

The State of Technology in Aging Services in Minnesota

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in partnership with

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Center for Aging Services Technologies

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1. INTRODUCTION

The purpose of this paper is to describe the current state of affairs of technology in aging services and related policy in the State of Minnesota, particularly with regard to the advancement of technology-enabled services in long-term care and home settings. This paper seeks to highlight innovative practices of state government, aging services organizations and others to advance the use of aging services technologies in Minnesota. It serves as a baseline for further technology development and deployment. This paper is part of a series of papers that focus on individual states' progress to date and potential opportunities for advancement in the use of aging services technologies. It is also intended that this effort will serve as a best-practice and advocacy guide for use in states nationwide.

This paper was completed in partnership with Aging Services of Minnesota and benefited greatly from the insights and experience of its members and staff.

It also benefited from the assistance of the Minnesota HomeCare Association, the Minnesota Department of Human Services, the Association of Area Agencies on Aging and others. The contributions of CAST members and sponsors and all those interviewed were invaluable and are greatly appreciated.

DEFINITIONS

The National Alliance for Health Information Technology, which managed a federally funded initiative to seek industry consensus on the use and definitions of specific information technology terms, has published the following definitions which may be referred to in this paper.

Electronic Medical Record: An electronic record of health-related information on an individual that can be created, gathered, managed and consulted by authorized clinicians and staff within one health care organization.

Electronic Health Record: An electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be created, managed and consulted by authorized clinicians and staff across more than one health care organization.

Personal Health Record: An electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be drawn from multiple sources while being managed, shared and controlled by the individual.

Health Information Exchange: The electronic movement of health-related information among organizations according to nationally recognized standards.

Health Information Organization: An organization that oversees and governs the exchange of health-related information among organizations according to nationally recognized standards.

Regional Health Information Organization: A health information organization that brings together health care stakeholders within a defined geographic area and governs health information exchange among them for the purpose of improving health and care in that community.

In addition, the following are definitions of key terms used in this paper:

Health information technology (HIT): Hardware and software used to store, retrieve, share and use health information to treat patients effectively.

Aging services technologies (ASTs): Technologies that can be used by older adults, caregivers (both professional and informal), health care providers and aging services providers to improve the quality of care, enhance the caregivers' experience, create efficiencies and cost-effectiveness. These technologies broadly include assistive, telemonitoring, telehealth, telemedicine, information, and communication technologies that intend to improve the aging or care experience. Aging services technologies can be categorized into three broad areas based on the relationship these technologies address between the older adult and his/ her environment (safety), oneself (physical and mental health/ wellbeing), and others (social interaction). For more information on specific types of aging services technologies see www.agingtech.org.

2. EXECUTIVE SUMMARY

The Center for Aging Services Technologies (CAST) developed this paper to describe the current state of affairs of technology in aging services and related policy in the State of Minnesota, particularly with regard to advancing technology-enabled services in long-term care settings, including the homes of individuals in the community. It serves as a baseline for further technology development and deployment.

The policy and legislative activities related to HIT and aging services technologies in Minnesota are presented first to provide the context for much of what is to follow. The paper highlights the universally-applicable HIT mandates for all health providers enacted by Minnesota as well as the substantial support and planning efforts underway to achieve these requirements. Also highlighted are legislative changes made nearly a decade ago that reimburse homecare providers for the use of certain aging services technologies. These efforts will require continued focus and development.

Next, extensive state grant programs supporting technology adoption and research by aging service providers are discussed in sufficient detail to provide best-practice guidance for other states and key deployment insights for providers. Minnesota's efforts to support provider use of technology are innovative and sustained over several years and serve as a national model.

Technology adoption rates based on findings from two recent aging service technology surveys are presented in depth to provide a current baseline. The surveys reveal substantial investments by providers in a wide range of technologies and significant planning for future technology adoption. In addition, the paper highlights the leading HIT tools and resources developed by Minnesota's mission-driven aging services association for providers. These toolkits can serve as a resource for aging service providers nationwide.

Four examples of "early adopter" organizations are then presented in detail. While the providers highlighted vary in size and approach, all have been innovative leaders and have relied heavily on collaborations with other providers to pilot and implement new technologies in providing care to older adults. Examples of technology adoption range from interoperable electronic health records (EHRs) to "therapeutainment" technologies and everything in between. These early achievements can serve as a point of reference for other providers in the field, as well as a foundation to evaluate and improve the application of specific emerging technologies.

Much has been achieved in Minnesota and the groundwork has been laid for a rapid and extensive increase in the effective use of technology in providing care to older Minnesotans. States and aging service providers across the country have a great deal to learn from Minnesota's innovative state policies, incentives and support as well as providers' innovation, collaboration, and willingness to adopt aging services technologies. While continued development is needed, the state of technology in aging services in Minnesota is strong.

3. POLICY & LEGISLATIVE CONTEXT

The State of Minnesota is well ahead of most states in its policies that require, support and evaluate the use of health information technology by health and long-term care providers. Furthermore, it has substantiated its technology-enabled vision for long-term care by providing significant technology grants and other resources to long-term care providers (*see sections 3.6 and 4*). This overview of policy and legislative activity provides an important context for a discussion of the utilization of HIT and aging services technologies in Minnesota.

