



Telehealth in Skilled Nursing Facilities: Opportunities To Improve Quality, Health, and Costs of Care

Prepared for Center for Connected Health Policy

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Table of Contents

Executive Summary	1
Introduction	3
Overview of Skilled Nursing Care	5
Overview of Telehealth	7
Promising Telehealth in Skilled Nursing Facilities	9
Teleconsultation in Emergency Care	9
Remote Monitoring Technologies	141
Teleconsultations with Specialists	Error! Bookmark not defined. 4
Policy Opportunities and Recommendations	16
Appendix A: List of Interviewees	22
References	Error! Bookmark not defined. 3

Executive Summary

Despite its potential for transforming care delivery within the U.S. health system, telehealth still remains a largely under-utilized resource. This is expressly evident in skilled nursing facilities (SNFs) where technology adoption significantly lags behind other health services priorities. Broader deployment of telehealth in SNF settings offers considerable potential to help obtain the Triple Aim of better care, health outcomes, and per capita savings.

Telehealth involves the use of interactive audio, video or data communications to deliver health care services and has been primarily used by hospitals, health systems, and safety net providers to link health professionals, patients, and caregivers in a virtual network of care. Use of telehealth among SNFs has been limited, but a recent growth in the number of health care facilities implementing telehealth is beginning to demonstrate its potential to achieve cost-effective, efficient, and appropriate care in skilled and long-term care settings.

SNFs face growing workforce, care management, and clinical challenges in providing cost-effective, efficient, and quality care. SNFs provide services to a population of predominantly older adults who have limitations in their ability to independently care for themselves due to multiple and coexisting cognitive, physical and chronic conditions. An aging population and a lack of resources for long-term health care are leaving skilled nursing staff increasingly responsible for a growing frail patient population that requires significant medical, therapeutic, and rehabilitation services due to their significant risk for adverse, complicated, and costly health events. However, SNF physicians are often off-site or unavailable when patient assessments and care recommendations are most urgently needed. As a consequence, residents often have to be transported off-site to receive appropriate care such as to an emergency department for immediate assessment and possible hospitalization. Frequently they experience preventable negative health outcomes from the lack of timely care.

Telehealth holds promise for SNF settings in a variety of ways. It can provide remote access to specialist care in both unplanned emergency and scheduled care episodes. It can assist with providing quality care management by monitoring the safety and wellness of residents. Furthermore, telehealth can enable SNFs to achieve cost efficiencies by building confidence within the skilled nursing care team to proactively and effectively prevent negative health outcomes in clinical scenarios that may otherwise lead to costly, preventable, and sub-standard care. These workforce, care management, and clinical benefits can also translate into cost savings by enabling specialists to facilitate much-needed care remotely and improving the capacity of skilled nursing staff to provide quality care on-site which may lead to reductions in unnecessary transfers between care sites and preventable hospital (re)admissions.

Detailed studies on the use of telehealth in SNFs are scarce, but programs currently under development appear encouraging. This paper identifies three applications for telehealth technology in skilled nursing care settings that have had recent or ongoing studies that have shown preliminary promise:

- **Teleconsultation in Emergency Care**—enables a 24/7 consult between SNF staff and an emergency department (ED) physician to conduct a patient assessment to determine if an ED visit is necessary.
- **Teleconsultation with Specialists**—enables remote communication between a SNF provider and specialist for the monitoring, evaluation, and management of clinical conditions.

- **Remote Monitoring Technologies**—enable monitoring of resident safety and wellness through measuring and tracking indicators, including movement, vital signs, and sleep quality, among others.

This paper also identifies barriers to a more widespread adoption of these applications and offers a list of potential recommendations to address these barriers and facilitate the further use of telehealth in a SNF setting is provided.

Introduction

As with other sectors of the care delivery system, skilled nursing facilities (SNFs) are facing increasing pressures to improve clinical and financial performance despite limited resources and greater expectations inherent in health care reform. SNFs provide services to a population of predominantly older adults who have limitations in their ability to independently care for themselves due to cognitive, physical, and chronic conditions. SNFs face growing clinical, workforce, and care management challenges in providing cost-effective, efficient, and quality care. At the same time, SNFs are increasingly responsible for a frail patient population that requires significant medical, therapeutic, and rehabilitation services and, as a result, is at greater risk for adverse events that may lead to hospitalization.

As policies that target reductions in preventable hospital readmissions and promote accountable care become more prevalent, SNFs will need to respond appropriately. Payment and health care reforms, such as the provision in the Patient Protection and Affordable Care Act (ACA) that will introduce payment penalties under the Hospital Readmissions Reduction Program, are exerting pressure on providers across the care continuum to identify effective ways to improve hospital performance through reducing preventable readmissions. Starting in October 2012, hospitals will face medical payment penalties when they report 30-day readmission rates for the three high-volume and high-cost conditions (acute myocardial infarction, congestive heart failure, and adult pneumonia) when they exceed expected set thresholds. Medicare beneficiaries receiving care in SNFs, as a result, are particularly relevant to the discussion of preventable hospital readmissions. Telehealth can be an important tool available to SNFs to reduce readmission rates and to health care payers to minimize their financial risk as they capitalize on the move towards a more integrated and collaborative system of care.

Federal Reimbursement for SNF Services

- SNFs are the most commonly used setting for post-acute care services, treating 29 percent of Medicare beneficiaries requiring post-acute care upon discharge from the hospital. In fiscal year 2010, SNFs provided Medicare covered care to almost 1.7 million fee-for-service beneficiaries. After a qualifying hospital stay of at least three days, Medicare will pay the full cost of covered services for the first 20 days, partial cost between 20 and 100 days, and nothing after 100 days. For calendar year 2012, the average Medicare beneficiary co-pay is \$144.50 per day. Medicaid also covers co-payments of dual eligibles (both Medicare and Medicaid eligible) who stay 21 days or more in a SNF for post-acute care.
- On average, Medicare-covered SNF patients represent a small share of a facility's total patient population yet attribute to a disproportionately larger share of a facility's payments. At the median in 2010, Medicare-covered SNF days made up 12 percent of total patient days in freestanding facilities versus 23 percent of facility revenue.
- In 2011, Medicare spent close to \$32 billion on skilled nursing facility care.

Source: Medicare Payment Advisory Commission, 2012¹

Telehealth refers to a mode of delivery of medical care, health education, and public health services that utilizes information and communication technologies to connect multiple users in separate locations to enable the diagnosis, consultation, treatment, education, care management,

and self-management of a patient's health care, as well as the transfer of medical data between providers responsible for that patient's care.

