IMPACT REPORT:
Advancing the Health and Well-Being of Older Adults through Connected Health Technology

February 2013
Achieving Real-World Results with Technology-Enabled Care

The Center for Technology and Aging is a national leader in a powerful movement that is transforming health care for older adults through the use of technology. As care for people with chronic disease and functional limitations moves from clinical settings to home and to the community, a broad array of technologies can be harnessed to improve the health and well-being of older adults. This Impact Report summarizes how the Center’s initiatives have helped meet these goals. Working with health care providers throughout the U.S., the Center has:

- Substantiated how technology-enabled care programs that are well designed and implemented can meet the Triple Aim of improving the patient experience of care, improving population health, and lowering the costs of care.
- Demonstrated how technology-enabled programs can have success at scale, going beyond pilots and demonstrations and having a positive return on investment.
- Developed tools that enable health care and aging organizations across the country achieve success at scale.

The Promise of Connected Health Technology for Older Adults

The Center was founded in 2009 to help demonstrate the far-reaching impact that connected health technologies can have on the health of older adults. Connected health technologies support patient engagement, patient activation, self-management, and monitoring in ways that are cost-effective, with the added benefit of making care delivery more efficient and effective. The result has been powerful – dramatic changes in utilization (reductions in emergency room visits and hospitalizations), increased satisfaction for providers and patients, and enhanced connectedness between homebound older adults and the external world.

The Center has focused on accelerating the adoption of technologies that can improve the health outcomes of older adults and help them attain a better quality of life. Older adults often struggle with chronic conditions and activity limitations. Over the past four years, the Center has worked with more than 100 U.S. health care and aging-services organizations to develop and implement technology-enabled health care programs.
Our flagship initiative has been the Diffusion Grants Program, which has supported the implementation and expansion of a wide range of patient-care technologies and intervention models. Through this initiative, 22 grantees have produced technology-enabled health care programs in four focus areas: medication optimization, remote patient monitoring, care transitions, and mobile health solutions. These initiatives include technologies such as remote monitoring devices that collect behavior and vital sign data and mobile devices that provide older adults with health-related text messages and medication reminders. Collectively these programs have addressed a number of pressing issues in the era of health reform: improving medication adherence, reducing avoidable hospital readmissions, and improving care transitions, among others.

Looking back, we find many examples of our grantees producing real-world, sustainable results that are improving the well-being of older adults and demonstrating improved care processes. Overall we have found that:

- Technology-enabled care programs can have a significant positive impact on improving quality of care, patient and provider satisfaction and engagement, and economic outcomes.
- The success of the Center’s grant programs and products has helped catalyze the creation of scaled technology-enabled programs that made care more accessible to large numbers of older adults. In other words: Getting to scale is eminently doable.

The findings from these programs reinforce the promise of how connected health technology can improve the health and well-being of older adults. As detailed in this report, Center activities have illuminated how technology-enabled programs can advance the Triple Aim, demonstrated how these programs can be replicated and expanded to a larger scale, and gave providers hands-on tools for using technology to improve the health and health care of older Americans.
Advancing the Triple Aim

Improving patient experience, improving population health, and lowering health care cost

The Triple Aim is a central principle fueling the rapid changes now taking place in America’s health care system. Connected health technologies help achieve the Triple Aim by empowering individuals with the knowledge and support they need to stay healthier. It also connects them to the people, services, and businesses they need to stay independent. Recipients of the Center’s Diffusion Grants Programs have used connected health technology to achieve the Triple Aim objectives in a number of areas, especially in reducing medication non-compliance and rehospitalizations, and improving care transitions. Specifically:

- Of 12 technology-enabled programs focused on reducing 30-day hospital readmissions, 10 succeeded in reducing readmissions, including five programs that achieved a reduction of 50% or more.
- All 15 programs measuring patient satisfaction and engagement with their care management reported marked improvements.
- Of the 10 programs that measured cost savings and return on investment (ROI), nine demonstrated significant cost savings and positive ROI.