Minnesota Vision for Long-Term Care

A long-term care system that:

- ✓ Supports innovation through new delivery and financing models, and through use of technology
- ✓ Ensures efficiency, affordability and productivity, including labor-saving technology, among both public and private long-term care providers

—MN Department of Human Services

3.1 HIT Mandates for Long-term Care Providers

Governor Tim Pawlenty and the Minnesota Legislature in 2007 enacted a series of three HIT mandates for all health care providers, including nursing facilities, boarding care homes and homecare providers (these designations include what is generally referred to as “assisted living”). The first is an “eBilling” mandate that requires all health care providers and payers to use a standard format to electronically exchange eligibility, claims and payment and remittance advice transactions by the end of 2009 (Minnesota Statutes 62J.536). Deadlines were staggered through 2009, first for eligibility (1/15/09), then claims (7/15/09) and lastly payment and remittance advice (12/15/09). The state enacted this requirement because of its belief that paper and nonstandard electronic health care transactions are expensive and inefficient for everyone involved – providers, payers, consumers, and government. The law was intended to improve efficiency, and applied to all providers and payers in order to maximize the potential benefit from electronic, standard exchanges. The state also believes that electronic data interchange can also speed up reimbursement time and enhance the accuracy of a claim before it is submitted for adjudication.

The second is an “eRx” mandate which requires all health care providers, purchasers, prescribers to establish, maintain and use an electronic prescription drug program by January 1, 2011 (Minnesota Statutes 62J.497). The ePrescribing must comply with certain standards for transmitting, directly or through an intermediary, prescriptions and prescription-related information. Specifically, the standards require that all parties use HL7 or NCPDP standard messages *within* an organization and the NCPDP standards across health care sectors. The State’s purposes for the eRx requirements are:

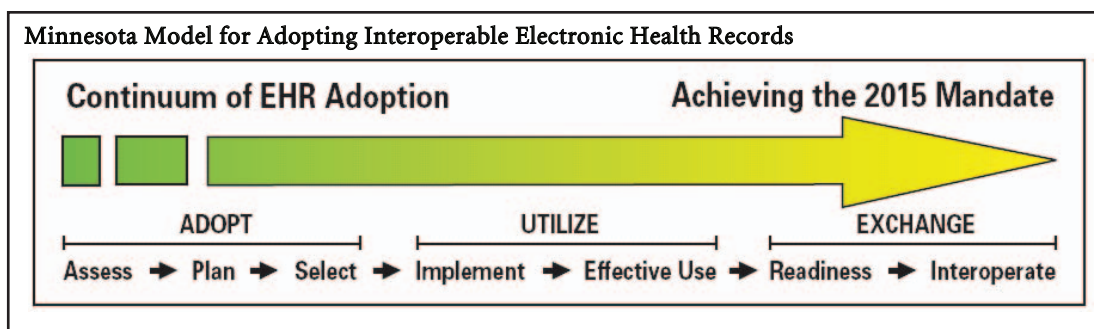
- To improve the quality, safety and cost-effectiveness of the entire prescribing and medication management process;
- To reduce Adverse Drug Events (ADEs) and their costs which are too high in human and financial terms;
- To reduce the burden of callbacks, evaluate possible errors and clarify prescriptions; and
- To facilitate access to comprehensive information between outpatient and hospital settings which will reduce ADEs

The third is an “EHR” mandate that requires all health care providers to have in place an interoperable electronic health record by January 1, 2015 (Minnesota Statutes 62J.495). The legislation also required the development of an HIT Advisory Committee and statewide plan to meet this goal, including uniform standards to be used for the interoperable system for sharing and synchronizing patient data across systems. The standards were to be developed by January 1, 2009 and be compatible with federal efforts.

Governor Pawlenty and the Minnesota Legislature believe that the adoption and effective use of electronic health information systems can play a significant role in transforming the health care system and in supporting healthier communities. They contend that more effective use of health information – including the timely exchange of information – is needed to improve the quality and safety of care and control costs. Their plan to achieve this goal in Minnesota is discussed below.

3.2 Minnesota e-Health Initiative's Statewide Plan for Interoperable EHRs

Pursuant to the enactment of legislation discussed above, Minnesota established an e-Health Initiative within the Department of Health to carry the state from the enactment of HIT mandates to actual implementation according to the required timelines (www.health.state.mn.us/ehealth/ehrplan.html).



Its statewide implementation plan published in June 2008 has several purposes:

- To accelerate the adoption and effective use of interoperable electronic health records (EHRs) in order to improve health and health care in Minnesota
- To identify a model for achieving the 2015 interoperable EHR mandate
- To provide practical guidance to providers and provider organizations on what they can do now to overcome barriers and accelerate progress in adopting interoperable EHRs
- To provide links to tested planning and implementation tools.

