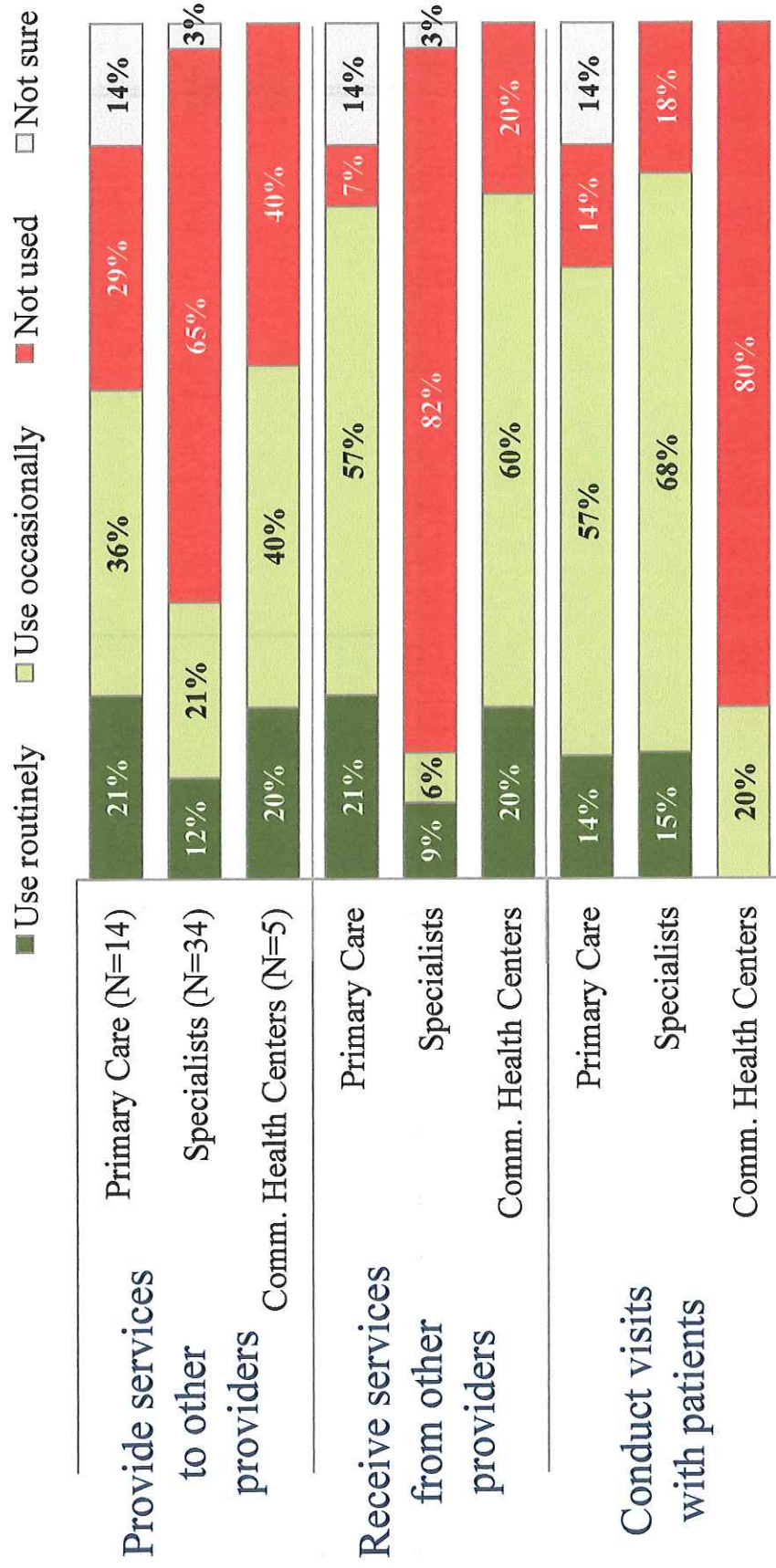
Asked of hospitals (N=20) and EMR-equipped provider practice sites (N=53) that use telemedicine



How Do Provider Practice Sites Use Telemedicine?

