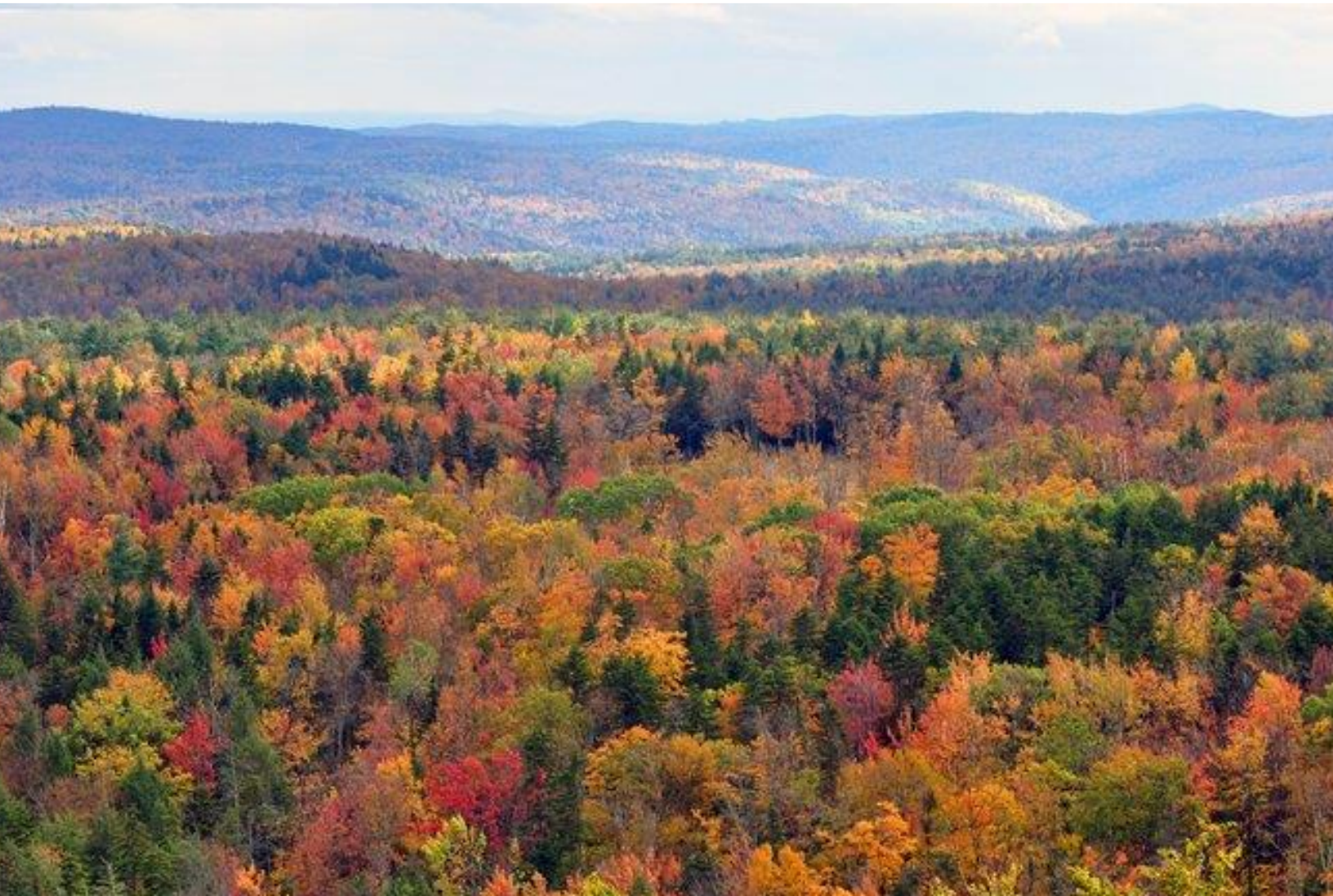
A Statewide Telehealth Strategy For the State of Vermont



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Executive Summary

Vermont was one of six states awarded first round State Innovation Model (SIM) grants by the Centers for Medicare and Medicaid to test a plan for statewide health reform that would improve access to better care with greater cost efficiency while improving the health of the overall population. One of the elements of Vermont's Health Care Innovation Project (VHCIP) is the development of a statewide telehealth strategy and pilot projects that would test the strategy's ability to meet the Project's goals.

This strategy was developed, reviewed, and approved by the VHCIP HIE/HIT Work Group, the VHCIP Steering Committee, and the VHCIP Core Team, with support from a multi-stakeholder Telehealth Steering Committee convened to guide the strategy development process and make recommendations. The key work products informing this effort included:

- A definition of telehealth that is inclusive of the multiple telehealth technologies in use throughout the country to improve access to health and care: interactive audio-visual, store-and-forward asynchronous transmission of health data, remote monitoring, secure messaging, and wearables;
- Guiding principles that emphasize patient-centeredness, alignment with the state's health reform efforts and current programs, interoperability of data, and measurable outcomes;
- A report on current telehealth efforts in Vermont;
- A review of other statewide telehealth programs; and
- An assessment of existing barriers to more widespread use of telehealth services and possible options for mitigation.

The telehealth strategy itself calls for:

1. Designation of a coordination body to support expansion of telehealth services that promote patient-centered care and health care reform by monitoring existing efforts, identifying gaps, coordinating all telehealth programs to align with the strategy, leveraging the purchase of new technologies, and developing a consistent set of outcome measures.
2. Alignment of state policies referable to telehealth reimbursement, licensure, and privacy with the goals of health reform and maintenance of a patient-centered approach to care.
3. Telehealth technologies that are secure, accessible to people with disabilities, interoperable to the degree possible, cloud-based where appropriate, aligned with Vermont's statewide HIT infrastructure, supported by sufficiently robust broadband or wireless platforms, and meet usability testing standards.

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4. Resources to engage clinician interest in and adoption of telehealth products and services, and to provide ongoing support for the effective and efficient implementation of those products and services to the benefit of patients.

This report also includes a Roadmap that is based on Vermont's transition from volume-based to value-based payment. This was also developed to guide prioritization of telehealth projects and their alignment with the new clinical processes that are being adopted as payment reform evolves. The following recommendations for the state are derived from the Roadmap:

- Support increased use of remote monitoring for patients as the delivery system seeks to better coordinate care.
- Extend reimbursement for e-visits beyond Medicaid in preparation for the delivery system assuming downside financial risk, particularly for those patients with any type of behavioral health morbidity that could affect or is affected by their physical health.
- Invest in a Project ECHO (Extension for Community Health Outcomes) program to support primary care physicians caring for more complicated and complex patients in preparation for managing downside risk.
- Reimburse for store-and-forward technologies to support episode-based payment pilots.
- Improve broadband (upgrade download speeds) or wireless coverage throughout the state in order to be able to meet the vision of needed care anywhere, anytime.

Finally, recommendations were made for a Request for Proposals to be made available for pilot projects, open to all Vermont-based organizations except for technology vendors, which would test the feasibility of implementing some of these recommendations and measure outcomes consistent with the goals of the VHCIP.

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A Proposed Statewide Telehealth Strategy for the State of Vermont

I. Background

On February 21, 2013, Vermont was notified that it was one of six states to be awarded first-round State Innovation Model (SIM) testing grants to implement its statewide plan for health reform. The Center for Medicare & Medicaid Innovation awarded $45 million over 3 years to the State to support the Vermont Health Care Innovation Project (VHCIP) in implementing three innovative payment models (accountable care organization [ACO]/shared savings programs, episode-based payment, and pay-for-performance), with the goal of providing better quality care more efficiently.