In order to achieve these goals, the MN e-Health Initiative in June 2009 published a series of four extensive guides to help providers with HIT adoption. The guides focused upon addressing common barriers, recommended standards, implementing ePrescribing, and effective use of electronic health records.

Effective Use

The 74-page EHR guide defines “effective use” as:

“...adequately planned for, selected, and implemented EHR systems that are efficiently and properly populated and used; are [both] supported by and support the continuous commitment of individuals and organizations to improve patient safety and to provide optimal and comprehensive care to clients; achieve value for individuals, families, organizations, and populations across the continuum of care...”

It identifies the four critical improvement outcomes for EHRs as: 1) organizational support, 2) health care decision support, 3) health and practice improvement, and 4) community health improvement.

Long-term Care

Notably, the statewide implementation plan identified long-term care (LTC) as a “special interest area” and discussed needs and challenges unique to long-term care for EHR adoption. It recognized LTC as a “complex, highly varied and highly regulated industry” citing the varied care settings, services, and licenses, and complex federal and state requirements associated with providing long-term care. It also recognized that HIT needs are different between nursing homes and assisted living settings, and that the majority of HIT standards work has been focused on the nursing home level of care. Furthermore, the plan stated that there are currently few EHR products in the marketplace for LTC and none that meet the Minnesota requirements. However, the plan makes the following insight regarding the importance of achieving electronic health information exchange in LTC:

“Long term care is a setting in which health information exchange is of crucial importance given the number of health care providers typically seen by seniors, the frequency of hospital admissions, and the frequent back-and-forth migration of individuals between assisted living, skilled nursing and other facilities. The sheer number and complexity of admissions and discharges highlights the need for timely, accurate and complete health record exchange, compounded by detailed federal and state documentation requirements. These requirements can mean that an individual must be retained in a more expensive facility while the health information needed to discharge them to a lower-level facility is being collected by other facilities and sent by fax or postal mail.”

Four actions are recommended for long-term care providers:

1. Trade and/or professional associations should lead efforts to collaboratively define the business requirements and unique information needs of long term care. This will both communicate requirements and specifications to EHR/HIT vendors and provide an objective basis for product evaluation.
2. Work with national trade associations to monitor and help influence standards and/or certification criteria within CCHIT, HITSP or other bodies that will meet the needs of the long term care industry.

3. Long term care facilities and associations should work with the Minnesota Legislature and the Minnesota Department of Human Services (DHS) to explore means to ensure adequate resources exist to meet the 2015 interoperable EHR mandate.
4. Seek other funding opportunities from foundations and the federal government (www.health.state.mn.us/ehealth/funding.html).

Telehealth and In-Home Monitoring

The statewide plan also recognized telehealth and related technologies as an important next step. It recommends that “future versions of the plan will need to address how telehealth—including telemedicine, *in-home monitoring and other uses of telecommunications technologies*—relates to EHRs and other information technologies, and fits into the overall e-health goals of improving health and care.” Specifically, the e-Health Initiative suggests that the plan will need to address how the exchange of information and privacy and security infrastructure generated by telehealth and related technologies fits within health information exchange.

3.4 Broadband Mapping

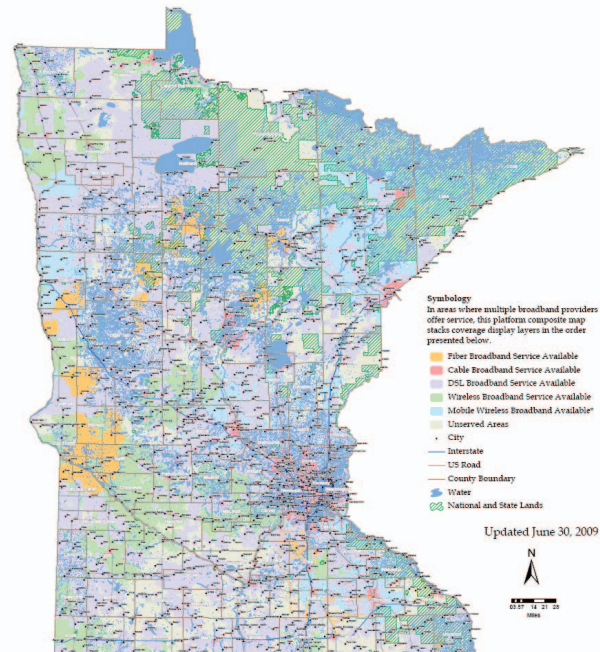
In the 2007-2008 legislative session, Minnesota enacted a state law to map levels of broadband service by connection speed and technology, and integrate the maps with demographic information to produce a comprehensive statewide inventory of existing and needed broadband service and capability. The Department of Commerce contracted with a nonprofit organization, connectednation.org, to develop the map by February, 2009.

The legislature required that the map clearly convey the following information:

1. areas unserved by any broadband provider;
2. areas served by a single broadband provider;
3. the location of towers used to transmit and receive broadband signals;
4. actual upstream and downstream transmission speeds at the county level of detail;
5. areas served by multiple broadband providers; and
6. the types of technology used to provide broadband service.