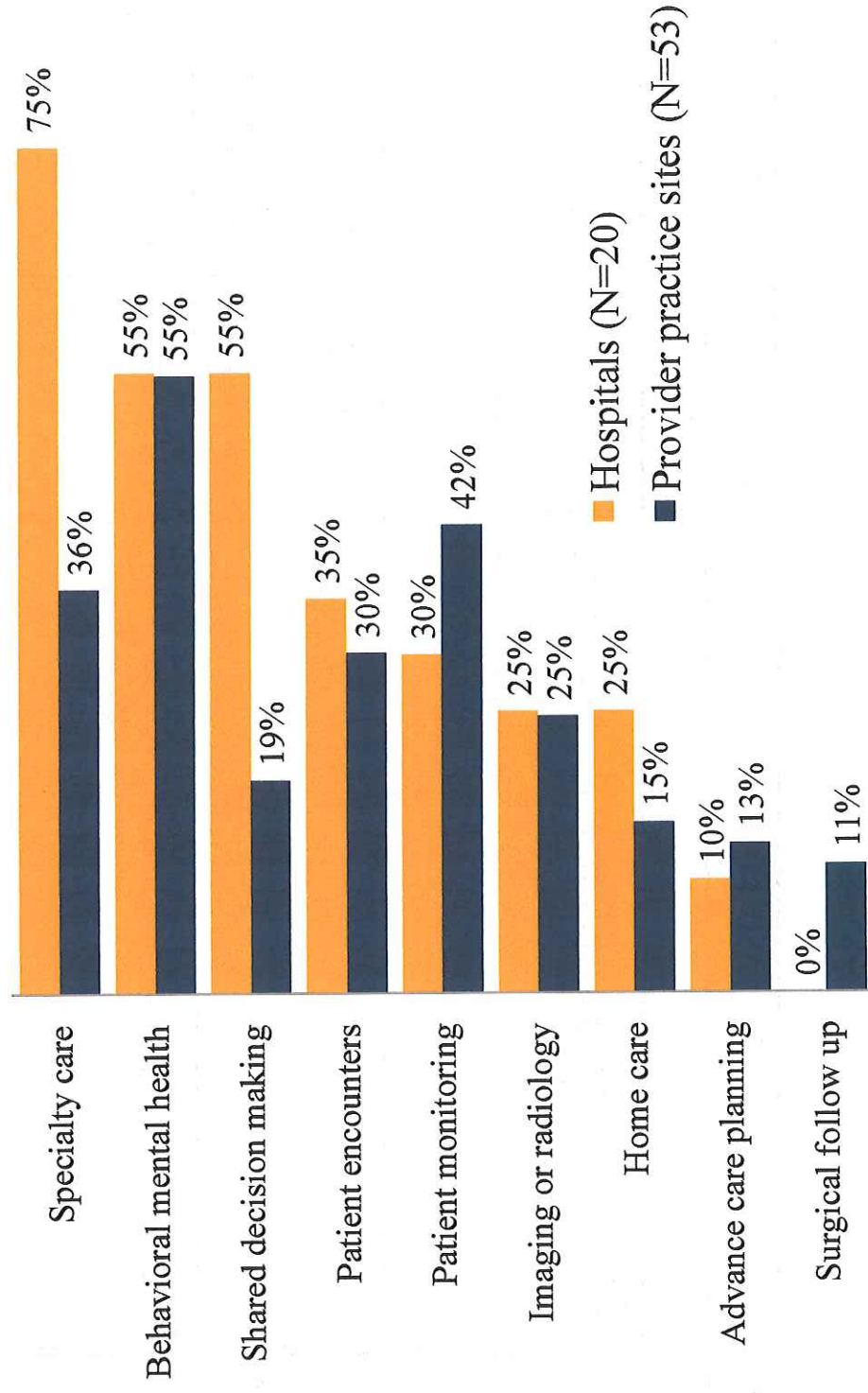
Provide services, receive services or see patients?

Asked of provider practice sites (N=53) that use telemedicine



Which Telemedicine Services Do You Use?