The grant also supports several key investments in Vermont's health data infrastructure, including:

- Improved data transmission and integration across providers;
- Improved clinical data quality;
- Improved capacity to measure and address provider workforce needs;
- Improved data analytics and predictive modeling to support monitoring system costs and quality; and
- Enhanced telemedicine/health capabilities.

The budget for this effort included funds to develop a statewide telehealth strategy and fund one or more pilots to test the strategy. JBS International, Inc. (JBS)—a consulting company based in North Bethesda, Maryland, with a 30-year history of working with vulnerable populations, health information technologies, workforce development, and data/analytics internationally and at the U.S. federal, state, and local levels—was awarded the contract to support the development of the statewide telehealth strategy and the request for proposals (RFP) process for the pilot projects.

II. Strategy Development

This strategy was developed, reviewed, and approved by the VHCIP HIE/HIT Work Group, the VHCIP Steering Committee, and the VHCIP Core Team, with support from a multi-stakeholder Telehealth Steering Committee convened to guide the strategy development process and make recommendations. Participants on this Committee are listed in *Appendix A.*

The Committee also contributed to the other elements of the strategy development: a definition of telehealth for the state of Vermont, a set of principles to guide strategy development, a

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statewide survey of current telehealth initiatives in Vermont, and a national environmental scan of other statewide programs. Barriers to more extensive deployment of telehealth modalities were discussed along with potential opportunities for mitigation. Lastly, the group formulated recommendations for the state strategy and recommendations for pilots that could test and further that strategy.

Definitions

There is currently no agreement on a unifying definition of "telehealth." The federal government has at least 15 definitions among its many departments, centers, agencies, and offices. There are different state definitions in states that have legislated telehealth parity. The American Telemedicine Association has a definition that is widely customized to fit a specific organization's or entity's needs. For the purposes of Vermont's telehealth strategy, the Vermont Telehealth Steering Committee recommends adoption of the following definition until such time as a more unified and consistent definition is set forth:

Telehealth is the HIPAA-compliant use of health information exchanged from one site to another via electronic communications to improve a person's health and well-being. Telehealth includes a growing variety of applications and services using interactive audio-visual communication, asynchronous audio-visual transmission of information, secure email, remote monitoring of physiological parameters and activities through use of remote monitoring devices, mobile applications, and other wireless tools and technologies.

This definition looks to the future and is expansive in order to cover the burgeoning new approaches, products, and services that are proving effective with respect to improving access to care and services, integrating care among multiple types of providers, and engaging patients in their own health and care by working with them to meet their needs. Examples of the types of telehealth technologies that would be included in this definition include:

- Stationary Interactive Real-Time Audio-Visual: Mature but costly dedicated videoconferencing equipment housed in various clinical facilities for clinician-to-clinician consulting, patient-to-remote clinician care, education, and administrative purposes. Major suppliers of this technology are now moving away from this type of equipment to cloud-based systems that are less costly, can be more easily updated, and are more mobile.
- Store-and-Forward: Mature asynchronous communication technology that is most useful for certain visual consultations (dermatology, pathology, radiology, ophthalmology), although it is also being tested with templates to gather clinical information for other types of consultations, notably psychiatry. Store-and-forward technology can be stationary or available for use on smartphones, computers, and tablets through downloadable software applications.

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- Cloud-Based Interactive Audio-Visual: Downloadable, HIPAA-compliant, secure "Skype-like" approaches to providing care virtually from and to multiple devices. There are several mature companies with others transitioning (Polycom, Cisco), and many more with releases set within the coming year. Software is licensed, with cost advantages for large numbers of users (both originating and responding). Transmission can be wireless or via broadband.
- Remote Monitoring: Multiple peripheral technologies in use that collect data through devices that interact directly with a patient and transmit data wirelessly to the vendor's monitoring site where it can be accessed by the appropriate care coordinator or clinician. At this time, not all incorporate interoperability standards that would allow transmission of the data directly to electronic health records (EHRs). Predominantly being used by home health and care coordination teams to monitor vitals and other physiological parameters, as well as monitor adherence to use of certain medications. Also in use by substance use treatment centers to monitor recovery through breathalyzers that can regularly transmit data to a monitoring center.
- Secure Messaging: A secure form of encrypted email that requires logon and password validation and is required as part of Office of the National Coordinator for Health Information Technology (ONC) Certified Health Information Technology for Meaningful Use. Problematic for clinicians and patients if multiple portals are involved.
- Wearables: A newly developing, consumer-oriented, and unregulated device market that collects person/patient-generated data for use by wearers and possibly their clinicians to maintain optimal health. Data may also be shared through social networking sites.

Guiding Principles

The recommended Telehealth Strategy adheres to the following guiding principles:

A. *Patient-centeredness* is first and foremost—care and services are to be provided when and where they are needed by patients to improve health, well-being, and outcomes of treatment.

   ONC released an issue brief—*Using Health IT to Put the Person at the Center of their Health and Care by 2020*—in February 2014, following publication of its white paper on *Unleashing the Power of Each Individual to Manage Their Health and Partner in Their Health Care, Enabled by Information and Technology*. Both of these publications emphasize the need to empower individuals to manage their own health and health conditions independently of the delivery system, to enable smooth, easy, and seamless interaction with the delivery system, and to integrate individuals as partners with care team providers within the care system. Both of these publications

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signal the direction that health IT, including telehealth, must support in the coming years.

B. *Improved access to care* should address service (e.g., workforce shortages), geographic (e.g., distance from closest provider), and personal (e.g. disability, lack of transportation, foreign language) limitations.

   At 128.9 primary care physicians per 100,000 residents, Vermont is exceeded only by Massachusetts (131.9) as the state with most primary care physicians per capita in the nation, where the median rate is 90.3/100,000. Given Vermont's rural nature, weather patterns, lack of public transportation, and natural clustering of clinicians in more urban areas or with colleagues in clinic settings, many of the state's inhabitants, however, do not have ready access to either primary or specialty care. One of the 16 key strategies articulated in the January 2012 Strategic Plan for Vermont Health Reform is to "assess the adequacy of Vermont's health care workforce and service availability and recommend specific steps to enhance and improve as needed."

C. The strategy must *support and align with health reform programs (such as new reimbursement methodologies to support ACOs) and initiatives*.

   Payment reform is foundational to Vermont's Health Care Reform goals, and the state's SIM grant efforts will be evaluated on progress in value-based purchasing and numbers of patients receiving care in alternative payment models. As the state implements payment strategies that increase delivery system accountability for the cost and quality of care, different aspects of telehealth will be critical in supporting the success of these payment models, while the flexibility inherent in them makes telehealth a viable business investment from the providers' perspective.

D. The strategy should *align and support existing programs and efforts*.

   Vermont's current Health Information Technology (HIT) Strategic Plan provides direction for existing programs and efforts as well as for the future. In addition to leveraging what can be learned from other states, the HIT Strategy emphasizes shared services, cloud-based technologies, and modern IT delivery frameworks, coupled with optimization of business processes. A statewide telehealth strategy must therefore align with the overall HIT strategy.

E. *A consistent set of outcome measures* (both short- and long-term) should be established.

   Vermont's overarching goals for health reform include better care, lower costs, and better health. Progress will be measured in different ways, depending on either federal or state-based approaches. The degree to which telehealth will contribute to

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these goals will be an important part of the evaluation process and can be built on existing approaches to evaluating the efficacy and cost/benefit of telehealth processes.