SNFs are equally at risk financially from the introduction of health care reforms that will make them more accountable for performance-based outcomes. In March 2012, the Medicare Payment Advisory Commission (MedPAC) recommended to Congress that a new SNF re-hospitalization policy be instituted, including measures to reduce payments to SNFs that have relatively high rates of re-hospitalization.² Between 30 and 67 percent of hospitalizations among nursing facility residents could be prevented with well-targeted interventions.³ Skilled nursing facilities are the most commonly used setting for post-acute care services, treating 52 percent of Medicare beneficiaries needing care after hospital discharge.⁴ CMS research on Medicare-Medicaid enrollees in nursing facilities found that approximately 45% of hospital admissions among those receiving either Medicare skilled nursing facility services or Medicaid nursing facility services could have been avoided, accounting for 314,000 potentially avoidable hospitalizations and \$2.6 billion in Medicare expenditures in 2005.⁵ The deployment of telehealth represents an opportunity in skilled nursing care to support improved collaboration between SNFs and other providers and to address the successful coordination of care for both long-stay as well as post-acute care residents.

This paper reviews the current and potential use of telehealth to improve care delivery in SNFs and describes barriers that inhibit more widespread use of telehealth by SNF providers. Three potential uses of telehealth in SNFs are explored through recent or ongoing studies. Last, several policy changes are recommended to better support use of telehealth in SNFs.

The methodology employed for this paper included a comprehensive literature review of SNF service provision, long-term care populations served, telehealth reimbursement models, and telehealth deployments in SNFs and other health care settings. The authors conducted interviews with experts in the areas of technology, health policy, and long-term care, as well as with SNF staff engaged in the deployment of telehealth applications. These key informant interviews provided information on the types of telehealth systems in use, issues encountered during the implementation of telehealth programs, and policy recommendations for addressing the challenges and barriers to implementing telehealth. A list of the interviewees is provided in Appendix A.

Overview of Skilled Nursing Care

Skilled nursing facilities (SNFs) are health care institutions that provide short-term or long-term medical treatment of a general or specialized nature not performed in a hospital setting. A SNF, which can be part of either a nursing home or hospital, can also provide greater levels of long-term custodial care and support in addition to furnishing skilled nursing and rehabilitation services. Medicare and Medicaid are the two primary sources of payment for post-acute, short-stay and chronic-care, long-stay services, respectively, delivered within SNFs. Medicaid also covers skilled nursing care costs furnished in SNFs that Medicare does not cover.

The majority of SNF residents are 65 years of age and older. Because of limited self-care abilities due to physical, cognitive, or chronic health conditions, SNF residents require round the clock care and rely on skilled nursing or rehabilitation staff to manage, observe, and evaluate their care, often for extended periods of time. Patients receiving care in SNFs are increasingly frail, which is leading to an increase in the needed level of intensity of medical, therapeutic, and rehabilitation services (and staffing). As a result of their clinical complexity, SNF residents are at increased risk for adverse health events such as falls, fractures, pressure ulcers, nosocomial infections, and complications from medications.

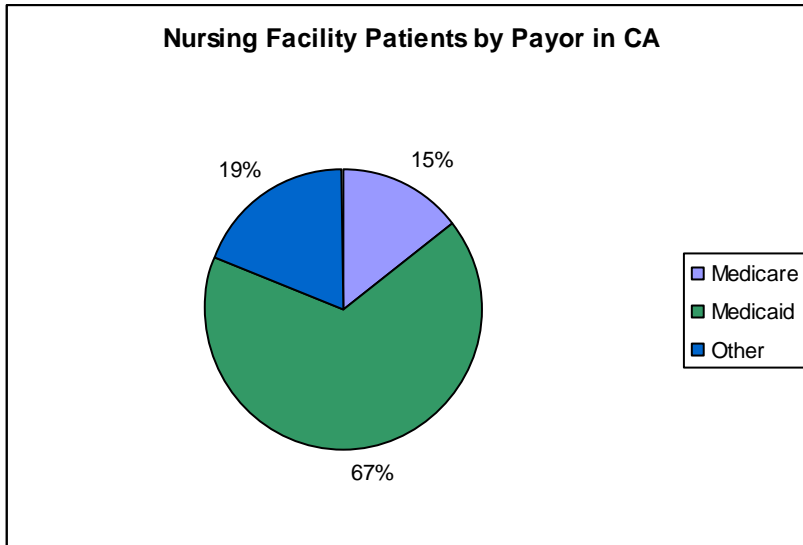
Skilled nursing facility staffing generally includes registered nurses, licensed practical and vocational nurses, physical and occupational therapists, and certified nursing assistants. The prevailing staff model in nursing homes employs paraprofessionals under the supervision of a registered nurse to provide direct care to residents on a continuous basis. SNFs experience high levels of staff turnover, which makes continuity of individual patient care challenging from a staffing perspective. Although many facilities have standing arrangements with community physicians or specialists to provide care on-site, these physicians are often off-site or unavailable when patient assessments and care recommendations are most urgently needed. In many instances, patients have to be transported off-site to an emergency department for immediate assessment and care.

Skilled Nursing Facilities, Patients and Common Conditions

- There are approximately 16,000 Medicaid-certified nursing homes nationwide, 85 percent of which are dually Medicare-certified¹. The facility type where beneficiaries seek care is shifting towards for-profit and freestanding clinics.⁶
- The proportion of patients in SNFs categorized as having major or extreme severity of illness increased from about 45 percent in 2005 to 53 percent in 2009. Respiratory, kidney, and other infections are common diagnoses among SNF patients, as well as recovery from surgical procedures, such as joint replacements.⁷
- Between 2005 and 2009, the percentage of Medicare SNF patients with eight or more co-morbidities increased from 74.8 percent to 86.9 percent, whereas the number with one to five co-morbidities decreased from 11.0 percent to 5.3 percent. The leading co-morbidities among SNF patients include hypertension, arthritis, coronary heart disease, depression, diabetes, and Parkinson's disease.⁸

The existing policy environment creates financial incentives that unintentionally contribute to high SNF re-hospitalization rates. Medicare reimbursement levels are more generous than that of Medicaid. When Medicaid is the primary payer for an individual SNF resident, hospitalization of

that resident is an opportunity to cost shift from Medicaid to Medicare. This is because a hospital stay of 3 or more days will qualify the resident for a Medicare-covered SNF stay of up to 100 days upon their return. (Medicare reimbursement for SNF care is limited to post-acute care stays under the SNF benefit.) With states facing ongoing budgetary problems, the ability to cost shift expensive health care cost to the federal government is an attractive alternative to alleviating their financial woes. For example, a state like California, that has seen consistent revenue shortfalls over the last few years, has a majority of their nursing facility patients in the state reliant on its Medicaid program (see chart). Having a mechanism that will place some of the financial burden on the federal government and alleviate the state coffers could result in a more fiscal approach to care rather than what could be best for the patient.