Achieving the Triple Aim: One Patient’s Experience

Maxine was enrolled in the Centura Health at Home remote patient monitoring program to better manage her congestive heart failure, which had put her in the hospital five times in 2010. She was followed via telehealth by an RN who tracked Maxine’s vital signs, helped her better manage her medication regimen, and improved coordination of her clinical care. As a result, Maxine was not hospitalized at all in 2011, was more engaged in her own health care, resulting in significantly lower health care costs.

Sharp Healthcare: Improving Care for Vulnerable Populations

Sharp HealthCare, a hospital system in Southern California, used telescale technology and health coaching in two Sharp hospitals to help underserved patients better manage their congestive heart failure. In addition to improving health outcomes, the program resulted in decreasing readmissions by half, from 20.7% to 10%. Patients’ confidence about being able to adhere to treatment and monitor and recognize their symptoms significantly increased, from 2% at enrollment to 98% at graduation. Similarly, the percentage of patients confident they could manage their heart failure symptoms increased from 19% to 92% after completing the program. Sharp achieved these positive clinical results while achieving a 1.6 to 1 ROI in the program’s first year of operation — a return of more than $2,800 per patient.
Connecticut Pharmacists Foundation: Improving Medication Adherence and Reducing Costs

The Connecticut Pharmacists Foundation combined videoconferencing technology with an online decision support tool, enabling pharmacists in Connecticut to provide remote medication therapy management support to Cambodian-American older adults in Southern California.

Ravaged by the conflict that scarred their country during the 1970s and 1980s, older Cambodian-Americans often have exceedingly poor health — the patients in this program averaged 10.3 medications and 6.6 chronic conditions each. The program demonstrated that virtual medication therapy management visits have the same impact on participant experience and outcomes as those conducted face to face. The results:

- The percentage of patients achieving their therapy goals rose from 68 to 93 over six months.
- Costs were reduced by $3,000 per participant per year, with a return on investment of 6 to 1.
Demonstrating Success at Scale

Ideas that are successful in the pilot stage often have trouble sustaining those gains when expanded to large-scale practice. According to the Institute of Medicine, it takes an average of 17 years for new health care interventions to be incorporated into practice. Yet health care reform and the formation of new models of care are putting pressure on programs to be taken to scale immediately. Connected health technology offers a rapid and effective way to replicate effective health care interventions.

Over time, successful Center-supported programs have produced evidence that they can be taken to scale, expanding broadly within a health care system to a larger population or to additional health care providers. Specifically:

- Of 22 connected health technology programs, 10 have demonstrated scalability within their organizations or externally to other organizations and 10 others are capable of being taken to scale.
- Of the 10 Center-supported programs taken to scale, six have been expanded throughout a health care system, while four have been replicated nationally.

**Centura Health at Home: Taking a Program to Scale Statewide**

Building on its success using telehealth to reduce preventable readmissions with home-based Medicare beneficiaries, Centura Health at Home (CHAH) is a prime example of taking a program to scale. CHAH integrated remote monitoring with a clinical call center staffed by registered nurses who provide telephonic telehealth services. Among the results:

- A 62% reduction in the frequency of hospital readmissions.
- An increase in patient satisfaction and self-management.
- A reduction in the frequency of RN visits to the home from two or three per week to 2.69 over a 60-day period.

The program is being expanded to other Centura hospitals, physician networks, and senior-living communities throughout the state. The success of this program has led to the establishment of telehealth as the standard of care at CHAH and passage of state legislation in Colorado permitting Medicaid reimbursement for remote patient monitoring.

**Family Services Agency of San Francisco: Taking a Program to National Scale**

The mobile technology program developed by Family Services Agency of San Francisco (FSA) focuses on care planning and assessment for a very at-risk population: older adults with severe behavioral issues. The FSA mobile assessment and care-planning tool, CIRCE, has been instrumental in facilitating care management for mentally ill older adults, and has been recognized by Salesforce as a national best practice model. Due to its effectiveness, the FSA mobile assessment tool is being distributed throughout the U.S.