F. New and upgraded telehealth technologies must incorporate data standards that support *interoperable health information exchange.*

Vermont has built a strong network of Patient-Centered Medical Homes (PCMHs) supported by community-based care coordination that is the heart of its delivery system reform efforts. It also continues to build on a mature health information exchange (HIE) that allows clinical health data to be shared appropriately. The burgeoning telehealth market for "convenience care" and self-management of an individual's health and health conditions can lead to further fragmentation of the delivery system if the data and information generated from these newer technologies are not shared, or are not sharable. A first step in mitigating this potential fragmentation is to ensure that the data generated by these technologies can be exchanged through the HIE.

Although not a guiding principle, care was taken to address the fact that illness and disease do not honor state boundaries and that the statewide strategy should also recognize that Vermonters seek care in New York, New Hampshire, and Massachusetts, as well as in-state, and that residents of those states may seek care in Vermont.

Current State of Telehealth in Vermont

All members of the Telehealth Steering Committee as well as a number of other interested parties *(Appendix B)* were interviewed using a standardized questionnaire to assess the current telehealth network in the state. *Table 1* outlines the results of that survey.

In summary, we found that significant investment has been made in stationary equipment that is housed in medical facilities—hospitals, emergency departments (EDs), Federally Qualified Health Centers (FQHCs), and Designated Mental Health Agencies (DAs)—and that it is used primarily for administrative or educational purposes. Although there is also limited use of this telehealth technology for patient care purposes (primarily telepsychiatry with the University of Vermont Medical Center [UVMMC]), there is a significant amount of equipment downtime at all facilities.

There is also a strong remote monitoring program used by the Home Health Agencies that is funded either by Medicare as part of its Home Health bundled payment or by Medicaid as part of a pilot to reimburse for use with Medicaid patients who have congestive heart failure (CHF). The equipment used in that program is wireless and can monitor a number of physiological parameters.

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Lastly, there are a number of unique small pilots that are being conducted independently of the larger programs.[1] One of these, a tele-dermatology store-and-forward pilot project at UVMMC, has addressed the problem of geographic and service access by using a free, downloadable application developed by the American Academy of Dermatology that can be used by primary care clinicians to send images to a dermatologist at UVMMC. The pilot has demonstrated a decrease in wait time from 6 months to as little as a week for guidance on how to manage a skin lesion, thus obviating the need for an in-person visit in the Burlington area, where 13 out of the 19 dermatologists in the state practice. Planned Parenthood of Northern New England just began offering home-based e-visits in March 2015. A tele-medication check pilot program through Vermont Care Partners has been initiated in the DAs. One of the state's nursing homes partners with the U.S. Department of Veterans Affairs (VA) to provide tele-psychiatry to its patients and others engaged in tele-psychiatry with UVMMC. One FQHC provides tele-psychiatry to its local nursing home and another has set up a tele-nutrition program for other FQHCs to use. Five FQHCs are using a daily telephone triage system with analytics to monitor chronic obstructive pulmonary disease (COPD), CHF, and diabetes patients. They are partnering closely with the Visiting Nurse Associations for daily care coordination, and have each found this system to be a complementary program to their more intensive tele-monitoring of CHF patients. Finally, a handful of small efforts have been set up by individual clinicians.

Most striking about these programs and pilots is the lack of coordinated effort among them, which represents a significant opening for a more cohesive approach in the telehealth sector.

National Environmental Scan

In addition to conducting our survey of telehealth programs in the state of Vermont, we also interviewed nine states with statewide telehealth programs with respect to barriers and enablers as their programs developed (see *Table 2*). Although many telehealth programs, projects, and pilots are being researched throughout the country, most are focused on specific providers or populations, or in limited geographic areas. The nine states interviewed represent those with statewide programs. We also spoke with the Southcentral Alaska Foundation,[2] which has perhaps the most comprehensive telehealth program in the 50 states, built on the work established by the Indian Health Service prior to the tribes' negotiating autonomy in providing care to their members. The Foundation uses all modalities of telehealth, including tele-prescribing via kiosks in remote areas, to ensure that all needs of its diverse, scattered, and somewhat isolated population of patients are met. Given its payment and organizational structure (federal grant dollars and employed staff), however, we did not include it in our

[1] Contact information:
Tele-dermatology pilot: Julie.lin@uvmhealth.org
Planned Parenthood of Northern New England (PPNNE) pilot: wendycampbell@ppnne.org
Designated Agencies (DA's) tele-medication check: simone@vermontcarepartners.org
Federally Qualified Health Centers (FQHC) programs: mmiles@bistatepca.org
[2] See https://www.southcentralfoundation.com

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review. We also excluded the Veterans Health Administration and Kaiser Permanente from our review for similar reasons.

One of the nine state programs reviewed is coordinated within state government (Colorado.) Five (Arizona, Illinois, Missouri, Mississippi, New Mexico) are coordinated by academic medical centers (AMCs), one is a not-for-profit organization (Georgia), one is a university that is not an AMC (Utah), and one is based in a hospital system (Nebraska.)

Although these programs serve different populations, have different types of connectivity platforms, and have unique (and minimal) measures of success, our scan revealed a number of commonalities among them:

- Most were driven by access to care issues;
- All faced similar barriers to implementation (see below);
- Most focused on interactive audio-visual (AV) technology between clinicians or between a patient and a clinician, although all were moving away from stationary equipment and moving toward cloud-based connectivity accessible from any site; and
- Each found that interest among providers was growing, spurred by satisfaction among early adopters, local policy changes, and expanding national interest in all types of mobile telehealth modalities.

Perhaps the most salient feature of these programs, however, is the role they play in coordinating telehealth efforts throughout their state. Such coordination could leverage advantages when purchasing products and services, consolidate and replicate successful training programs, support statewide policy changes, and create a menu of outcome measures that could demonstrate value to patients, clinicians, payers, and policy makers.

Barriers to Use of Telehealth Services and Possible Mitigation Opportunities

As noted above, all statewide programs faced similar barriers with respect to implementation and expansion, although none were strong enough to preclude development of robust statewide programs, as we have seen.

A. *Lack of reimbursement for time and expertise expended during telehealth encounters*. This is perhaps most significant for the Medicare population, for whom direct reimbursement is currently limited to areas designated as rural health professional shortage areas, specific facility-based originating sites where the patient must be situated, interactive AV telehealth (except for store-and-forward demonstrations in Hawaii and Alaska), and certain specified provider types. Remote monitoring is not covered, although Home Health Agencies have discretionary power to use telehealth as part of their global payment for services to Medicare patients, and primary care

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clinicians can bill for these services under a new care coordination code that could include remote monitoring.[3]

Change is on the horizon, however. When Congress passed the Medicare Access and CHIP Reauthorization Act of 2015,[4] it included a directive for the U.S. Government Accountability Office to study telehealth and make recommendations on expanded coverage at a later date. The Centers for Medicare and Medicaid (CMS) is including the use of telehealth in its new ACO contracts. In addition, each state Medicaid program has the latitude to reimburse whatever telehealth services it deems appropriate, although the number of states that have exercised this option is somewhat limited to those whose legislatures have passed telehealth parity acts directing Medicaid to cover specific services.

Commercial payers usually reimburse only for telehealth services that are required by state law as well, although interest in using direct-to-consumer telehealth consultations is growing among the national payers who find this a less costly alternative than paying for either a doctor's visit or an emergency department encounter. There are, at the moment, over 130 bills working their way through the legislative process in various states, so the environment is very dynamic.