Overview of Telehealth

Telehealth is the use of digital information and communications technologies to deliver medical care, health education, and public health services, by connecting multiple users in separate locations. Telehealth removes traditional economic, professional, and geographic barriers to delivering care by linking healthcare professionals, patients, and caregivers in a virtual network to facilitate the delivery of cost-effective, efficient, and appropriate care services. Telehealth services are delivered in one of three main ways: 1) video conferencing, 2) remote monitoring, and 3) store and forward technologies.

- **Video Conferencing Technologies** - Video conferencing includes two-way interactive, audio-visual communication utilizing devices such as video cameras, web cameras, videoconferencing systems, videoscopes, computer screens, tablets, televisions, and projectors. Video conferencing minimizes geographic barriers and can be used for teleconsultations between patients and providers, provider-to-provider discussions, and language translation services. Video conferencing can improve clinical outcomes through timely and appropriate access to clinical expertise.
- **Remote Monitoring Technologies** - Remote patient monitoring (RPM) technologies can be used to track patient vital signs, behavioral health, and patient safety such as fall detection and wellness indicators. The data is passively or actively collected and electronically transmitted from the patient's location to health care providers, caregivers, or third parties in another location. Data analysis can trigger a real-time intervention or assistance. Remote monitoring technologies are used to manage chronic conditions and post-acute care, and facilitate an important means of care delivery along the continuum of care. Remote monitoring technologies can increase access to health care, provide an early warning system for providers with changes in patients' health, and improve patient education and self-management, leading to improved patient outcomes and reduced exacerbations of patients' conditions. RPM is commonly used by doctors to monitor blood glucose level in diabetic patients and to monitor blood pressure in patients receiving cardiac care.
- **Store and Forward Technologies** - Store and Forward Technologies allow for the electronic transmission of pre-recorded videos and digital images, such as X-rays, video clips and photos, between primary care providers, patients and medical specialists. Most store and forward technologies are primarily used between providers to help with making diagnoses, usually in radiology, dermatology, ophthalmology and pathology. Patients can also use store and forward technologies to send images to providers as in the case of dermatology concerns. The use of store and forward technologies can improve access and quality of care by hastening specialty care review and treatment.

Telehealth policies vary from state to state. Medicare offers the states flexibility in how their programs will utilize telehealth, if at all. Some states allow for greater integration of telehealth into their Medicaid programs. For example, California recently passed state legislation, The Telehealth Advancement Act of 2011(AB 415), which created an environment conducive to greater utilization of telehealth technologies in the delivery of health care services by eliminating barriers.⁹ While AB 415 does not mandate reimbursement for telehealth services, it removes obstacles for payers and providers to incorporate such technologies into care delivery. Many states are considering telehealth as a potential means to meet increased demands to attain the Triple Aim in the face of resource shortages.

However, other states have emulated Medicare's more restrictive policy when dealing with telehealth or at this time have not utilized it at all in their Medicaid programs. Medicare only

provides limited scenarios in which telehealth will be reimbursed. For example, Medicare will only reimburse in specific rural settings. Specifically, only Medicare beneficiaries residing in rural health professional shortage areas (HPSAs) are eligible to receive telehealth services. Additionally, where the originating site where the Medicare beneficiary receives the services must be located in a HPSA in a county that is not a metropolitan statistical area (MSA). These two geographic restrictions present several barriers.

Defining MSAs by county line may result in rural communities more than an hour outside of the city limits being defined as metropolitan, limiting the population's access to care. HPSAs are designated by the Health Resources and Services Administration as having shortages of primary-medical care, dental or mental-health providers and may be geographic (a county or service area) demographic (low income population) or institutional (comprehensive health center, federally qualified health center or other public facility). While the population might have access to these types of care, specialty care may still be limited.¹⁰ Other Medicare limits on telehealth include allowing only store and forward to be utilized in demonstration projects in Alaska and Hawaii, a small reimbursement rate for the primary care provider at the originating site,¹¹ allowing only specific providers to offer services delivered via telehealth and limits on the types of reimbursable telehealth services. However, recently, Medicare did approve SNFs to be an originating site.

Promising Telehealth Applications in Skilled Nursing Facilities

Telehealth remains a largely underutilized resource within SNFs. However, several applications have shown promise in a SNF setting and in meeting the goals of the Triple Aim.

Teleconsultation in Emergency Care

Nearly 3 million transports are made annually from SNFs to emergency departments (EDs) at a cost of almost \$4 billion in transportation and ED visit costs. On average, the typical ED visit, including round trip ambulance service, costs \$2,500.¹² Approximately 40 percent of SNF residents who develop symptoms that represent a possible medical emergency (e.g., fever or significant changes in heart rate or oxygen saturation levels) are transported to an ED even though emergency care is not required.¹³ A number of factors contribute to unnecessary ED visits. Many SNF residents are critically ill, burdened with multiple chronic conditions, and retain unstable health conditions. When a resident's condition worsens, SNF staff must determine whether the circumstances are serious and urgent enough to warrant transport to the ED. Physicians are frequently off site and unable to properly evaluate or treat acutely ill residents, so staff is instructed to send any possible medical emergency to the ED, even those cases that fall into a "gray area" where the benefit of sending the patient may be minimal and is not sufficient enough to the SNF to pay for the transport or to threaten the condition of the patient.

SNF residents without urgent care needs but who have been sent to the ED, often wait alone for many hours before being seen by a physician. Once seen, they may wait again for transportation back to the nursing home. This experience creates significant stress for residents, particularly those with cognitive impairment. Residents requiring transport to EDs or hospitals are at greater risk for transfer trauma which is associated with higher mortality rates as well as increases in falls, fractures, infections, confusion, and exacerbations of underlying medical conditions.

One obvious benefit of utilizing telehealth technologies is avoiding unnecessary transportation offsite to receive unplanned, urgent care at emergency departments or scheduled, specialized care at physician offices. Preliminary studies indicate that teleconsultations between SNFs and emergency room physicians, utilizing two-way videoconferencing technologies, can reduce stress and other negative health effects on patients as well as generate cost savings through avoiding patient transfers and unnecessary ED visits. The aforementioned Cusack 2007 study conducted by CITL projected that widespread use of teleconsultations between nursing homes and EDs in the US could reduce ED transports by 12.5 percent. This translates into an estimated 2.7 million nursing residents who could avoid being transported to EDs for care a year and would save \$3.62 billion.¹⁴

A reduction of unnecessary transfers of frail patients not only reduces costs for the SNF but alleviates stress for the patient that may further complicate their condition. An estimated 40 percent of nursing facility residents is admitted to the hospital in a typical year, one-quarter of which may be preventable. Of these admissions, about 14 percent of patients that are discharged directly from hospitals to skilled nursing facilities are sent back to the hospital for conditions that could have been avoided.¹⁵

Another promising benefit of SNFs utilizing telehealth is efficiently increasing the capacity of an existing staff model to provide effective, on-site management of patients by allowing nursing staff to consult with a patient's physician, another primary care physician, or a specialist off-site. SNF staff also benefit by being able to receive timely and critical decision support at the point of care.