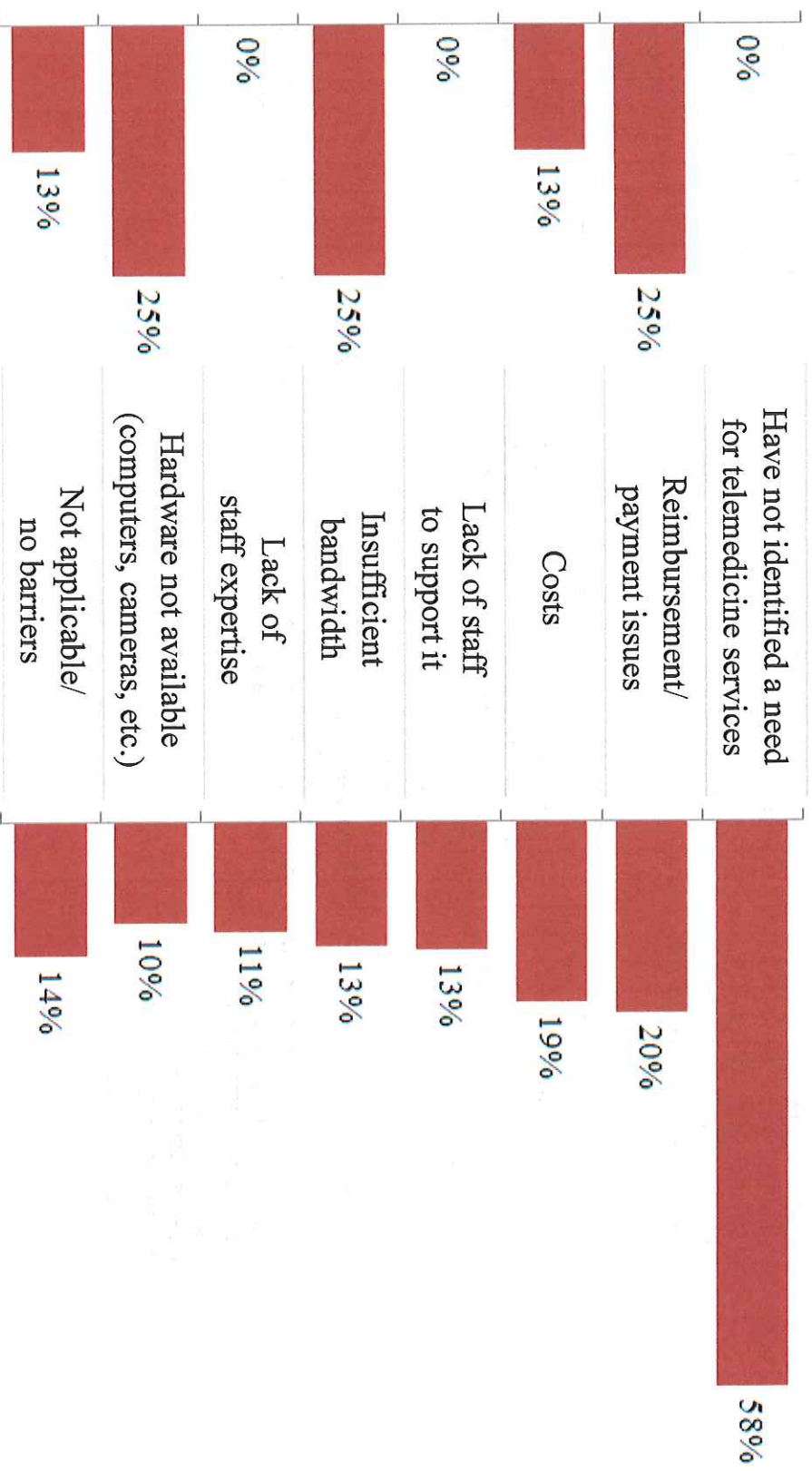
Asked of hospitals (N=20) and EHR-equipped provider practice sites (N=53) that use telemedicine



What Barriers to Telemedicine Do You Face?