Vermont's telehealth parity law, An Act Relating to Telemedicine,[5] was passed in 2012 but it was limited to interactive AV encounters and facility-based originating sites—similar to Medicare restrictions, but without geographic limitations. Since then, almost no services have been billed to Vermont's largest commercial insurer, BlueCross BlueShield of Vermont (BCBSVT), with the telehealth modifier. Medicaid's billings (mostly for tele-psychiatry) are increasing, however, as interest grows. More important has been the passage of S. 139 in May 2015, which requires Medicaid to reimburse for primary care telehealth consultations using interactive audio-video when a patient is outside of a health care facility.[6] There is still no mandated coverage for store-and-forward technologies (although anyone using them must obtain patient consent), and Vermont's Medicaid program does not reimburse for remote monitoring outside of the CHF pilot being conducted by the Home Health Agencies.

[3] Primary care practices participating in Vermont's Blueprint for Health are not eligible to receive payments under this care coordination code because they currently receive medical home payments from Medicare through the Blueprint's participation on the federal Multi-payer Advanced Primary Care Practice (MAPCP) demonstration.
[4] See https://www.congress.gov/bill/114th-congress/house-bill/2/text.
[5] For full text, see http://legislature.vermont.gov/assets/Documents/2012/Docs/ACTS/ACT107/ACT107%20As%20Enacted.pdf.
[6] For full text, see http://legislature.vermont.gov/assets/Documents/2016/Docs/ACTS/ACT054/ACT054%20As%20Enacted.pdf.

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B. *Difficulty in engaging busy clinicians to consider use of telehealth within their practices.* This is primarily an education and experience issue. With consistent reimbursement, user-friendly applications that can be easily downloaded to any computer or tablet, and the right technical assistance with respect to incorporating telehealth into the workflows of the practice, physicians find that their care is more efficient and their patients' needs are met with greater satisfaction. In the face of competing priorities (e.g., ICD 10, Meaningful Use), greater efficiency becomes even more valuable. And, as noted above, early adopters who benefit from the advantages become champions for more extensive use among their colleagues.

   In Vermont, these types of educational programs can be conducted in multiple ways using the expertise and information available through the New England Telehealth Resource Center and Grand Rounds presentations. And, as patient demand spreads for home-based visits and usable software becomes more available, even the more recalcitrant physicians are likely to engage.

C. *Insufficient access to broadband or wireless to support telehealth.* Access to broadband and wireless is a two-pronged issue that includes sufficient data transfer speeds to support telehealth modalities and affordability on the part of the patient for that technology. The Vermont Division of Telecommunications and Connectivity at the Department of Public Service has been tasked with overseeing the dispersion of broadband and wireless connectivity to all inhabited areas of the state. At present, the broadband coverage is completed at a download speed of .768 mbps, which can lead to lag for video use. Download speeds of at least 10 mbps are needed for most video use and are currently available only in more heavily populated parts of the state. The current coverage is, however, sufficient to support some of the newer technologies that do not require real-time video exchange.

   Wireless coverage is hampered by the mountainous terrain of the state and local aversion to cell towers. Of greater significance may be the costs associated with cell plan usage and the applications required for secure telehealth encounters. Although this may be mitigated somewhat by bulk purchasing, cost to consumers will remain an issue in some parts of the state.

D. *Clinician licensure in multiple states.* Current state laws prohibit providers from caring for a patient who lives in a state if the physician or other type of clinician is not licensed in that state. Obtaining multiple licenses to allow for practice across state lines can be a very time- and cost-intensive process. Recent steps by the Federation of State Medical Boards (FSMB) and the National Council of State Boards of Nursing Licensure (NCSBNL) have provided a means to expedite the credentialing process by allowing one state board that signs a FSMB or NCSBNL Compact to share the verified

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credentialing information with another state board to ease cross-state licensing challenges.

At present, a limited number of states (most thinly populated and rural) have signed the FSMB Compact, with at least another dozen or so considering it (including Vermont). The Nurse Licensure Compact (NLC) is active in 25 states and has been recently updated. Vermont is not actively considering the NLC, but New Hampshire, Massachusetts, and New York have either signed or are considering signature at this time. While allowing patients with significant access limitations to be able to received consultative care from physicians all over the country clearly has its advantages, there is a risk of further fragmented care. A number of companies are now advertising direct-to-consumer telehealth outside of a patient's usual system of care. State board and provider effort is needed to ensure that all care, including care accessed from direct-to-consumer telehealth companies, is coordinated at the primary care clinician level.

E. *Implementation resources.* There are national guidelines for use of various telehealth services and multiple approaches to helping clinicians efficiently embed telehealth services into their workflow. Although some early-adopting clinicians will enthusiastically embrace the concept of providing virtual care to their patients if they are held harmless financially, most will require some technical assistance to implement and use the technology efficiently. Any program or plan to incorporate any telehealth modality in the care continuum must have access to and budget accordingly for this service.

F. *Technical limitations of the products and services that ensure interoperability of the data and information and sufficiently secure transmissions for privacy protection*. Much has been done at the federal level to develop and promulgate standards for interoperable exchange of data and to ensure security of information and patient controlled consent of segmented data sharing. This work has been focused on EHRs and organizations that have been created to exchange health information among many partners. Virtually all telehealth-related technologies have been out of the scope of this federal work unless they are embedded within the infrastructure of a clinician's EHR (e.g., secure messaging technology). Although there are organizations external to the public space that are engaged in developing interoperability and security standards for telehealth products and services, few vendors adopt these standards, thus limiting the ability of these products and services to exchange data with other relevant parties.

Addressing these barriers is foundational for the development of a Telehealth Strategic Plan.

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III. Recommendations for Strategy Elements

Vermont has defined nine elements that characterize our proposed statewide telehealth strategy. These elements are informed by a set of guiding principles, a survey of the current state of telehealth in Vermont, an environmental scan that identified and interviewed nine statewide programs across the country, and a synthesis of barriers to telehealth adoption and how to mitigate them. A number of Telehealth Steering Committee members also attended the American Telemedicine Association's Annual Meeting this past May and contributed helpful information on the exponential expansion in programs, projects, and research that is now progressing in the field; the ever-increasing number of products and services that are now available to support all forms of telehealth; and new policies that are encouraging even greater adoption of all types of services.

Based on this work and information gathering, Vermont identified the following strategy elements:

A. A comprehensive and inclusive definition of telehealth;

B. A set of guiding principles that characterize the goals of the strategy;

C. Support for Vermont's health reform efforts;

D. Strong emphasis on providing care in situations of geographic and personal limitations;

E. The need for a coordinating entity or body that can monitor and update programs, leverage purchasing power, identify a set of outcome measures that the various programs can track, and advocate for policy changes as needed;

F. Migration away from the stationary AV equipment that is becoming outdated to more flexible, HIPAA-compliant, cloud-based applications that can be easily downloaded to a cell phone, tablet, or desktop computer when feasible and appropriate;

G. Approaches to updating the 2012 Act Relating to Telemedicine to achieve alignment among at least local payers with respect to reimbursement for telehealth services;

H. Availability of technical assistance as telehealth becomes part of physician/clinician workflow; and

I. Consideration of how Vermont would maintain coordinated care at the primary care level if a decision were made to join the FSMB Compact.

These elements and the supporting landscape analysis are the foundation for a Telehealth Strategic Plan for Vermont.