In a pilot completed in Georgia in 2011, the ED of the Medical College of Georgia's Health Medical Center provided teleconsultations to 10 SNFs in five rural communities. The intervention allowed for an ill SNF resident to be evaluated by an ED physician to determine if any treatment was necessary and to decide if a trip to the hospital was warranted. In 10 out of 20 telehealth consults, the ED physician concluded that the patient did not need to be transported to the hospital. Prior to implementation of the program, all 20 patients would likely have been transported to the ED.

The challenges encountered in the pilot were cost of equipment and connectivity, a state requirement for a licensed physician to be credentialed to provide services to a SNF, and the site of the telehealth equipment.

Profile 1: Teleconsults with Emergency Department Physicians

Project Description – Effectiveness of teleconsults from Medical College of Georgia Health Medical Center emergency department (ED) to nursing homes that are enabled by two-way video conferencing equipment.

Care Setting – The intervention was implemented in 10 SNFs in 5 rural Georgia communities.

Description of the Telehealth Intervention – The intervention employs video conferencing. When a SNF resident becomes ill, a nurse brings him/her to a room with video conferencing equipment and calls the Medical College of Georgia Health Medical Center for a consultation with an ED physician. The physician evaluates the individual's condition, determines any necessary treatment, and decides if the individual needs to be seen at a hospital.

Project Status – Pilot completed in 2011.

Targeted Outcomes – Outcomes include 1) reducing costs associated with unnecessary ED transports/visits; 2) reducing patient stress and other negative health effects that are associated with unnecessary transports to the ED; 3) improving decision support available to SNF staff; and, 4) reducing the burden on medical directors/attending physicians which improves the SNF's ability to recruit physicians.

Key Success Factors – The ability to get reimbursed for teleconsultations and the time taken to carefully engage and train stakeholders were important success factors.

- **Reimbursement:** The virtual ED visits were eligible for Medicare reimbursement.
- **Obtaining stakeholder support:** The lead physician met with representatives of the telemedicine partnership and nursing home company to explain reductions in patient stress that could result from the program and the potential cost savings. To ensure support, he met with staff at each SNF as well as with all ED physicians.
- **Training nursing home staff:** In most instances, the charge nurse at each SNF took initial and ongoing responsibility for staff training on the telemedicine equipment.

Challenges and Barriers – Challenges and barriers center around credentialing, equipment, and costs:

- **Establishing central credentialing:** To provide consultations using telehealth, all participating ED physicians had to be designated as nursing home staff, which required obtaining credentials through the state's Central Credentialing Program. The credentialing process introduces potential delays in the start-up phase of telehealth implementation and adds to the costs.
- **Large, non-portable Equipment:** The equipment used for teleconsults, including video conferencing and peripherals, was not portable, requiring staff to move the patient to the equipment in a dedicated room.
- **Cost of T1 Lines:** Each SNF paid approximately \$400 per month for a T1 line.
- **Equipment Costs:** Each telehealth unit costs \$20,000. (The participating SNFs did not

pay for equipment; The Georgia Partnership for Telehealth paid for the 10 telehealth units with state funds.)

Remote Monitoring Technologies

Remote patient monitoring (RPM) interventions have been shown to be effective in the management of post-acute care and chronic diseases and can lead to interventions that prevent emergency room visits and re-hospitalizations. RPM technologies are designed to remotely collect, track, and transmit data related to patients' health from the patient care setting to a care provider or case manager in a physically separate location. It has repeatedly demonstrated effectiveness in sharing real-time health information and education and in allowing for immediate feedback and adjustment. The most documented successful use of RPM has been with the management of post-acute care and chronic diseases, such as congestive heart failure where real-time monitoring of biometric patient data has been shown to prevent adverse health events, emergency rooms visits, and re-hospitalizations. The use of RPM by SNFs is holds many promising applications and the potential impacts are highlighted in the following clinical settings:

- The Veterans Health Administration offers robust evidence of success with RMP from its home telehealth program offering routine non-institutional care and chronic-care management for over 60,000 patients. Overall, the VHA's program showed a 25 percent reduction in bed days of care and 20 percent reduction in numbers of admissions in 2006 and 2007. The \$1,600 cost of the program (USD per patient per annum) is significantly lower than home-based primary care services (\$13,121 USD per patient per annum) or nursing home care (average \$77,745 USD per patient per annum).¹⁶
- The British Whole Demonstrator Programme also contributes significantly to the evidence base of telehealth and telecare. Launched in May 2008 with over 6,191 patients among 238 practices, the preliminary evaluation results indicate that properly delivered telehealth services can amount to a 15 percent reduction in emergency department visits, a 20 percent reduction in emergency admissions, a 14 percent reduction in elective admissions, a 14 percent reduction in bed days and an 8 percent reduction in tariff costs. The trial also demonstrates a 45 percent reduction in mortality rates.¹⁷
- One study analyzed data collected from a demonstration project at UMass Memorial Medical Center and two community hospitals in Massachusetts who employed tele-ICU technology, a telemedicine application that utilizes RPM. It found that not only does tele-ICU technology allows physicians and nurses who specialize in critical care to monitor a higher volume of ICU patients in multiple, distant locations from a centralized command center, but could, if broadly and effectively implemented across Massachusetts, save an additional 350 lives, benefit hospitals financially, and save more than \$122 million annually with a reduced length of patient stay.¹⁸

Remote monitoring technologies can be used to track vital signs, behavioral health, location, balance, and gait related to resident chronic conditions, post-acute care, and safety and wellness. A principle form of remote monitoring for safety and wellness utilizes sensors placed around an older adult's residence. Remote monitoring technologies offer skilled nursing providers the ability to remotely yet effectively monitor residents with sensor data to determine potentially preventable adverse effects on health from common nursing facility ailments, such as: falls, sleep disorders and poor response to medication, lack of repositioning, dehydration, and UTIs. Analyzing biometric patient data trends may indicate emerging injurious health conditions or

safety concerns. Prompting timely intervention on the part of the provider will save both the patient and the provider from a potentially worse outcome.

Remote monitoring technologies offer SNFs great potential for early detection of other patient ailments that are commonly developed in a nursing facility setting. Severe sepsis and kidney or urinary tract infections are among the top three most common hospital diagnoses preceding admission to a nursing facility.¹⁹ These complications, along with pneumonia, ranked as #6, and pressure ulcers, are a critical high-cost and high-volume adverse event for SNFs, and a key clinical indicator of the standard and effectiveness of the quality of care delivered in skilled nursing facilities,²⁰ as SNFs are held responsible for their severity and even their existence.