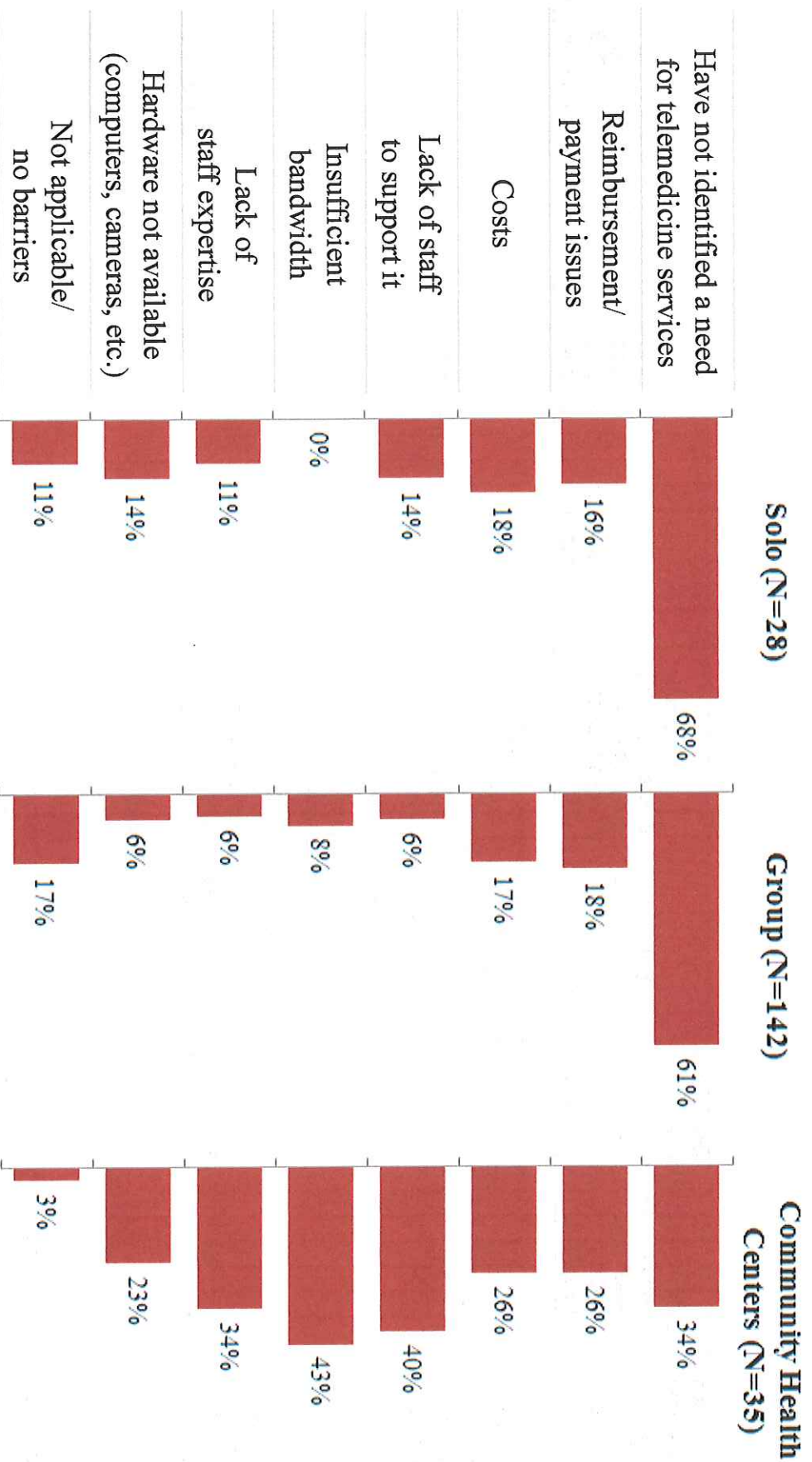
Hospitals without
telemedicine (N=8)

Provider Practice Sites
w/o telemedicine (N=205)