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IV. A Telehealth Strategy for the State of Vermont

Below are listed the Strategic Plan goals, along with their key objectives:

A. *Creation or designation of a coordination body to support expansion of telehealth services that promote patient-centered care and health care reform*. The most salient feature of the statewide telehealth programs that were investigated as part of this project was the presence of this type of coordinating organization. In states where a single AMC served as a referral center, these AMCs fulfilled that role. In others the coordination body was a state office, a state-funded university, the major integrated delivery system within the state, or an independent not-for-profit. These were funded by various combinations of grants, membership fees, appropriated state budgets, and donations, and through the Universal Service Administrative Company (USAC)—an independent, not-for-profit corporation designated by the Federal Communications Commission (FCC) as the administrator of universal service. The objectives of a similar coordinating body in Vermont would be to:

   1. Develop timelines and measures of success for the Strategic Plan, based on available resources, expertise, and experience.
   2. Engage stakeholders, coordinate implementation of, and monitor the Telehealth Strategic Plan.
   3. Monitor the state and national telehealth environment.
   4. Advocate, track, and promulgate policy changes.
   5. Leverage purchase of products and services.
   6. Create and monitor outcome measures that demonstrate value.
   7. Coordinate telehealth-related activity in programs throughout the state.
   8. Further prioritize areas where services can expand.
   9. Maintain a website where all information related to telehealth in the State of Vermont is readily and easily accessible to both providers and patients—the latter of which may benefit from information about the burgeoning number of health-related applications and wearables that are available.

The coordinating body in Vermont should be part of the overall HIT infrastructure already operating within the state, rather than an isolated entity. Some combination of state funding, grants, and membership fees would be the most likely sources of funding. Given that there may be several candidates that could take on the functions outlined above, further discussion will be necessary before a more specific recommendation can be made.

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B. *Alignment of state policies referable to telehealth with the goals of health reform and maintenance of a patient-centered approach to care.* Patient-centered care provided in the medical home environment is the foundation of Vermont's care delivery reforms. As telehealth provides opportunities for patients to access care whenever and whenever it is needed, whoever provides that care should communicate, with patient consent, information generated through telehealth processes to the patient's primary care clinician in order to ensure that care is coordinated on his/her behalf. Policy changes with respect to the practice of telehealth should reflect this basic approach.

Policies affecting reimbursement systems should also take into account the alternatives to fee-for-service payment that Vermont will be implementing across the state. Whether these are capitated payments, bundled payments, shared savings programs, or other forms of payment, there will be a need for consistent reimbursement policies among payers with respect to telehealth. We therefore recommend the following:

1. Review and update policies related to the use of telehealth by physicians, nurses, pharmacists, and other health professionals both within and outside Vermont.
    a. Conduct an analysis of the implications of signing the FSMB Compact and NLC, taking into account not only the increased access to care that this may afford to Vermonters, but also the risk of more fragmented care and how that risk can be mitigated. The analyses will need to be conducted by the State's Physician and Nursing Licensing Boards prior to any decision to adopt the Compacts.
2. Review and, if necessary, update the 2012 Act Relating to Telemedicine to achieve a consistent reimbursement infrastructure across Medicaid and commercial payers upon completion of the VHCIP-supported telehealth pilots.
3. Educate licensed providers practicing telehealth under both Vermont's 2012 Act and the 2015 law requiring Medicaid coverage for primary care e-visits outside of the delivery system setting about:
    - Appropriate use of these services.
    - Billing for these services using the appropriate modifier so that usage and outcomes can be tracked.
    - National guidelines on the appropriate use of telehealth services by physicians, nurses, and pharmacists.
4. Generate, track, and report outcome measures from the VHCIP-funded telehealth pilot projects to be implemented in 2015-2016 to inform policymakers regarding their effectiveness.

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C. *Investment in telehealth technologies that are secure, accessible to people with disabilities, interoperable to the degree possible, aligned with Vermont's statewide infrastructure, and meet usability testing standards.* The following objectives underscore the need for technology investments that will align with Vermont's health reform strategy and telehealth principles:

   1. Ensure that all certification-eligible equipment purchased in support of VHCIP-supported telehealth pilot projects is certified to be interoperable with ONC-certified electronic health record technologies.
   2. Ensure that telehealth products and services are HIPAA-compliant and include appropriate security standards.
   3. Support conversion of existing stationary equipment to cloud-based technology that can be more easily updated and used on desktop computers, laptops, tablets, and mobile devices where appropriate.
   4. Monitor broadband and wireless access and use for health care purposes throughout the state, upgrading from .768 mbps to faster download speeds in areas where clinicians and patients require more reliable connection for real-time AV transactions.
   5. Analyze the cost/benefit of subsidizing wireless/broadband plans for high-risk patients who experience either geographic, personal, or service related limited access to care outside of their home environment.

D. *Resources are available to engage clinician interest in and adoption of telehealth products and services, and to provide ongoing support for the effective and efficient implementation of those products and services to the benefit of patients*. Although many clinicians are interested in the concept of telehealth, there is concern about how best to include these services in the workflow of a busy patient schedule. The following will address this concern:

   1. Conduct pilot projects that include resources for clinician engagement and training.
   2. Conduct pilot projects that demonstrate cost savings associated with the use of telehealth so that either state or multi-payer funding will support training as well as care.

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V. The Telehealth Strategic Roadmap

Perhaps the most important aspect of this telehealth strategy's implementation is how it will align with the payment reform efforts underway in Vermont. There is universal agreement that fee-for-service reimbursement creates incentives that drive service volume independent of any accountability for quality, cost, or clinical outcomes associated with the care delivered. A number of payment models along a continuum of financial risk increase accountability for all of these outcomes among provider groups and networks. As financial risk increases, so, too, does the opportunity to provide better, more efficient care through telehealth.

The foundation for providing incentives for Health IT infrastructure improvement was laid by the Meaningful Use (MU) program included in the HITECH portion of the American Recovery and Reinvestment Act of 2009[7] (ARRA). Eligible Providers (certain licensed practicing clinicians) and Eligible Hospitals (including Critical Access Hospitals) are eligible for MU payments if they have implemented ONC-certified EHR technology and demonstrated adequate performance on a series of MU measures. The fee-for-service reimbursement methodology did not change, but the investment in infrastructure is allowing these providers and hospitals to create, use, and share clinical data and information in ways that can support better management of care and costs and to engage in the newer payment models currently being offered or considered in the state.

If the telehealth strategy is to align with health reform activity in Vermont, it must support the evolution of the associated payment strategies and support the delivery system in successfully responding to them. Fortunately, the use of telehealth technologies can also evolve, dependent on their costs, usability, payment policy, and demonstrated outcomes. Secure messaging, the most basic form of telehealth, is included in the MU incentive program and is currently in use by most clinicians in the PCMHs, where they are also eligible for pay-for-performance incentive payments. Additional telehealth modalities can be included as the delivery system infrastructure acquires increasing levels of financial risk.

Through the SIM grant, Vermont is implementing three major value-based payment models:

A. *Pay-for-Performance*. Pay-for-performance is the preferred reimbursement model for the PCMH initiative operational throughout Vermont, the Blueprint for Health. Performance payments are dependent on meeting National Committee for Quality Assurance (NCQA) PCMH recognition standards. Given that over half of the state's residents are seen in the strong network of the 124 PCMHs supported by Blueprint for Health, this was a major step forward in a consistent reimbursement policy statewide.