“Emphasizing how technologies will be incorporated into routine processes from the beginning is one of the single most effective ways to promote scalability.”

*Erin Denholm, CEO,*

*Centura Health at Home*
Demonstrating Return on Investment

Technology-enabled patient care interventions are new and fundamentally disruptive to bricks-and-mortar-based models of health care. Thus, they are often challenged to demonstrate their financial cost/benefit. To date, there has been a lack of published data to give organizations guidance on how to evaluate – simply, consistently and reliably – the return on investment (ROI) of a technology-enabled program.

The Center for Technology and Aging and the Boston-based Center for Connected Health have created a universal ROI Tool for organizations adopting remote patient monitoring (RPM) programs. Developed with support from the California HealthCare Foundation, the web-based ROI Tool evaluates the financial benefit of RPM technologies for congestive heart failure (CHF) and chronic obstructive pulmonary disease (COPD) patients. Several Center programs used the tool and found that they would achieve a significant ROI after program implementation – a major achievement for startup programs that often need tuning to reach peak performance.

The widespread use of the ROI Tool is intended to promote adoption of proven technology-based programs. Designed to be flexible to work with a variety of health care organizations, types of technologies, and clinical models, the ROI Tool provides a framework for an organization to examine the financial value of RPM programs. The tool’s scenario planning capabilities track scalability - looking at how cost structure, implementation, and staffing can change the ROI as a program moves from a smaller to a larger scale operation. The tool not only assists program managers to evaluate financial ROI, but it also identifies potential program efficiencies, making the ROI Tool effective for both evaluation and decisionmaking.

HealthCare Partners: Achieving Strong Financial Return

HealthCare Partners (HCP), a large physician group practice based in Southern California, used the ROI Tool to quantify the value of its remote patient monitoring program for COPD. HCP’s interactive voice response program had demonstrated improvements in health care utilization as measured by reductions in inpatient admissions, outpatient visits, and home visits. The ROI calculator offered even more compelling news: starting with a positive return at Year 1 of 1.3 to 1, ROI for the program is projected to increase dramatically to 18.9 to 1 in Year 5. Using specific ROI projections was instrumental in convincing senior management of the value of the program and justifying its continued long-term support.

“The importance of compelling health services research cannot be overstated. To help meet CMS’s Triple Aim, CTA’s ROI tool allows clinicians, policy researchers, and executives to accurately examine the costs to implement and disseminate health technologies in a variety of care settings.”

Dr. Jeremy Rich, Director, HealthCare Partners Institute for Applied Research and Education
Building on the Center’s broad research and real-world experience, Center staff created the web-based ADOPT Toolkit (Accelerating the Diffusion of Proven Technologies), a universal toolkit to help health care providers design and implement new technology-based programs. Center staff worked with hundreds of organizations to identify pre-existing tools and create others, totaling more than 300 tools organized into eight workstreams:

- program planning
- technology management
- patient management
- clinical management
- financial management
- administration
- marketing
- evaluation & performance improvement

The ADOPT Toolkit helps health care providers assess the value of technologies, determine the best fit for their organizations, and increase the ease and rate of implementation by tapping the experience and expertise of other organizations that have successfully developed technology-enabled care programs. The ADOPT Toolkit translates program structure and empirical experiences into guides and action steps to quickly implement best practices.

“The Toolkit is a comprehensive, easy-to-navigate set of guides for launching a telehealth program. The workstreams are helpful to any health care team that intends to use the power of home monitoring and other technology-based solutions to improve the care of chronically ill patients.”