Telemedicine Barriers by Provider Type

for Provider Practice Sites with EMRs that Did Not Use Telemedicine



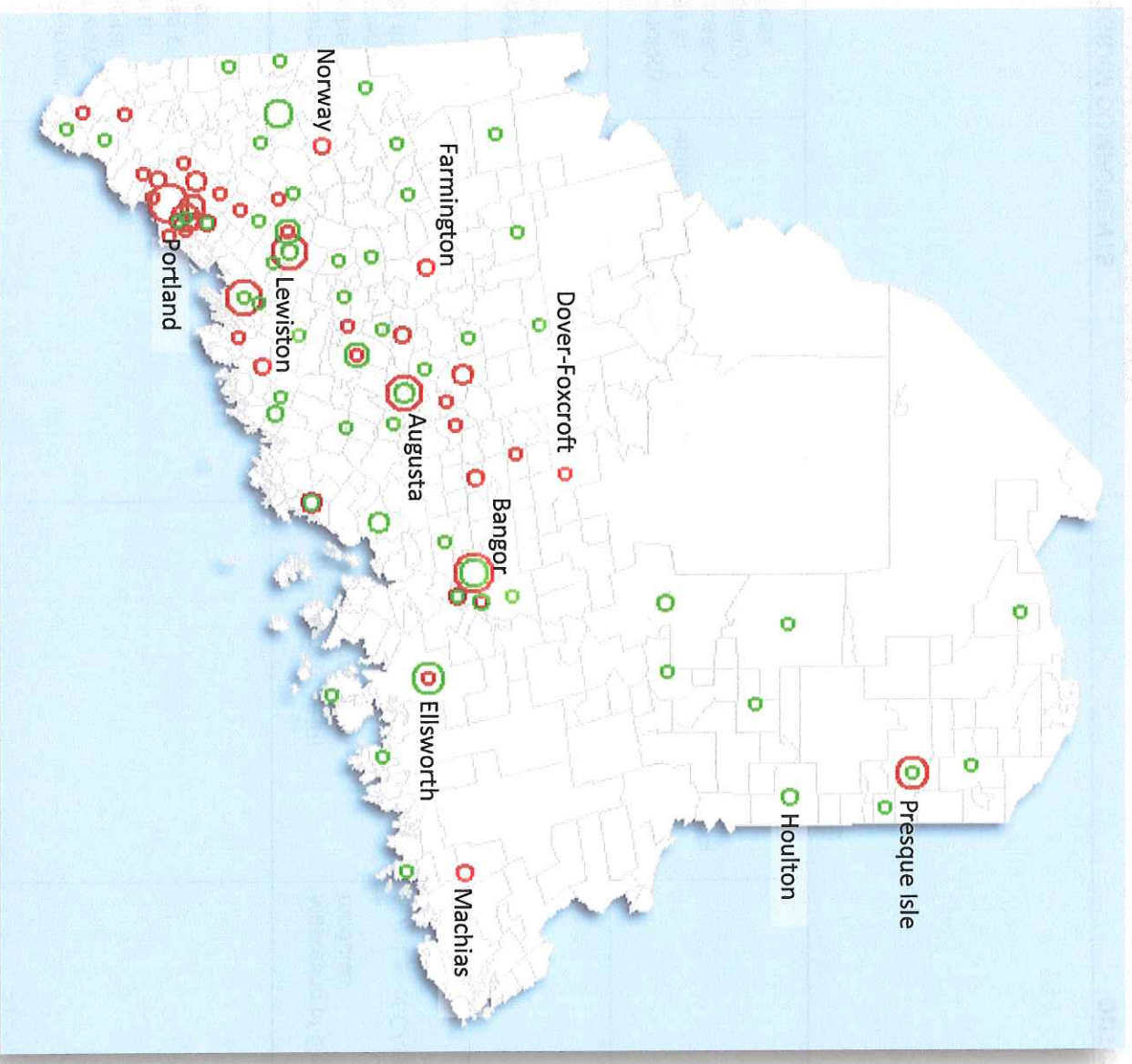
Barriers con't.

Distribution of provider practice sites by ZCTA:

"No identified need for telemedicine"

Did not cite it as a barrier

- 1 site
- 5 sites
- 10 sites



Summary

- Telemedicine used throughout Maine
- Much more likely to be used by hospitals
- Most often used for specialty care, behavioral health, shared decision-making and patient monitoring
- Most common barriers to adoption:
 - Hospitals: Reimbursement, bandwidth, hardware
 - Doctors: Many don't recognize a need (reimbursement and cost are secondary)