[7] See: http://www.gpo.gov/fdsys/pkg/BILLS-111hr1enr/pdf/BILLS-111hr1enr.pdf

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B. *Shared Savings ACO Programs*. Shared Savings ACO Programs introduce accountability for a specified set of services where the reimbursement is determined by both the quality performance metrics *and* the amount of cost savings that the process improvements generate. Two forms of this approach have been developed:

   1. *ACO Programs With Shared Savings, Upside Risk Only.* Providers are eligible to share in any cost savings that accrue beyond expected total costs of care but are not at risk for any costs beyond the expected amount. Some degree of team-based care is required for success, and national research suggests that cost savings are mostly predicated on decreases in preventable hospital admissions through strong chronic care programs that can be either community- or provider-based. BCBSVT and Vermont's Medicaid program offer this program, which is similar to Medicare's Shared Savings Program with no downside financial risk, as of January 2014. The clinical process improvement that has been demonstrated to successfully support this reimbursement model is care coordination.

   2. *ACO Programs With Shared Savings, Upside and Downside Risk.* This model includes risk of financial penalty (shared financial loss) if the total costs of care for the assigned population of patients exceeds that expected. As such, it is an incentive for providers to manage care that might otherwise be referred out to specialty physicians or more costly settings. Integration of behavioral and physical health is a critical component of success under this reimbursement model, as is the ability to divert patients to the most efficient setting across the continuum of care. This model is operational as a Medicare Shared Savings Program with downside risk but with limited uptake, and it being discussed for future implementation as part of the commercial Shared Savings Program.

C. *Episode-Based Payments.* Episode-based and other bundled payment models are most appropriate for specific diagnoses that dominate an individual's care patterns and for specific procedures associated with a finite set of services. This model involves a single payment amount for a suite of services associated with that diagnosis or procedure, rather than payment for each service. It also requires providers to demonstrate that quality of care is maintained. All of these efforts require exquisite attention to coordinated care and patient engagement with all the providers of care included in the bundled payment. At present there are two Medicare-funded initiatives in Vermont using bundled payments: providers in Rutland caring for patients with CHF; and providers in St. Johnsbury caring for patients with cancer. DVHA is currently working with stakeholders and contractors to plan and implement at least three episodic payments within Medicaid.

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Discussions about the next step along the payment reform continuum in Vermont are centered on capitation, global budgets, and prospective payment systems. Stressing patient engagement through support for self-management independent of the delivery system, co-management when appropriate, and seamless communication with as well as between providers will be foundational for the success of these payment methodologies, which are currently being tested in a select number of delivery systems around the country on a trial basis.

The following Table summarizes the care processes most likely to be implemented and the telehealth programs and services that can most effectively support these care processes as payment structures evolve.

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Summary Table: Aligning Telehealth Products and Services With Value-Based Payment Strategies

Payment Model	Key Care Process Improvements	Supportive Telehealth Services and Programs
Pay-for-Performance	Patient engagement and follow-up	Secure messaging
Shared Savings ACO Programs (Upside Risk Only)	Team-based care coordination Patient engagement	Remote monitoring devices and programs Smartphone strategies (texting, alerts) Secure messaging
Shared Savings ACO Programs (Downside Risk Included)	Integration of behavioral health and primary care services More management of complex patients by primary care Team-based care coordination Patient care in least intensive settings Patient engagement	AV telecommunication between behavioral health and primary care settings when jointly caring for patients Tele-education support on a case presentation basis (e.g., an ECHO program) in managing patients with chronic pain syndromes, Hepatitis C, atrial fibrillation, etc.) Remote monitoring devices and programs E-visits with patients at home, school, or work, or in residential settings or long-term/post-acute care (LTPAC) Secure email, smartphone strategies, and e-visits
Episode-Based Payments	Integrated care among multiple specialties Team-based care coordination Patient care in least intensive settings Patient engagement	Store-and-forward technology Case conferencing Telecommunication between providers with or without patient being present Remote monitoring devices and programs E-visits with patients at home, school, or work, or in residential settings or LTPAC Secure email, smartphone strategies, and e-visits

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Payment Model	Key Care Process Improvements	Supportive Telehealth Services and Programs
Capitation, Global Budgets, and Prospective Payment Systems	"Warm handoffs" during transitions of care Programs to maximize patient engagement and loyalty Integration of BH and Primary Care services Integrated care among multiple specialties More management of complicated patients by primary care Team-based care coordination Patient care in least intensive settings	Mobile AV interaction at time of transitions between high-intensity settings Links to consumer-facing tools and applications Social networking Secure messaging, smartphone strategies, and e-visits AV telecommunication between BH and PCP settings when jointly caring for patients Store-and-forward technology Case conferencing Telecommunication between providers with or without patient being present Tele-education support on a case presentation basis (e.g., an ECHO program) in managing patients with chronic pain syndromes, Hepatitis C, atrial fibrillation, etc.) Remote monitoring devices and programs E-visits with patients at home, school, or work, or in residential settings or LTPAC

In order to align with and support the increasing accountability for care outcomes as payment methodologies evolve, Vermont should consider:

- Identifying how best to support increased use of remote monitoring for patients at home, at work, or in school as the delivery system now seeks to better coordinate care among those with chronic conditions.
- Extending reimbursement for e-visits beyond Medicaid in preparation for the delivery system assuming downside risk, particularly for those patients with any type of behavioral health morbidity that could affect or is affected by their physical health.
- Investing in an ECHO program to support physicians practicing at the top of their licenses in preparation for managing downside risk.

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- Reimbursing for store-and-forward technologies to support episode-based payment pilots.
- How to improve broadband (upgrade download speeds) or wireless coverage throughout the state in order to be able to truly meet the vision of needed care anywhere, anytime. This is perhaps most important for the future, no matter how far along the provider financial risk continuum Vermont ultimately goes.

VI. Development of Pilot Projects to Test the Strategy and Align With the Roadmap

The Vermont Telehealth Steering Committee evaluated five types of pilots:

A. Increased use of the current interactive AV system to minimize unused capacity;

B. A store-and-forward dermatology pilot using free downloadable applications;

C. A pilot to test the efficacy and efficiency of e-visits in specified populations;

D. Implementation of a case-based tele-education program that would support primary care clinicians caring for patients with complex diseases (e.g., Hepatitis C) or those with difficult-to-manage presentations (e.g., chronic pain syndromes, irritable bowel syndrome); and

E. Extension of Medicaid's remote monitoring pilot for Home Health care of CHF to other disease presentations (e.g., COPD).

Based on this research, Vermont's Health Care Innovation Project chose *not* focus on specific types of pilots, but to open the RFP process to any Vermont-based organization (vendors excluded) that could:

- Describe how the project would align with the strategy's principles, particularly as they relate to healthcare reform and the move toward an accountable care environment;
- Describe where and how the project would align with the statewide telehealth strategy;
- Demonstrate coordination of telehealth efforts across the state;
- Describe how the project would coordinate with other telehealth efforts in Vermont;
- Demonstrate sufficient resources to design and manage the project;
- Clearly define implementation and maintenance costs;
- Leverage technology costs;
- Recruit participants;
- Gather data for measurable outcomes;

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- Be sustainable after conclusion of the pilot; and
- Be scalable.

An RFP is in development, with proposals due in October and awards to be made in November.

VII. Conclusion

Telehealth, with all of its modalities, has the potential to support the Triple Aim. Telehealth can support the efforts of many states to participate in health reform through new payment and delivery system structures, advanced care coordination models, better integration of care across different types of providers, and motivated patient engagement.

Implementation of a thoughtful statewide telehealth strategy implies addressing multiple issues in concert with implementing these other aspects of health reform. Vermont is unique in its foresight to address these issues through the development of its telehealth strategy, consideration of a telehealth strategic roadmap, and funding of pilot projects that will inform future implementation.