Wendy Everett, President, NEHI

Specific tools within the ADOPT toolkit are having an immediate impact in the field:

- The Texas Tech4Impact program developed a care planning and management tool for Care Transitions Intervention® coaches to support the evaluation of workflow efficiency and patient outcomes during transitions of care. Through the National Care Transitions Intervention® Training Center the tool is provided to all newly trained coaches. More than 45 organizations to date, including hospitals and Aging and Disability Resource Centers, are now using the tool.

- The Center developed an Organizational Readiness Assessment Tool for Telehealth that provides an innovative way to delve into any organization’s true ability to plan, execute, and maintain a telehealth program for chronically ill patients. Using this tool, providers have been able to quickly focus on their areas of strength and developmental needs for successfully implementing targeted technology-enabled programs.
Center-supported health care organizations have successfully integrated their technology programs into new models of care that represent critical components of health care reform. Technology-enabled care programs can play a significant role in developing innovative patient-centered medical homes and accountable care organizations (ACOs), addressing the goals of meaningful use, and improving patient engagement. Significantly, five of the Center-supported programs are part of or will be part of ACOs and three are embedding their technology programs within patient-centered medical homes.

**NEHI and Atrius Health: Applying Technology in an ACO**

Atrius Health, a Pioneer ACO, is expanding the availability of RPM technology to patients with a diagnosis of heart failure at all 30 Atrius Health practice sites. Collectively, these programs serve nearly one million patients in eastern and central Massachusetts. In less than two years, use of RPM technology has moved from “innovation,” or demonstration status, to mainstream care throughout Atrius Health. As a Pioneer ACO, incentives within Atrius Health promote technologies that have been shown to control costs of care and achieve better outcomes through tighter monitoring and management of chronic conditions.

**Connecticut Pharmacists Foundation: Improving Patient Engagement within a Patient-Centered Medical Home**

The Connecticut Pharmacists Foundation successfully incorporated community health workers (CHWs) to help their Cambodian-American patient population improve medication compliance. Using CHWs enhanced patient engagement improved patient-provider communication, and overcame language barriers. As a result, delivering medication therapy management services via videoconferencing has been established as a core component of the national medical home model for Cambodian-Americans.
Conclusion

The outlook is bright for connected health technology’s role in improving health care delivery and empowering older adults and their caregivers to maintain their health and independence. National efforts to reform the health care system rely in great part on improving the health and health care of older Americans – at the very least because of their sheer numbers. With 10,000 Baby Boomers turning 65 each day, it’s not possible to build enough health care and residential facilities to keep up with potential demand. Also, the work force supporting older adults cannot meet the current and future needs of older adults with chronic conditions.

Meanwhile, ongoing pressure on government budgets is resulting in a shift toward global budgeting and incentives for moving care out of hospitals and nursing homes into the community. At the same time, older adults strongly prefer to stay in their homes and communities as they age. Technology-enabled health care solutions offer a significant opportunity to mediate the growing and complex challenges posed by this changing health care ecosystem.

The Center for Technology and Aging is at the leading edge of this rapid evolution in health care and is making a significant contribution to how policymakers, providers, and older adults view connected health technology’s potential. The Center has been instrumental in moving forward both the evidence and the dialogue around these issues by:

- Supporting the development of living, breathing models of successful implementation whose leadership can provide both expertise and moral support to others.
- Creating a set of tools for health care and aging-services providers to improve their capacity to design, implement, and evaluate technology-enabled programs.

In coming years, a complex mix of forces will be at work: rapid technological change, new and more efficient technology-enabled care models, faster uptake of now-mature technologies, increased fiscal and work force constraints, expanding provider and patient needs, and a more tech-savvy older adult population. The Center remains in a unique position to help ensure that technology solutions realize their full potential to improve the health and well-being of older adults. Health care and aging-services providers will need to make sense of the increasingly complex technology landscape and make decisions amid an accelerating pace of change. These challenges reaffirm the Center for Technology and Aging’s role: helping providers best understand the widening, increasingly rich array of connected health technologies they can deploy to both improve health care delivery and enable older adults and their families to thrive.