Appendix 3

Full list of Forum members

Telehealth Forum Advisory Committee

Participant	Organization	Position	Email	phone
Susan Baltrus	Central Maine Medical Center	Acting President	baltruss@cmhc.org	207-795-2840
Jackie Cawley	Maine Health	Senior Medical Director	cawley@mainehealth.org	207-541-7521
Edwina Ducker	Office of Rural Health and Primary Care	Program Manager	edwina.ducker@maine.gov	Ph: 207-287-5427 Fax: 207-207
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Marilyn Hughes	Regional Medical Center Lubec		mhughes@rmcd.org	
Bob Kohl	Maine Primary Care	HIT Project Director	bkohl@mepca.org	207-621-0677 x205
Georgia Kosciusko	Maine General Health	Grant Writer	Georgia.Kosciusko@MaineGeneral.org	207-861-8675
Peter Kraut			peter.kraut@gmail.com	(207) 837-5267
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(207) 973-6811

207-557-5513

Appendix 4

Informed Consent

**University of Southern Maine
CONSENT FOR PARTICIPATION IN RESEARCH**

Project Title: What does a successful and sustainable telemedicine programs look like? An inside view of six programs in Maine.

Principal Investigator(s):

Edwina Ducker, student in the Masters of Public Health Program University of Southern Maine, Muskie School of Public Service, Portland. Cell (207)-692-4243

Email: educker2@gmail.com

David Lambert PhD, faculty advisor, Masters of Public Health Program, University of Southern Maine, Muskie School of Public Service, Portland. Cell (207)-780-4502

Email: davidl@usm.maine.edu

Introduction:

Please read this form, you may also request that the form is read to you. The purpose of this form is to provide you with information about this research study, and if you choose to participate, document your decision.

You are encouraged to ask any questions that you may have about this study, now, during or after the project is complete. You can take as much time as you need to decide whether or not you want to participate. Your participation is voluntary.

Why is this study being done?

This project is attempting to identify the factors that contribute to a successful and sustainable telemedicine programs in a Maine program and how these lessons can be used to expand the use of telemedicine in the state.

Who will be in this study?

The key Informants for the study are key staff from telemedicine programs that agree to participate in the study. Specifically, any staff program member identified by the program administrator who can contribute information to the study. This may include; clinicians, program managers, Information technology or nursing staff. You have been identified by your supervisor as a key staff member to participate in the study. The total number interviewed will be determined by above but it is anticipated that there will be approximately 12-15 participants in the study.

What will I be asked to do?

As a key member of staff identified by the program administrator you will be asked to participate in a face-to-face on site interview. The time for this interview will be agreed by you and your supervisor and you will not be compensated for participating in the project. The interview will include semi-structured questions about the organizational, business and strategic plans used for the development and implementation of the telemedicine program. The questions will be sent to you in advance to allow you time to collect any needed information. They will be recorded to assure accuracy of information. As the interviews proceed, there may be a need to follow up with additional questions. This possibility will be discussed with you in advance and how that information will be gathered, by phone or electronically. The questions are divided into five categories access, technical properties, cost and economic value, appropriateness and clinical acceptance. The interview will last about sixty minutes. You will not be listed by name or agency and the information gathered will not be attributed to any specific participant or agency. The information gathered will be used to answer the following questions,

- *What are the factors that seem to contribute to a successful sustainable telemedicine program in Maine? This may also provide us with insight into the factors/barriers that inhibit success.*

- *Are there common characteristics across successful programs?*
- *What are the lessons learned from successful telemedicine programs?*
- *How can these lessons be used to expand the use of telemedicine services in Maine?*

What are the possible risks of taking part in this study?

There are no foreseeable risks associated with participation in this study.

What are the possible benefits of taking part in this study?

There are no direct benefits to you for participating in this study. There may be a benefit to your telemedicine program as the study is attempting to gather the information to better understand the successes and lessons learned in the development and implementation of successful programs to help guide future decision making when planning a new telemedicine program.

How will my privacy be protected?

The setting for the interviews will be at your programs site and a private room for the interviews will be requested. The interview will only proceed if you are comfortable with the setting. These arrangements will be made in advance. For the purposes of the report you will not be listed by name or agency and the information gathered will not be attributed to any specific participant or agency.