RPM can be utilized by SNFs for the early detection of or ongoing management of sleep disorders, which are commonly under-diagnosed of significant concern in the geriatric population as the amount of sleep is largely correlated to a senior's quality of life. In a recent study, a group of senior living residents reported that 65 percent experienced sleep disturbances, thereby lessening their ability perform daily activities, increasing their symptoms of depression, and negatively impacting their quality of life.²¹ Sleep monitoring can also provide insight into medication treatment responses and provide information about patient pain levels. This information can help SNF providers detect: otherwise unnoticed sleep restlessness; the beginnings of UTIs and other common infections; and patient repositioning needs to avoid pressure ulcers.

In 2004, Volunteers of America (VoA) initiated use of sensor networks to remotely monitor residents in assisted living and skilled nursing facilities. In 2011, VoA deployed a wireless version of WellAWARE, a wireless sensor network that transmits data on wellness indicators, including sleep quality, activity levels, bathroom visits, and other physiological information, to a data manager where analytical software tracks changes in these metrics in their skilled nursing facilities. Caregivers and clinicians can access patient data and trending reports through a secure website and can establish alerts when changes in metrics indicate the need for immediate attention. As of early 2012, WellAWARE had been installed in six VoA SNFs with the goal of implementing the intervention in all 14 nursing homes by the end of 2012 (totaling over 1200 beds).

VoA conducted two pilot studies utilizing WellAWARE in their assisted living facilities prior to introducing remote monitoring in SNFs. The first pilot study showed improved quality of care in terms of early detection of UTIs and patients that require repositioning at night versus others that can reposition themselves on their own. The second pilot study showed reduced cost of care for individuals using the intervention compared to those not using the technology when measuring frequency of medical utilization (doctors' office visits, ED visits, hospital day stays, etc.). Anecdotal evidence indicated that remote technology led to reductions in falls and sleep restlessness and improvement in pain management. Additional anecdotal evidence on workforce efficiencies and engagement found that remote monitoring helped staff reduce the number of telephone calls made to doctors' offices by 40 percent. Workforce utilization of the technology at night resulted in increased resident engagement by identifying individuals needing additional attention. Staff reported feeling more involved in the care of the patient and more engaged as part of the care team.

Challenges encountered in the pilot have been reimbursement and the costs of the technology.

Profile 2: Remote Monitoring of SNF Residents' Safety and Wellness

Project Description – Monitoring patient wellness indicators with the use of wireless sensor networks and analytic software to proactively improve older adults' quality of life and avoid serious and costly health complications.

Care Setting – Volunteers of America (VoA) is one of the nation's largest non-profit providers of affordable housing for seniors and a major provider of long-term care, including a continuum of services consisting of assisted living, home health care, memory care, rehabilitation, and skilled nursing care. VoA owns and operates over 25 health care facilities including 14 SNFs.

Description of the Telehealth Intervention – The technology employed, WellAWARE, consists of a wireless sensor network that transmits data on wellness indicators, including sleep quality, activity levels, bathroom visits, and other physiological information, to a data manager, where analytical software tracks changes in these metrics. Caregivers and clinicians can access patient data and trending reports through a secure website and can establish alerts when changes in metrics indicate the need for immediate attention.

Project Status – VoA initiated its use of sensor networks (an early version of WellAWARE) in 2004. In 2011, VoA deployed a wireless version of WellAWARE in their skilled nursing facilities. As of early 2012, WellAWARE had been installed in 6 VoA SNFs with the goal of implementing the intervention in all 14 nursing homes by the end of 2012 (totaling over 1200 beds).

Targeted Outcomes – Targeted outcomes included improvement in: 1) clinical outcomes (reduction in UTIs, improvement in sleep quality, early detection of health issues associated with poor sleep quality, increased interventions to adverse drug reactions); 2) patient safety (reduction in falls); 3) workforce productivity (improvement in efficiency, engagement); and 4) health care utilization (reduction of avoidable medical utilization).

Key Success Factors – Staff training, education, technology champions and strong leadership helped to achieve staff buy-in to the use of remote monitoring and led to successful implementation. Nurses adapted well to the system, almost intuitively. Rollout of the technology within each nursing home was initially conducted in smaller-sized units to demonstrate early success before remote monitoring was implemented in all units.

Challenges and Barriers – Challenges to date include the cost of providing the technology coupled with a limited private-pay market. VoA pays for the intervention by incorporating the system within its standard of care. As the system is deployed to all skilled nursing facilities, residents will not have the option to opt-out of the program; remote monitoring is the new standard of care within VoA. Rolling out the technology to all 14 nursing homes spans multiple states. This creates a challenge in that staff members must travel to oversee the deployment of the intervention in new sites and varying state policies may prevent the complete utilization of telehealth at certain sites.

Teleconsultation with Specialists

Patients requiring specialty care often face geographic barriers because they live in remote, rural areas where there is a lack of specialists locally, or they may face physical or financial barriers that place limitations on their ability to commute to in-person visits on a regular basis. In the pilot intervention profiled below, the use of teleconsultations can provide greater access, more efficient use of resources, and productive use of the visit time that lead to improved quality of care and quality of life for patients.

Teleconsultations involving SNF residents with Parkinson's disease is one promising telehealth service application that has gained traction in recent years. Studies have shown that people live for approximately one-fifth of their lives with the disease, and that 40 percent of these individuals will require nursing home care at some point in time. A study by the American Parkinson Disease Association (APDA) involving 300 Parkinson's patients reported that those with access to specialty care were three times more likely to be satisfied with their care than those who saw a general neurologist. Approximately half of SNF residents were determined to either have possible or probable Parkinson's. For those patients who have already been diagnosed with Parkinson's, the randomized, controlled APDA pilot trial reported that participants in teleconsultations providing sub-specialty care experienced significant improvements in their quality of life and symptoms compared with those who received usual care.²² Early diagnosis of Parkinson's, which can be accomplished via teleconsultation, is necessary for the most effective treatment and long-term control.

Neurologists at The Johns Hopkins Parkinson's Disease and Movement Disorders Center have been early implementers of telehealth for the treatment of Parkinson's disease. Though virtual Parkinson's disease consults are not widespread and evidence is mainly anecdotal, patients seem very satisfied with the approach and physicians feel that it is highly effective. A study involving the use of teleconsultation to facilitate a visit between a SNF resident with Parkinson's disease and a movement disorders specialist reported that the web-based videoconferencing technology was effective, resulting in improvements in motor and cognitive symptoms.²³

In an ongoing pilot program launched in 2011 in Pennsylvania, Phoebe Home, a SNF with approximately 400 individuals with 395 certified skilled nursing beds worked with Lehigh Valley Health Network (LVHN) to replace traditional office visits to the neurologist's office for their residents with a telehealth-enabled service. Initial visits are done in the neurologist's office, but subsequent visits are conducted via telehealth. Results are preliminary, but so far, clinicians report that the telehealth service is more efficient in accomplishing clinical goals than an in-person office visit. The principal reasons are because it eliminates many of the process inefficiencies (i.e., delays in arriving at scheduled visits and lack of complete clinical information accompanying the patient) as well as minimizes any adverse impacts on patients (i.e., disorientation and inconvenience). In addition, patients are often accompanied by a family member and caregiver during the teleconsultation which specialists find also contributes towards enhancing the quality and productivity of the actual consultation in accomplishing clinical goals.