Minnesota Broadband Service Inventory

Submit questions or recommended changes to: maps@connectednation.org



Under the legislation, data used to produce the maps must be capable of being integrated with demographic data from other sources such as population density and household income to allow for the production of maps that measure, down to the census block level of detail, various characteristics of residents in areas receiving different levels of broadband services and utilizing different technologies. Broadband technologies to be mapped include cable modem, DSL, ADSL, VDSL (Very high bit-rate Digital Subscriber's Line), and fiber optics.

The completed interactive Broadband Inventory Map allows users to create customized views of broadband infrastructure across the state (www.connectmn.org/mapping). Minnesotans can also clock the speed of their Internet connection and determine if the company supplying home Internet service is truthful in their marketing information regarding connection speed.

The mapping project determined that broadband service is currently available to 94% of Minnesota households statewide (note that the percentage of households actually using broadband is likely to be lower). This leaves 97,282 Minnesota households who are unserved by any broadband provider. The map lays the groundwork for broadband expansion and positions the state to take advantage of federal stimulus funds available under the American Recovery & Reinvestment Act (ARRA). More than \$7 billion is available through the ARRA for broadband projects nationwide. \$350 million is set aside for the Broadband Data Improvement Act of 2008, which makes grants available for states to develop public-private partnerships for grassroots-driven expansion of broadband and computer use, particularly among unserved and underserved populations.

3.5 ARRA HITECH Act Legislation and Policy Initiatives

Because of Minnesota's state-level health information technology (HIT) mandates and related initiatives, it is more prepared than most states to take advantage of the federal HIT stimulus funds contained in the HITECH Act within the American Recovery & Reinvestment Act (ARRA). Minnesota has taken legislative action to commit state funds in two ways: \$350,000 to assist the state in administering HITECH Act programs; and \$4 million for the state's 20 percent match for a state loan program, making approximately \$24 million available for provider loans. However, while the state legislation makes nursing homes and other health care providers eligible, it gives preference for the loan program to "(1) critical access hospitals; (2) federally qualified health centers; (3) entities that serve uninsured, underinsured, and medically underserved individuals, regardless of whether such area is urban or rural; and (4) individual or small group practices that are primarily focused on primary care" (*Minnesota Statutes 2008, section 62J.496, "Electronic Health Record System Revolving Account and Loan Program"*). Their approach is to provide loans to the specified providers, then allow providers to use the Medicare/Medicaid payment incentives to pay back the loans.

This policy position represents a shift away from its previous priorities which included long-term care. Reportedly, the state made these priority changes in order to be in compliance with the HITECH Act's requirements. However, the only place these priorities appear in the HITECH Act is in section 3012 (c), regarding the creation of "Health Information Technology Regional Extension Centers."

3.6 Reimbursement for Aging Services Technologies

Minnesota law allows for MN Medical Assistance reimbursement of telemedicine, and telehomecare by home health agencies with certain parameters. The Minnesota "elderly waiver and "alternative care" home and community-based service programs also provide reimbursement for telehomecare services. Some insurers in Minnesota have begun reimbursing for such services as well.

Telemedicine consultations

Under Minnesota's Medical Assistance program, telemedicine consultations – a service provided by a physician whose opinion or advice is requested by another physician – must be made via two-way, interactive video or store-and-forward technology. Store-and-forward technology includes telemedicine consultations that do not occur in real time via synchronous transmissions, and that do not require a face-to-face encounter with the patient for all or any part of telemedicine consultation. The patient record must include a written opinion from the consulting physician providing the telemedicine consultation. A communication between two physicians that consists solely of a telephone conversation is not a telemedicine consultation. Coverage is limited to three telemedicine consultations per recipient per calendar week. Telemedicine consultations shall be paid at the full allowable rate (*MN Statute, Section 256B.0625*).

Telehomecare Skilled Nurse Visits

Since 2001, Minnesota's subsidized state health care program ("MinnesotaCare") covers home care skilled nurse visits provided via "telehomecare," for services which do not require hands-on care between the home care nurse and recipient. All skilled nurse visits provided through telehomecare must have prior authorization and will be covered at the same rate as skilled nurse visits provided in-person. Telehomecare services are defined as skilled nurse visits delivered through technology to enhance service delivery options that help address client access to needed services related to shortages of healthcare professionals, logistical barriers, provider responsiveness, and continuity of care issues that may reduce the comprehensiveness and successful outcome of a supportive home and community-based service plan (*MHCP Provider Manual, Chapter 24*).

The provision of telehomecare must be made via live, two-way interactive audiovisual technology and may be augmented by utilizing store-and-forward technologies. Individually identifiable patient data obtained through real-time or store-and-forward technology must be maintained as health records. If the

video is used for research, training, or other purposes unrelated to the care of the patient, the identity of the patient must be concealed. Multiple daily skilled nurse visits provided via telehomecare are allowed, but coverage of telehomecare is limited to two visits per day (*MN Statute, Section 256B.0625*).