Sharing Results:

The project is a Muskie Capstone project. The Telemedicine Forum, the advisory group to the project, committed to the advancement of telemedicine in Maine, will have access to the final report and it will be made available to interested parties on request by the principal investigator.

How will my data be kept confidential?

- Research records will be kept in a locked file in the locked office of the Principal Investigator.
- No individually identifiable information will be collected.
- Please note the Institutional Review Board may review the research records.
- A copy of your signed consent form will be maintained by the principal investigator for at least 3 years after the project is complete before it is destroyed. The consent forms will be stored in a secure location that only the PI will have access to and will not be affiliated with any data obtained during the project.
- The interviews will be recorded to ensure accuracy of information. The PI will be the only person who will have access to the recordings and will be erased on completion of the final report.
- All telemedicine programs that participate in the study will be sent the final report on the research findings and so it will be available to you. If you would like to receive an individual copy of the report please contact the PI using the contact information at the beginning of this consent form.

What are my rights as a research participant?

- Your participation is voluntary. Your decision to participate will have no impact on your current or future relations with the University. Your decision to participate will not impact your relationship with your employer.
- You may skip or refuse to answer any question for any reason.
- If you choose not to participate there is no penalty to you and you will not lose any benefits that you are otherwise entitled to receive. You are free to withdraw from this research study at any time, for any reason. If you choose to withdraw from the research there will be no penalty to you and you will not lose any benefits that you are otherwise entitled to receive.

What other options do I have?

- You may choose not to participate.

Whom may I contact with questions?

The researchers conducting this study are; Edwina Ducker PI, David Lambert PhD faculty advisor.

- For questions or more information concerning this research you may contact Edwina Ducker @ Cell (207)-692-4243 educker2@gmail.com
- If you choose to participate in this research study and believe you may have suffered a research related injury, please contact

David Lambert PhD, faculty advisor, Masters of Public Health Program, University of Southern Maine, Muskie School of Public Service, Portland. Cell (207)-780-4502 davidl@usm.maine.edu

- If you have any questions or concerns about your rights as a research subject, you may call the USM Human Protections Administrator at (207) 228-8434 and/or email usmirb@usm.maine.edu.

Will I receive a copy of this consent form?

- You will be given a copy of this consent form.

Participant's Statement

I understand the above description of this research and the risks and benefits associated with my participation as a research subject. I agree to take part in the research and do so voluntarily.

Participant's signature or
Legally authorized representative

Date

Printed name

Researcher's Statement

The participant named above had sufficient time to consider the information, had an opportunity to ask questions, and voluntarily agreed to be in this study.

Researcher's signature

Date

Printed name

Appendix 5

Interviews Questions

Telehealth Interview Questions

The questions are divided in to five broad areas:

1. Access,
2. Technical properties,
3. Cost and economic impact,
4. Appropriateness,
5. Clinical acceptance.

Access.

- Describe your program.
- How do you handle no shows?
- How does telemedicine fits within overall service mix?

Technical Properties.

- Describe your system, function and features and ease of use.
- If you have significantly upgraded/or changed your system, has it brought in new sources of revenues to pay for the change.
- Are you constantly looking for new programs or secondary uses for the technology to improve income?
- Have you included maintenance in your business plan and the inevitable upgrades to the system or a complete change in technology?

Cost and Other Economic Impacts

- Do you get reimbursed for the services you provide
 - Are there services you do not get reimbursed for? Explain.
 - Do you have any additional sources of funding that supports your program?
- The establishment of a new program may lead to expanded or unanticipated applications. Did this happen to you?
- With the introduction of a new service, barriers to services have been reduced. Have you seen and or anticipated in your business plan, the additional services that might be provided or savings achieved as a result of this.
 - When you started your program did you estimate the high costs/patient against the steady utilization rate later? Were they accurate?

Appropriateness

- Is your technology appropriate to the service being provided?
- Was an evaluation conducted before the technology was purchased?

Clinical

- Is there support from the top level administrative/leadership staff both at the startup phase and ongoing.
- What efforts were made in advance of implementing the program to get the clinical staff engaged with the technology to negate any resistance?
- Do you have a clear champion/s for your program and what role do they play? e. g. promoter of the program, legitimizer of the program, relationship builder or other?

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