The Phoebe Home pilot raised concerns about interoperability and regulatory compliance with privacy and security regulations. Reimbursement was also found to be a mitigating factor in continuing the project. Their experience with the specialty teleconsultations pilot, along with its successes, are detailed below in Profile 3.

Profile 3: Teleconsults Between Neurologists and SNF Residents

Project Description – Telehealth-enabled service to replace the traditional office visit to the neurologist’s office for SNF residents with Parkinson’s disease and movement disorders

Care Setting – Phoebe Home (PH) is the primary referral site for skilled nursing care for patients at Lehigh Valley Health Network (LVHN) in Pennsylvania, providing skilled nursing care to approximately 400 individuals (395 certified skilled nursing beds).

Description of the Telehealth Intervention – Patients have an initial visit in the neurologist’s office; subsequent visits are conducted via the telehealth system. Teleconsults are conducted using a videoconferencing system on a mobile cart. The system employs standard off-the-shelf videoconferencing equipment (approximate cost: \$16,000 for the base unit). During the telehealth visit, a nursing home staff member is present with the patient and can act on clinician’s instructions to check a reflex or put the patient through specific diagnostic procedures. Oftentimes family members are also present allowing the clinician to ask questions of patient, family caregivers, and staff.

Project Status - This pilot program was launched in January 2011 and is ongoing.

Targeted Outcomes – Outcomes include improvements in 1) clinical outcomes and control of escalating expenses compared to the traditional approach of providing care via scheduled in-person office visits, 2) the functional status of patients as a result of being able to adjust medications through visual observations, and 3) team-based care coordination.

Key Success Factors – critical factors for successfully implementing teleconsultation into practice have been leadership, an open culture of innovation, and staff education. Both PH and LVHN recognize the importance and value of collaboration in achieving a higher quality of care and services for residents in an efficient manner and with improved outcomes. Physician commitment from the outset was also critical to the program’s success, as was ensuring the intervention was in compliance with and alignment with state regulatory requirements for electronic care management across settings.

Challenges and Barriers – Challenges in the initial implementation and barriers to sustaining the intervention center around technical integration, regulatory compliance, and reimbursement:

- **Technical interoperability and regulatory compliance:** Teleconsults need to develop a seamless technical interface that also fully complies with HIPAA requirements.
- **Reimbursement:** There is a need to establish a fee schedule for teleconsultation services specifically linked to clinical outcomes.

Policy Opportunities and Recommendations

The need for SNFs to reinvent care using technologies has never been greater. SNFs are operating under ever-mounting pressures from payers and policymakers to assume greater accountability and improve efficiencies while simultaneously serving an increasingly frail patient population.

Telehealth has the potential to help expand the capacity of SNFs to proactively manage care, optimize clinical outcomes, and generate cost savings. However, several federal and state policies limit the ability of SNFs to realize this potential. Financial incentives and supports are limited and many telehealth-related licensing and scope of practice policies place burdensome requirements on SNFs that seek to implement technology-based solutions. A policy environment that better encourages SNFs to invest in information and communications technologies and to use telehealth, more specifically, is clearly needed. Supportive policies are also needed to establish critical resources that will help SNFs implement these technologies into and support their use in practice.

Several policy challenges and opportunities are described below. Each description includes a recommendation related to federal or state policies that will encourage SNFs to take advantage of telehealth to meet current and future challenges, and to facilitate the integration of telehealth into standard care practices.

MEDICARE REIMBURSEMENT POLICY

A re-occurring theme when discussing barriers is reimbursement. Medicare currently has several restrictive policies that limit the full utilization of telehealth in the health care system. Geographical and facility restrictions are among the barriers in Medicare policy. While SNFs are considered an eligible site, they must be located in a Primary Care Health Professional Shortage Area (HSPA) not near a Metropolitan Statistical Area (MSA). These geographical restrictions disadvantage states like California, where 98 percent of SNF beds are located in urban areas in or near MSAs.²⁴

Additionally, Medicare's geographic barriers severely limit telehealth access to specialist or urgent care for SNF residents because an HSPA designation usually refers to a shortage of primary care providers and does not reflect existent shortages of specialty care providers. A location may not be considered a HPSA because of an adequate number of primary care providers, but it may still lack an adequate number of needed specialists.

At this time, Medicare also does not currently reimburse for usage of remote monitoring technologies. CMS' demonstration project, Care Management for High Cost Beneficiaries (CMHCB)—Health Buddy Program, showed that use of RPM was associated with improved patient care, reduced costs, and lower rates of mortality. Though the demonstration did not include SNF patients in its sample, the favorable results could set the stage for Medicare reimbursement of RPM.²⁵ With recent changes in the process of approving new reimbursable telehealth services in place, many telehealth stakeholders hope that Medicare will soon consider RPM as an eligible use of telehealth in the program.

Medicare does not reimburse for Store-and-Forward outside of the demonstration programs in Alaska and Hawaii. Store-and-Forward has proven to be an effective and efficient means of delivering services in certain specialties, for example in dermatology and ophthalmology.

Providers at the originating site are at a significant disadvantage when seeking reimbursement for telehealth. While specialists at the distant site are reimbursed for a full office visit during a telehealth encounter, the provider at the originating site is paid a facility fee—an amount that is

far less than what he/she would be reimbursed for an in-person visit. This unequal reimbursement discourages primary care providers from using telehealth.

An inadvertent effect of Medicare's restrictive policy has been its influence on Medicaid policy. While states are given flexibility to integrate telehealth more deeply into their Medicaid programs, some states have followed the more restrictive Medicare model of telehealth reimbursement.

Recommendations:

- Eliminate geographic restrictions currently used in the Medicare program when providing telehealth services.
- Implement a more equitable reimbursement policy for originating site providers.
- Expand use of store-and-forward beyond demonstration sites in the Medicare program.

HOSPITALIZATION READMISSION REDUCTION POLICIES

Reducing hospital readmissions may be the most immediate policy opportunity for nursing home operators to deploy technology to improve health outcomes and thus performance. Two studies that reviewed medical charts to determine hospitalization appropriateness found that almost 40%, (Saliba and colleagues 2000 study), and more than 60% (Georgia, Ouslander, and colleagues 2010 study) of hospital admissions of nursing home residents were unnecessary.²⁶ Unnecessary hospitalizations are costly to Medicare and, to a lesser extent, Medicaid. In 2005, Medicare and Medicaid spent \$2.6 billion on acute hospital costs for potentially avoidable hospitalizations among dual eligible nursing home residents. For each hospital stay, Medicare paid approximately \$7,600 and Medicaid paid about \$300 on average.²⁷ These hospitalizations are unnecessarily difficult for SNF residents as well, causing disruption, risk of complications like infections, and impaired functioning upon return to the SNF.