Telehomecare skilled nurse visit parameters:

- ✓ Does not require the physical presence of the nurse in the home residence
- ✓ Visit is performed via live, two-way audio-visual, interactive technology
- ✓ Technology provides for complete visual and verbal communication between the professional and the client
- ✓ Provides for accurate measurement and assessment of the client's physical status using computerized telephonic equipment
- ✓ Integral to the care needs and services delivered to the client
- ✓ In conjunction with in-home services and nursing visits
- ✓ Provided in a home with capacity for adequate and safe operation of the equipment
- ✓ May be augmented by utilizing store-and-forward technologies, not in synchronous transmission, and not necessarily during the face-to-face visualization of the two parties
- ✓ Allowable settings include client's place of residence, which may be a community setting
 - Community settings may include adult foster care, assisted living, residential care, and residential facilities, such as group homes, chemical dependency rehabilitation programs, non-certified board and lodge homes eligible for Group Residential Housing (GRH) payments
 - Not available in nursing facilities, inpatient hospitals, intermediate care facilities, or certified board and care.

Minnesota's *Elderly Waiver (EW)* also provides reimbursement for telehomecare services. The program provides home and community-based services not normally covered under Medical Assistance (MA) for enrollees who are at risk of nursing facility placement. In order to receive EW services, an enrollee must be age 65 or older; have been screened by a long-term care consultation team, be determined by the team to need nursing facility level care, and choose community care; and meet the EW income standard. As with other state's similar waiver programs, the cost of EW services cannot exceed the estimated cost of nursing facility services.

Telehomecare Paraprofessional Visits

A source for more flexible telehomecare reimbursement is Minnesota's *Alternative Care (AC)* program, a state-funded program that provides home and community based services to individuals who are not MA enrollees, but who are at-risk of nursing facility placement. Enrollees meeting certain income and asset criteria are required to pay a monthly fee to help offset the cost to the state of providing AC services (*MN Statute, Section 256B.0913*).

While the program covers telehomecare skilled nursing visits similar to those under Medical Assistance but limited to one per day, it also provides coverage for telehomecare under “discretionary services,” which include substitution for in-person *paraprofessional* visits.

Telehomecare paraprofessional visit parameters:

- ✓ Telehomecare conducted by paraprofessional worker
- ✓ Intermittent, visual contacts
- ✓ Flexible and individualized to client needs; schedule, frequency, duration
- ✓ Contact guide/plan for the worker
- ✓ Conducted in conjunction with in-home supportive services by same worker
- ✓ Units of service and payment rate are negotiated between the service provider and the local lead agency under an agreement or contract following review and approval by the department
- ✓ Workers are trained and oriented on:
 - telehomecare equipment
 - each client’s care needs/contact plan
 - schedule, guidelines, and parameters of contacts
 - guidelines for reporting to professional staff

Additionally, medication monitoring is reimbursable through some counties’ elderly and alternative care waiver programs. The units are billed as “extended supplies and equipment” through elderly care waivers and as “discretionary funds” through alternative care waivers. The reimbursed portion is included in the monthly cap for patients under each waiver.

Insurer Reimbursement Table (As of March 31, 2005)

<i>Insurer</i>	<i>Rate of Reimbursement</i>	<i>Video Required</i>	<i>Procedure Code</i>
MN Medical Assistance	Same as a skilled nurse visit	Yes	Skilled nurse visit procedure code with GT as the modifier
Blue Cross	None/Not a recognized Service	N/A	N/A
First Plan	Same as a skilled nurse visit	Yes	Skilled nurse visit procedure code with GT as the modifier
Medicare	Recognizes telehomecare as a service. No approved billing code	No	Billed as a home care service. Not recognized as a separate service
IM Care	Same as a skilled nurse visit	Yes	Skilled nurse visit procedure code with GT as the modifier
Elderly or Alternative Care Waiver—Carlton County	\$63.58	Yes	Skilled nurse visit via telehomecare
Elderly or Alternative Care Waiver—Lake County	\$125 installation \$75 per month following installation	No	DME (Durable Medical Equipment)
Elderly or Alternative Care Waiver—Good Shepherd	\$40	No	Monthly maintenance fee
Elderly or Alternative Care Waiver—Good Shepherd	\$63	Yes	Skilled Nurse Visit Via Televideo

• Reimbursement for skilled nurse visits can vary depending on contract and payer.

Source: University of Minnesota Medical School Duluth, March, 2005

Insurer Coverage

Some insurers in Minnesota, such as *First Plan* reimburses providers for telehomecare services using a “miscellaneous” category within “Durable Medical Equipment.” Plans have the ability to provide more flexible reimbursement for telehomecare services by not requiring the live video component and covering other types of technology, such as reimbursement for the *Health Buddy* health monitoring technology

in Northeastern Minnesota. However, further research is needed to determine how widespread coverage is by insurers. Much of the administration of Elderly Waiver programs in Minnesota is now being subcontracted to private insurers through Minnesota Senior Health Options (MSHO). MSHO is a health care program that combines separate health programs and support systems into one health care package.