JBS is grateful to have had the opportunity to work with DVHA, the Telehealth Steering Committee, and all participants in the VHCIP governance on this effort and is pleased to present this strategy to DVHA at this time.

Karen M. Bell, MD, MMS
Dave Wanser, PhD
September 2015

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Appendix A: Telehealth Steering Committee Membership

Judy Amour	University of Vermont Medical Center Telehealth
Terry Rabinowitz, MD	University of Vermont Medical Center and University of VT
Peter Cobb	Vermont Visiting Nurses Association
Nancy Eldridge	Cathedral Square/SASH Program
Kim Fitzgerald	Cathedral Square/SASH Program
Amber Fulcher	VT Department of Disabilities, Aging, and Independent Living
Stuart Graves, MD	Physician user of telehealth services
Danielle Louder	NE Telehealth Resource Center
Andrew Solomon	NE Telehealth Resource Center
Sarah Kinsler	Department of Vermont Health Access
Steven Meier	Department of Vermont Health Access
Sandy McDowell	Vermont Information Technology Leaders
Melissa Miles	BiState Primary Care Association
Sarah Pletcher, MD	Dartmouth-Hitchcock Center for Telehealth
Simone Rueschemeyer	Vermont Care Partners
Beth Tanzman	Blueprint for Health
Michael Wehner	University of Vermont Medical Center Telehealth

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Appendix B: Respondents to Vermont Survey of Current Telehealth Programs

Judy Amour	University of Vermont Medical Center Telehealth
Terry Rabinowitz, MD	University of Vermont Medical Center and University of Vermont
Peter Cobb	Vermont Visiting Nurses Association
Nancy Eldridge	Cathedral Square/SASH Program
Kim Fitzgerald	Cathedral Square/SASH Program
Amber Fulcher	VT Department of Disabilities, Aging, and Independent Living
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Sandy McDowell	Vermont Information Technology Leaders
Melissa Miles	BiState Primary Care Association
Sarah Pletcher, MD	Dartmouth-Hitchcock Center for Telehealth
Simone Rueschemeyer	Vermont Care Partners
Beth Tanzman	Blueprint for Health
Michael Wehner	University of Vermont Medical Center Telehealth
Dana Bianchi	Vermont Department of Education
Wendy Campbell	Planned Parenthood of Northern New England
Julie Lin, MD	University of Vermont Medical Center
Barbara Winters	Brain Injury Association of Vermont
Norman Ward, MD	OneCare Vermont
David Wennberg, MD	The Dartmouth Institute
Robert Wheeler, MD	Blue Cross Blue Shield of Vermont

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Table 1: Telehealth in Vermont: May 2015

Organization or Program	Partners in Use	Technology	Uses	Use vs Capacity	Barriers to Expanded Use	Contact
Type: Stationary Interactive AV Equipment Housed in Facilities Reimbursed by commercial and Medicaid payers through the 2012 Act Relating to Telemedicine						
UVMMC	Those within system on same EHR If not on same EHR, available in community hospital EDs	Polycom Prism	With patient -Psychiatry -Genetic counseling -Maternal/fetal monitoring -Neurology -Pediatric urgent care -Consensus conference -Pathology -Pediatric urology -Intensive Care Unit Education (Grand rounds) Administration	50% Limited participation	Bandwidth in rural areas Workflow challenges in clinical setting Reimbursement Lack of public awareness	Judith.Amour@uvmhealth.org Michael.Wehner@uvmhealth.org
Dartmouth-Hitchcock Center for Telehealth	Vermont Medical Centers: -Southwestern -Deerfield Valley -Northshire 50 Vermont providers with New Hampshire hospitals	Polycom	24/7 consultations and e-visits available for myriad specialties and problems		$11 million in grants and sustained by Vermont's Act Relating to Telemedicine and Medicaid reimbursements Pre-surgical and post-surgical visits in bundled episode	Sarah.N.Pletcher@hitchcock.org

Organization or Program	Partners in Use	Technology	Uses	Use vs Capacity	Barriers to Expanded Use	Contact
Designated Mental Health Agencies (community-based care centers for behavioral health and developmental disability care and support)	Clinicians within the Vermont Care Network UVM	Polycom Tandberg (purchased by Cisco in 2010)	Administration Distance learning Training Tele-psychiatry		Bandwidth (need at least 1.280, rural areas may carry only .768 mbps) Integration into clinician workflow	Simone Rueschemeyer Simone@Vermontcarepartners.org
Bi-State Primary Care Association and Federally Qualified Health Centers (FQHCs)	Nursing Homes UVMMC Among the FQHCs	Polycom	Adult tele-psychiatry Child tele-psychiatry Dietitian consults Administration and education		Integration into clinician workflow Sustainable revenue Availability of specialists	Melissa Miles mmiles@bistatepca.org
Nursing Homes (3 to 4)	VA UVMMC	Polycom	E-visits with VA Center staff (1 facility) Tele-psychiatry			Sheila Burnham sburnham@vcha.net
State of Vermont	Not in use for health-related purposes	Cisco bridge equipment currently not in use	Purchased for Department of Disabilities, Aging, and Independent Living in collaboration with Department of Education and other agencies		Could be reactivated—would require funding for updating and maintenance	Dana.bianchi@state.vt.us

Organization or Program	Partners in Use	Technology	Uses	Use vs Capacity	Barriers to Expanded Use	Contact
Type: Store-and-Forward Reimbursement not required by 2012's Act Relating to Telemedicine. If used, patient consent must be obtained.						
UVM Health	Primary care providers—pilot project	Access Dermatology: HIPAA-compliant mobile application (https://accessderm.aad.org) sponsored by American Academy of Dermatology	View skin rashes/ lesions and clinical history—make treatment recommendations to primary care clinicians Coordinates care and facilitates earlier in-person clinic visits in dermatology (6 months vs. 1 week)	Vermont: 19 dermatology specialists; 13 in or within 10 miles of Burlington with very long wait times (6 months)	Lack of funding to use more extensively Not reimbursed New mobile phone app with more clinical input about to be rolled out Other software available	Julie.Lin@uvmhealth.org
Type: Remote Monitoring Initiated and overseen by delivery system Limited coverage in Medicare's bundled home health care payment -Medicaid pilot for CHF patients -Bundled care coordination payment to primary care provider						
Certified Home Health Agencies	Physicians Cathedral Health Facilities (SASH program participants)	Honeywell Cardicom Phillips	Tele-monitoring statewide CHF pilot funded by Medicaid	Most agencies purchased original equipment with grants Significant capacity for growth pending payment adjustment	Most agencies do not have connectivity with other clinical data (no HIE connection) Limited number of Medicaid-only patients (mostly dual eligible, given the age ranges of Medicaid and Medicare beneficiaries Reimbursement does not cover costs	Peter Cobb vnavt@comcast.net