In March 2012, MedPAC recommended to Congress that a new SNF re-hospitalization policy be instituted, including measures to reduce payments to SNFs that have relatively high rates of re-hospitalization.²⁸ Medicare payment penalties for hospitals reporting 30-day readmission rates for three high-volume and high-cost conditions that exceed expected set thresholds become effective October 2012. In 2015, the list of conditions is anticipated to be expanded to include chronic obstructive pulmonary disorder and several cardiac and vascular surgical procedures. Penalties will not be limited to the individual diagnoses but will be levied against a SNF's total annual Medicare reimbursement payment.

Current SNF re-hospitalization initiatives include the Value-Based Purchasing (VBD) Demonstration for Nursing Homes initiative and the Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents. The VBD initiative is currently operating in Arizona, New York and Wisconsin. The initiative aims to improve the quality of care of nursing facility residents and achieve Medicare savings by reducing hospitalizations. Participating nursing facilities receive annual payment awards based on attaining quality targets, 30 percent of which are attributable to reducing avoidable hospitalizations from SNFs. The Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents provides funding for organizations to test new models of care that will result in lower SNF re-hospitalizations among enrollees that are dually eligible for Medicare and Medicaid.

The Medicare-Medicaid Coordination Office, in collaboration with the Center for Medicare and Medicaid Innovation, announced in March 2012 a new initiative to help States improve the quality of care for long-stay residents in nursing facilities by reducing preventable inpatient hospitalizations.²⁹ This initiative calls for evidence-based interventions that reduce avoidable

hospitalizations and provides an opportunity to pilot the use of telehealth. Technology-based initiatives will foster improved communication and coordination among existing providers, which may prove particularly valuable for medication-related care management and for behavioral health assessments, treatment and management. Interventions will be evaluated for their effectiveness in improving health outcomes and providing residents with a better care experience. This initiative is expected to last for four years from August 2012 to August 2016.

Recommendations:

- CMS should specifically allocate funds to further test and evaluate telehealth's effectiveness in reducing SNF hospitalization rates like the Value-Based Purchasing Demonstration.
- CMMI's new initiative to help States improve the quality of care for long-stay residents should put a priority on projects that utilize telehealth.

STATE TELEHEALTH REIMBURSEMENT POLICY

Telehealth reimbursement policies vary from state-to-state. Several states have instituted supportive policies, such as relaxing standards by which state Medicaid programs will reimburse for telehealth services and introducing quality improvement measures that offer opportunities for greater use of telehealth to improve care and costs associated with long-term care. But others have replicated Medicare's more restrictive telehealth policies, (e.g., restricting reimbursement to rural areas, not reimbursing for store and forward) even though states have considerable flexibility to institute more expansive policies.

California recently enacted the Telehealth Advancement Act of 2011 which, among other features, eliminated several barriers to expand telehealth opportunities for consumers, payers, and providers. For example, the Act expanded the potential list of facilities and licensed medical professionals that could offer telehealth services.

Minnesota serves as a model of how states can utilize policy to encourage SNFs to innovate to improve quality of care. Minnesota's Nursing Facility Performance-Based Incentive Payment Program utilizes performance bonuses to reward skilled nursing facilities that score highly on the state's nursing-home report card, which is based on a core set of quality measures. The state also awards performance incentive payments for projects, which are selected through a competitive process, that improve nursing-home quality or efficiency. The state has found that these payments spur additional quality improvement efforts, innovation among providers, and the sharing of best practices among nursing facilities that could be replicated statewide. Iowa has a similar initiative that rewards Medicaid facilities for attaining or exceeding accountability measures. Other states that have taken the lead in advancing policies that directly or indirectly promote telehealth use include Virginia, Texas, Maine, Massachusetts, Oregon, Arizona, Wisconsin, and Colorado.

As noted earlier, there exists a potential incentive for states not to seek out ways to provide care that would avoid a transportation to a hospital. When Medicaid is the primary payer for an individual SNF resident, hospitalization of that resident is an opportunity to cost shift from Medicaid to Medicare. This is because a hospital stay of 3 or more days will qualify the resident for a Medicare-covered SNF stay of up to 100 days upon their return. (Medicare reimbursement for SNF care is limited to post-acute care stays under the SNF benefit.)

Recommendations:

- States should look to more expansive reimbursement policies that allow for care via telehealth in other states such as California and Minnesota to create a policy environment that allows more flexibility in utilizing telehealth in delivering health care services rather than emulating Medicare's currently more restrictive policy.
- States should invest in demonstration projects that test the use of performance based payment models that provide incentives for utilizing telehealth where appropriate which may discourage cost shifting from Medicaid programs to Medicare.

WORKFORCE CAPACITY AND INTERSTATE PRACTICE ISSUES

Current professional licensing, credentialing, and privileging practices represent a major barrier for the use of telehealth in SNF care delivery. Due to the unique nature of telehealth, providers can, in theory, easily provide services across state lines. However, licensure laws either make this very difficult or present enough barriers that providers refuse to go through the needed approval process. Medical licensure is determined individually by the state so policies vary across the country. In general, in order to electronically interact with patients located in other states, physicians must be licensed or registered in the patient's state. This could be costly and time-consuming depending on how restrictive each state is and the number of states that are targeted for telehealth service provision.

Licensing issues have played a role in limiting the growth of telehealth in providing health services. Many providers simply refuse to go through the difficulties and expense of being licensed in multiple states. Additionally, the process to be licensed is often time consuming and complicated depending on the requirements in each state. This has led to an unequal access to care for some states. For example, one state may have an abundance of specialists, but another a shortage of the same specialists. The specialists have no desire to move to the second state, but would be willing to provide services via telehealth, but are unwilling to do so because of licensing requirements.

To ease the challenge of state licensure, particularly for interstate teleconsults, some states have created interstate compacts and policies that support the expanded use of telehealth. Examples of supportive policies that are currently in place include the following:

- **Nurse Licensure Compact** - The Nurse Licensure Compact is an example of a multi-state agreement that eases the barriers to establishing multiple licenses across state lines. The compact allows a nurse to have one license (in his or her state of residency) and to practice in other states (both physically and electronically). Such practice is subject to each state's practice law and regulation.
- **Licensure by Endorsement** - States can also license by endorsement, through an arrangement in which health professionals licensed in other states with equivalent standards may be granted licenses. For example, Idaho utilizes licensure by endorsement for physicians, allowing physicians with licenses in states of similar standards to practice in Idaho, under license. States may also establish reciprocity agreements for health care professionals.
- **CMS Changes affecting Hospital Conditions of Participation** - Federal regulations were passed in 2011 that eased the credentialing and privileging process for hospitals. A May 2011 Medicare rule allows hospitals that receive telehealth services to rely on the

credentialing and privileging information from the entity providing telehealth services.³⁰ This rule improves upon previous standards requiring practitioners to receive privileges from both the home hospital and the hospital where the telehealth services would be delivered. However, this change in credentialing and privileging has not yet been extended to SNFs.