4. STATE GRANT PROGRAMS SUPPORTING TECHNOLOGY ADOPTION & RESEARCH

Unlike many state-level mandates, Minnesota's HIT mandates have been followed by a grant program to help health care providers, including long-term care providers, to prepare for and meet required timelines. The substantial amount of state grants and focus on technology is consistent with Minnesota's vision for long-term care to utilize technology to achieve innovation, efficiency and affordability in providing care. The grants placed significant emphasis on partnerships. One grant program discussed below was targeted directly at nursing homes' technology needs while others have included technology-related initiatives as eligible grant-funded activities. Minnesota also has funded evaluations of several grant programs to determine effectiveness and educate other providers.

4.1 e-Health Grant & Loan Program

In response to the Governor's 2006-2008 budgets for the Minnesota e-Health Initiative, the Minnesota Legislature appropriated a total of \$15.3 million in grants and loans to support the adoption and effective use of interoperable electronic health records. Three years of grant projects have been funded, with requirements for cross-sector provider partnerships, consistent with the state's goal to achieve interoperable EHRs. Priority also was given to rural providers who are typically less able to afford the costs of conversion to HIT. Over 50 collaborative projects have been funded for health information exchange (HIE), EHR, and ePrescribing planning and implementation.

For example, a \$40,000 planning grant was received by Madelia Community Hospital for HIE planning with long-term care provider Luther Memorial Home, a clinic and a medical center. Another long-term care provider, Minnewaska Lutheran Home, received an \$18,000 planning grant for HIE planning with several partners including clinics, hospitals, pharmacies. Mahnomon Health Center, an early-adopter aging service provider and hospital highlighted in section five below, received \$500,000 in 2008-09 for interoperable EHR implementation between the Health Center, physician clinics, another hospital and nursing home provider and other partners.

Lessons learned from the first round of grants as captured by the Minnesota eHealth Collaborative contain valuable insights that are informative to cross-sector HIT efforts nationwide:

Planning and Resources

1. Thorough and systematic planning is critical; set modest, attainable objectives
2. Using a trusted consultant, existing tools, tips and templates can save time and avoid costly mistakes
3. It takes time to do it right; it almost always takes longer than anticipated, especially when working in a collaborative
4. Use a dedicated project management staff
5. Train staff from all sites at a single training

Needs Assessment

1. Comprehensive needs assessments are crucial for successful product selections; consultants can play a valuable role
2. Information systems expectations are a function of both business and care delivery needs
3. Determine site readiness with an external IT infrastructure evaluation
4. Scheduling and billing system upgrades often need to occur before EHR implementation

Engaging Stakeholders

1. Involve key stakeholders in entire process and ensure that all have a thorough understanding of the project goals
2. Agree on the model to help manage competing priorities and differing motivations
3. Engage physicians early as their commitment to the EHR process is essential
4. Engage internal staff. Adequate preparation of those impacted directly is a critical success factor

Interoperability

1. Numerous legal requirements and possible interfaces may need to be considered when creating a truly interoperable health record
2. Early Health Information Exchange strategies need to involve legal and HIPAA compliance staff to address the complex patient privacy and consent issues

Collaboratives

1. Determine organizational readiness of participating providers and develop action plans to overcome barriers
2. Organizations can learn from being part of a collaborative
3. Collaboration is essential among providers who share health information within a community
4. Managing from afar is not always effective; community liaisons are a useful bridge

4.2 Nursing Home Technology Grant Program

The Minnesota Department of Health in August of 2007 announced the one-time availability of \$120,000 in technology pilot project grant funding for nursing homes. The funds were derived through the Department's Compliance Monitoring Division in the form of civil monetary penalties collected from nursing facilities for noncompliance with state licensing requirements. While the amount of funding was relatively small, such innovative use of penalty fees is a model for other states to emulate.

Grants were not to exceed \$40,000, and were to fund pilot projects that use *new and innovative technology to improve resident quality of care and quality of life*. Pilot projects were required to include training and educational components for staff and/or residents on the use of the proposed technology and an evaluation component. Priority also was given to those projects that used innovative technology to further resident-centered or resident-directed care.

A total of 25 grant proposals were received from nursing homes with over \$678,000 of grant funds requested. The Department of Health chose nine projects to fund, and in most cases provided partial funding for project proposals.

The following are examples of nursing home technology projects that received funding:

- **Vocollect AccuNurse voice recognition technology (Bigfork Valley, \$22,000).** Purchase and installation of technology to provide staff with hands free audible resident care plans, reminders, and checklists, and to serve as a paging system without the use of overhead announcements. Real-time care information is transmitted between aides and nurses with point-of-care documentation. (healthcare.vocollect.com)
- **Webcams for residents to maintain contact with family (Bridges Medical Center and Evergreen Terrace, \$11,000 each).** Computers, outfitted with webcams, speakers, and microphones were purchased and installed.
- **Dakim BrainFitness (Emmanuel Community and Presbyterian Homes of Arden Hills, \$8,500 each).** Purchase and installation of Dakim BrainFitness stations that utilize touch screen technology and built-in camera with automatic facial recognition; self adjusts between five levels of challenge in cognitive fitness for older adults. (www.dakim.com)
- **It's Never 2 Late (Redeemer Health & Rehab. Center and St. Mary's Regional Health Center, \$20,000 each).** Purchase computer equipment and implement the It's Never 2 Late [2 Learn] software training programs targeting cognitive, physical and sensory activity of older adults. Utilizes adaptive touch screen technology with interactive engagement and audio e-mail capabilities. (www.in2l.com)



Evaluation

The Minnesota Department of Health completed a brief evaluation of the nursing home technology program in June 2009 to highlight successes, challenges and lessons learned. Most of the technology pilots yielded positive outcomes, some noted marked functional improvements in older residents.