Organization or Program	Partners in Use	Technology	Uses	Use vs Capacity	Barriers to Expanded Use	Contact
Federally Qualified Health Centers	Collaborations with VNAs of Vermont and Central Vermont Home Health and Hospice		Daily monitoring of high-risk Medicare patients with COPD, CHF, and diabetes Tele-medication follow-ups			Melissa Miles Mmiles@bistatepca.org
Designated Mental Health Agencies			Tele-medication follow-ups currently being piloted			Simone Rueschemeyer Simone@vermontcarepartners.org
Type: Cloud-Based Interactive AV Software Applications That Can Be Downloaded to any Desktop or Mobile Device to Support Care Outside of Delivery System Facilities Reimbursable by Vermont Medicaid if between primary care and patients outside of medical facilities, as of passage of S. 139 (May 2015)						
Planned Parenthood Northern New England Pilot in 4 centers commenced in May 2015	Currently in: Barre Williston Newport St. Johnsbury 8 more planned	VSee Telemedicine Solutions	Patient care Includes a small patient satisfaction survey	Just starting—ability to increase capacity significantly	Grant funded	Wendy.campbell@ppnne.org
Selected individual clinicians	Patients	Mobile devices or wireless technologies (i.e., Skype-like but HIPAA-compliant programs)	Patient care -Follow-up -New problem, established patient -Referral from another provider	TBD	HIPAA-compliant software available with licensure; Skype not HIPAA-compliant Education of both clinicians and patients on appropriate use (guidelines available)	

Organization or Program	Partners in Use	Technology	Uses	Use vs Capacity	Barriers to Expanded Use	Contact
Type: Wearables Personal (and personally purchased) devices that monitor physiological parameters and activities and can serve to alert both patients and clinicians						
Individual Vermonters					Do not usually incorporate interoperability standards Frequently produce a surfeit of data that may be difficult to organize into usable information Rapidly developing, immature market	
Type: Social Networking						
Individual Vermonters		Multiple approaches and websites; includes gamification	Capitalizes on individual needs to share/compare progress in maintaining/ improving health/healthy activities	Burgeoning market with no oversight at the moment	Research and pilots on how to use to improve public health messaging still lacking	

Table 2: Environmental Scan of Statewide Telehealth Programs

Program Model	Financing	Population Served	Interstate Medical Licensure Compact	Technology Used	Uses for Technology	Outcome/ Performance Metrics	Barriers/ Challenges to Use	Policy Issues
Organization: Arizona Telemedicine Program **Contact:** Ronald Weinstein MD rweinstein@telemedicine.arizona.edu								
Membership-based	Federal and other grants; membership fees	Rural, geographically underserved	No	T1; T3; VPN; wireless; other	Telemedicine, Tele-pathology, Tele-diabetes, Ultra-clinics, Tele-Trauma; Tele-Home Health Education; Store-and-forward, real-time	160 sites connected	Competition with larger healthcare systems and evolving level of competition in the healthcare marketplace.	Reimbursement restricted to geography; restrictive parity legislation
Organization: Colorado Telehealth Network **Contact:** Ryan Westberry ryan.westberry@cotelehealth.net								
Hub-and-spoke	SIM grant	Rural and underserved regions	No	Broadband; Vidyo; Cloud-based tele-behavioral health platform	Telemedicine; Statewide image exchange service; Telecom programs	Primarily used between hospitals and affiliates; Broadband connectivity to 200 behavioral and physical health care sites	Geographical limitations on the use of technology; silos for telehealth information	No Medicaid reimbursement; geographical and clinical setting reimbursement restrictions

Program Model	Financing	Population Served	Interstate Medical Licensure Compact	Technology Used	Uses for Technology	Outcome/ Performance Metrics	Barriers/ Challenges to Use	Policy Issues
Organization: Georgia Partnership for TeleHealth **Contact:** Paula Guy Paula.guy@gatelehealth.org								
Subscription-based	Grants; donations (nonprofit)	Rural and medically underserved areas	No	T1; broadband; 4G; cloud	Telemedicine; Education; Advocacy; Consultative Services; Trauma; HIE	Over 800 connection points across state with cost savings of 60% for high-risk individuals	Home-based care is not reimbursable; limitations on cross-state private telehealth companies	Reimbursement limited to designated settings; Medicaid, Medicare, and private payers reimburse
Organization: Southern Illinois University Telehealth and Clinical Outreach **Contact:** Nina Antoniotti MD nantoniotti79@siumed.edu								
	Universal Services Funding; Illinois Legislature; federal grant subcontract through Illinois Department of Human Services	Rural	Introduced in February 2015	Broadband; 3G; 4G	Education; Training; Telehealth – Clinical care; Tele-psychiatry; Outreach	Educational programs connect with 30 sites from 4 other states	Medicaid reimbursement	Medicare reimbursement challenging; Medicare Advantage plans offer reimbursement; uneven parity

Program Model	Financing	Population Served	Interstate Medical Licensure Compact	Technology Used	Uses for Technology	Outcome/ Performance Metrics	Barriers/ Challenges to Use	Policy Issues
Organization: University of Mississippi - Center for Telehealth **Contact:** Kristi Henderson MD khenderson@umc.edu								
	Self-sustaining; grants; state funds for new initiatives; corporate sponsorship	Rural; underserved areas	No	T1; broadband	Telemedicine; tele-diabetes; remote patient monitoring; tablets; emergency medicine; adult and children's services; education; distance learning; video consults; mobile telemedicine carts	166 contracts; 100 clinical sites; over 30 specialties	Medicaid reimbursement	Reimbursement from self-insured policies; any provider can be reimbursed; Medicaid reimbursement a challenge; rate parity among private payers

Program Model	Financing	Population Served	Interstate Medical Licensure Compact	Technology Used	Uses for Technology	Outcome/ Performance Metrics	Barriers/ Challenges to Use	Policy Issues
Organization: Missouri Telehealth Network **Contact:** Rachel Mutrux mutruxe@health.missouri.edu								
Open architecture to connect providers instead of an integrated statewide network	Federal, state, institutional grants; telephone companies	Underserved	No	T1; broadband Polycom; web-based connections	Telehealth; training; education; technology support; research	Over 202 sites in 62 counties	Limits on interoperability; adoption; HIE is not readily used; limit on reimbursement for certain services	No uniform payment; legislative telehealth bills are being considered; Medicaid reimburses for some services; 100% mandated coverage unavailable; commercial insurers mandated to pay for telehealth

Program Model	Financing	Population Served	Interstate Medical Licensure Compact	Technology Used	Uses for Technology	Outcome/ Performance Metrics	Barriers/ Challenges to Use	Policy Issues
Organization: Nebraska Statewide Telehealth Network **Contact:** Dale Gibbs DaleGibbs@catholichealth.net								
Hub-and-spoke	T1 lines subsidized by Universal Service Administrative Company (USAC); membership fees	No target population	Introduced January 2015	T1	Telehealth; education; support; consultations; training; readiness of state for preparedness in the event of attacks and disasters	Over 110 sites	Adoption; difficult to enforce policy change as non-legal entity; competition; HIE is not well connected	Medicaid and all payers have parity for telehealth and in-person rates
Organization: University of New Mexico: Project ECHO **Contact:** Sanjeev Arora MD SArora@salud.unm.edu **Contact:** Erika Harding EHarding@salud.unm.edu								
Hub-and-spoke	Federal and private grants	Underserved	No	Broadband; Jabber	Education; training; inter-professional relationships; care management		Maintaining with fee-for-service models	

Program Model	Financing	Population Served	Interstate Medical Licensure Compact	Technology Used	Uses for Technology	Outcome/ Performance Metrics	Barriers/ Challenges to Use	Policy Issues
Organization: Utah Telehealth Network **Contact:** Deb LaMarche deb.lamarche@utn.org								
	Federal and state; USAC; membership fees	Rural	Yes	T1; ethernet-based services	Telehealth; education; support; network services; ECHO		Lack of engagement due to costs for connecting to the network; reimbursement restrictions; interoperability	Reimbursement policy improvements are being driven by the advisory council