While the above examples can be seen as useful to telehealth, there continues to be much resistance to the idea of easing licensing barriers. The Nurse's Compact encompasses 24 states, but there is no comparable agreement for physicians. States have raised concerns over standards, loss of revenue on licensing, and loss of services to their own citizens as practitioners are drawn to other states as reasons for resisting easing of licensing processes.³¹

Recommendations:

- States should consider easing interstate licensure barriers to facilitate the use of telehealth across state lines or either joining or having similar agreements such as the Nurses Compact.
- Similar CoP regulations passed by CMS should also be extended to SNFs.

TECHNOLOGY-RELATED SUPPORT ISSUES

The three profiled SNF-related projects in this report cited several technology-related challenges, including privacy and security, interoperability, broadband, technology usability, and costs of technology. Such challenges can be addressed through education and guidance or through financial support and incentives.

Some challenges can be mitigated with better education and information. Both the Georgia Medical College and VoA telehealth pilots profiled in this report implemented new equipment that presented portability and cost challenges. Robust technical assistance could help SNFs strategically implement telehealth. For example, technology selection assistance could help hopeful SNF telehealth users to better articulate their equipment requirements, workforce capacity, and budget restraints to explore whether low-cost options, such as tablet computers with voice-over-Internet Protocol service, might meet the needs of the facility. Various technology-related education initiatives exist and can be utilized by SNFs to direct them to resources available for the capital and information needed for initial implementation. One such initiative is the FCC's National Broadband Plan that is working to ensure everyone in the US has access to broadband capability by providing a public Broadband Data Repository and allocating federal funds and assets to infrastructure needs to broadband deprived communities

Financial support and incentives will also facilitate use of telehealth technology among SNFs. Federal or state funding for investment in health information technology has served as a major stimulus across the health sector. However, SNFs have not been eligible to apply for any of the American Recovery and Reinvestment Act (ARRA) funds, which provided more than \$20 billion in payments and incentives to certain health care providers to implement electronic health record (EHR) systems. The Affordable Care Act authorized \$400 million in EHR funding for SNFs but this is modest as it represents only two percent of available EHR stimulus funds for the health sector.

Recommendation: CMS should target stimulus funding and incentives more specifically at SNFs to promote broader investment in EHR and telehealth technologies and introduce mechanisms that directly fund or subsidize the purchase of technologies, e.g., by providing state and federal grants to support providers' investment in technology and implementation.

SNF TELEHEALTH ADOPTION AND IMPLEMENTATION ISSUES

The nursing home industry lacks technical knowledge, resources, and expertise to support the wide adoption and implementation of information technology-enabled practices into care.^{32,33} The case studies examined earlier in this paper indicate how important training and provider buy-in are to the success of a telehealth program. Additionally, as technology becomes more pervasive in health service delivery, the workforce in SNFs will need to be trained and educated to keep up with peers working in other settings and to stay abreast of new developments in health services delivery.

There is a need for more SNF-focused industry-wide research to demonstrate effective telehealth use cases and organizational practice models to reflect the diverse range of needs, resources, and capacities across SNFs. Most clinical benefits have been shown by manufacturers of the technology.³⁴

Moreover, establishing learning collaboratives focused on use and implementation of telehealth will facilitate cross-organizational knowledge exchange and sharing of best practices and tools. Training will bolster confidence in implementing and managing technology and staff, and provide opportunities for early adopters to serve as champions for other provider organizations.

Recommendation: Authorize funding for SNF telehealth demonstration projects and training initiatives that will promote understanding and peer-to-peer learning with regard to telehealth applications and best practices for implementing telehealth into practice.

Appendix A: List of Interviewees

Name	Title	Affiliation
Barbara M. Bates-Jensen PhD, RN, FAAN	Associate Professor	School of Nursing & David Geffen School of Medicine, Division of Geriatrics University of California, Los Angeles
Gary Capistrant, MA	Senior Director	Public Policy, American Telemedicine Association
Ray Dorsey, MD, MBA	Director	Division of Movement Disorders, The Johns Hopkins Hospital
James Gomez	President and CEO	California Association of Health Facilities
David Grabowski, PhD	Associate Professor	Health Care Policy, Department of Health Care Policy, Harvard Medical School
Steven Handler, MD, PhD, CMD	Assistant Professor	Division of Geriatric Medicine, Department of Medicine, University of Pittsburgh; Geriatric Research Education and Clinical Center, Pittsburgh
Charlene Harrington, RN, PhD	Professor Emeritus	Sociology and Nursing, UCSF School of Nursing
Sandy Hudak, MS RN	Principal	Health Management Strategies
Bruce Janiak, MD	Professor and Vice Chairman	Emergency Medicine, Medical College of Georgia
Michael Jones	President and CEO	Interactive Care
Bruce Leff, MD	Professor	Medicine, Division of Geriatric Medicine, Johns Hopkins University School of Medicine
Liz Loewen	Director	Coordination of Care, Manitoba eHealth
Wayne Olson	Senior Vice President	Operations, Volunteers of America
Kate O'Malley	Senior Program Officer	Better Chronic Disease Care, California Health Care Foundation
Joseph G. Ouslander, MD	Professor and Senior Associate Dean and Professor	Geriatric Programs, Charles E. Schmidt College of Medicine, Florida Atlantic University
Scott Peifer	Executive Director	AgeTech California
Laurie Poole	Vice President	Telemedicine Solutions, Ontario Telehealth Network
Paul Rice, MD	Deputy Director, Telehealth Lead	Long Term Conditions Theme, Health Innovation and Education Cluster (HIEC)
Lee C. Rogers, DPM	Co-Director	Amputation Prevention Center, Valley Presbyterian Hospital
Siobhan S. Sharkey, MBA	Principal	Health Management Strategies
Kathleen Sullivan	Vice President	Catholic HealthCare West
Michael Torgan	Executive Vice President	Country Villa Health Services
Joseph Tracy	Vice President,	Telehealth Services, Lehigh Valley Health Network

(inside cover)

About the Center for Connected Health Policy (CCHP)

CCHP (connectedhealthca.org) is a non-profit planning and strategy organization working to remove policy barriers that prevent the integration of telehealth technologies into California's health care system.

About the Center for Technology and Aging (CTA)

Through research, technology demonstrations, and collaboration, CTA (techandaging.org) supports the adoption and diffusion of technology enabled care that is patient centered, coordinated, efficient and effective. Established with funding from The SCAN Foundation, CTA is affiliated with the Public Health Institute in Oakland, CA.

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