The two nursing home communities that deployed the Dakim BrainFitness system found that residents who actively used the system enjoyed the stimulation and challenge of the questions and games. However, some residents were intimidated by the computer system and preferred a group setting with staff, while some others had difficulty with the touch screen. Residents appreciated the automatic daily updates of information and challenges for each user to keep content fresh. Emmanuel Community reported that two of the 11 residents who used the system and participated in the study, showed a decrease in depression and improvement in their mood status score on the MDS since starting sessions with the BrainFitness system. Likewise, the six most active users at Presbyterian Homes of Arden Hills showed an increase in their MMSE scores. Family members commented about the increase in conversation during their visits. The most active user at Presbyterian Homes showed an increase in conversation, readily recalling accurate dates, and improved recall of daily events. Emmanuel believes that if residents consistently used the system every day these results would improve.

Providers who used grant monies to pilot the It's Never 2 Late (IN2L) system also report very positive experiences. Providers and residents most enjoyed the variety of capabilities of IN2L, which can be utilized in a range of applications, including exercise sessions, cognitively-stimulating game shows, communicating with family, and facilitating religious programming among others. While Redeemer Health and Rehab found the system to be very user friendly, staff and residents at St. Mary's found it complicated to use, at least for people with limited computer literacy, and needed to invest significant staff time to learn the system. One resident with Schizophrenia at Redeemer found an activity on IN2L that kept her engaged for hours. Redeemer had so many residents request to use the system outside of scheduled program activities that they implemented a daily sign up sheet and limited time on the system to one hour per person.

One grant recipient's experience demonstrates that sometimes a technology is not a good fit for an organization, and underscores the importance of piloting or phasing-in a technology solution before full implementation. The **Bigfork Valley** long-term care community found that the **Vocollect AccuNurse** voice recognition and documentation technology was not a good fit for their organization and discontinued its use before the end of the grant period. In particular, they encountered issues with network compatibility, resulting in inconsistent receipt of voice commands and missed documentation. Extra staff time was required to deal with the functionality challenges, taking time away from caregiving.

Bigfork also had reservations about the social dynamics of the system, feeling it diminished staff's interactions with residents.

However, other providers have had successful outcomes with the AccuNurse system as a tool for providing quality and efficient care, and in some cases improved reimbursement. For example, another Minnesota provider, **Oak Hills Living Center**, found that the system resulted in several operational and quality improvements, including:

- ✓ direct care staff report spending more time with residents;
- ✓ elimination of 'copycat' charting (when staff base end-of-shift charting on the prior shift's report);
- ✓ residents and family no longer see staff sitting at the desk to do charting
- ✓ nurses preparing MDS reports can easily access care data, and
- ✓ staff are easily recruited for help with caregiving or emergency situations.

Initial indications also show that accuracy of care reporting for reimbursement purposes has improved. Before selecting AccuNurse, Oak Hills formed a team of direct care staff in various departments and nurses who met and reviewed various vendors. Oak Hills provided computer stations at each 'neighborhood' to eliminate staff waiting for computers, and designated certain direct care staff to receive extra training to become "AccuNurse champions" who could train other staff.

As an organization engaged in the "culture change" movement, Oak Hills had some initial concern that the systems' headsets were not 'home-like,' but the new look quickly became part of normal attire. Staff joked with residents by saying "do you want fries with that?" to ease the transition of the technology.



4.3 Performance Incentive Payment Program (PIPP)

The Minnesota Legislature in 2007 enacted a state law providing financial incentives, up to a five-percent rate increase, for nursing facilities that meet performance improvement goals through service modality changes, including the use of aging services technologies. The overall intent of the program is to encourage nursing facility efforts to improve quality, improve efficiency, and contribute to the re-balancing of Minnesota's long-term care system. The program seeks to equip facilities with the organizational tools to improve their quality and to disseminate successful strategies throughout the nursing home sector.

Funding for the program is on-going and does not require legislative approval each year. For fiscal year ending June 30, 2009, the state share is \$6.7 million (approximately \$20 million after Federal match and private pay). Each subsequent fiscal year going forward has a \$6 million state share. The program is now evaluating its third round of project proposals, with approximately \$800,000 available for FY 2010 for new projects, while \$5.2 million is committed to multi-year projects from round two. The Minnesota Department of Human Services has entered into contracts with a total of 168 facilities for 45 projects, reflecting the program's emphasis on multi-facility collaboration. An additional 31 project proposals

representing 100 facilities have been received for round three. The use of aging services technologies has played a prominent role in projects funded through the incentive program. Approximately 50 percent of the projects use technology as a strategy to improve quality and provide care more efficiently. Examples of technologies used include wireless call systems, wound prevention and care technology, fitness and health assessment technology, telehealth monitoring and electronic health records.

The Department is conducting an overall evaluation to identify organizational factors leading to successful projects, facilitate diffusion of successful interventions, and examine the business case for provider investments. In addition, the Department of Human Services plans to select certain projects for further study of the financial impact certain strategies have upon Minnesota's Medicaid budget in order to create a business case for the State's ongoing investment in performance incentive payments. For example, projects warranting further study include those where resident outcomes are improved because of the use of technologies, as well as strategies that have improved efficiency or achieved rebalancing.

Academic partners to conduct the evaluation will include the Indiana University Center for Aging Research, University of Minnesota Center on Aging, and the University of Minnesota School of Nursing. It will employ a multidisciplinary team from nursing, medicine, and health services research with extensive practical and research experience in long-term care. Initial findings to date include:

Staff Response to Project:

- Hesitant to change routines
- Need for reassurance that jobs are secure

Approximately 50% of the nursing home performance incentive payment projects use technology as a strategy to improve quality and provide care more efficiently.

Examples of technologies:

- ✓ Wireless call systems
- ✓ Wound prevention and care technology
- ✓ Fitness and health assessment technology
- ✓ Telehealth monitoring
- ✓ Electronic health records

- Positive response when seeing a benefit to residents
- Education and buy-in takes two to three times more effort than expected, but pays off in staff appreciation of evidence-based practice and improved critical thinking skills

Sustainability of Project

- “You can’t go back”
- Make realistic budgets
- Equipment-based programs often easier to sustain, though technology depreciates
- Investigate new reimbursement options through Medicare/Managed care
- Integrate change into overall facility procedures
- Positive results; could not have implemented program without PIPP funding

4.4 Community Service/Service Development Grants for Technology

As part of Minnesota’s effort to rebalance its long-term care service delivery system and increase capacity of aging services and supports, the state legislature since 2001 has provided \$6 million each year to the Department of Human Services (DHS) for the Community Service/Service Development Grant Program (CS/SD) which has supported close to 240 projects.

The CS/SD grants support:

- ✓ Strengthening community service capacity
- ✓ Promoting health
- ✓ Improving chronic care
- ✓ Supporting caregivers
- ✓ Investing in technology
- ✓ Creating choice through housing options

The program has funded 178 projects that incorporated investments in technology, including telehealth, home monitoring, and electronic care management and records. According to the Department of Human Services, the grants have been used to invest in technology that helps providers become more efficient and mobile, allows them to do business with large systems such as healthcare and government, and helps them to provide better care. Furthermore, in many instances, the grants were used to pilot a technological innovation. Successes with various technology initiatives created interest among other organizations throughout the state.

“Advances in technology have revolutionized the way that every industry does business, including long-term care providers.”

– Minnesota Dept. of Human Services, November 2008

For example, grant funds supported the purchase of telehealth and home monitoring equipment by homecare providers such as **Worthington Regional Hospital, Sanford Home Care Canby, and Tri-County Hospital**. Equipment that monitors vitals such as blood pressure, heart rate, weight, etc. is installed in an older person's home and the data is electronically transmitted to a homecare nurse. Homecare providers reported that the technology enabled them to more closely monitor chronic conditions and intervene sooner to avoid acute episodes. Some agencies have partnered with clinics, counties, and other home and community-based providers to increase utilization of home monitoring technologies.

Carlton County and **Cook County** human services agencies established technology-enabled eldercare service collaboratives. The collaboratives brought together public and private aging service organizations (competitors) to support persons in their own homes through telehealth and home monitoring, personal emergency response systems (PERS), and electronic tracking systems for persons with dementia. The Elder Care collaborative led by Carlton County received a total of \$495,400 in funding. It used \$324,290 to purchase telehomecare monitoring equipment including Honeywell's HomeMed and American TeleCare technologies.

St. Elizabeth's Medical Center used grant funds to implement an electronic care management system and electronic health records (EHRs) in their home health care agency. Using an electronic point-of-care system on laptop computers, nurses are able to electronically conduct care planning, clinical management and charting. The system is interoperable with the EHRs systems used by the hospital and primary care clinics.

Evaluation of Telehomecare Projects

The **University of Minnesota Medical School Duluth** conducted an evaluation of five "telehomecare" telehealth and vitals monitoring projects funded through the CS/SD grants (*"An Evaluation of Technical and Implementation Questions in Selected Telehomecare Projects Funded by the Minnesota Department of Human Services, March 2005."*) The five projects were implemented in five separate regions of Minnesota to support older and at-risk adults in small rural communities. Common goals of the projects included decreasing emergency room visits or hospitalizations through better monitoring of changes in health status, and reducing the need for long-term, costly out-of-home placements for participants.

All projects utilized computer-based, telephone-connected telehealth devices including Bosch/Health Hero's "Health Buddy" (www.healthhero.com) Medtime (www.epill.com/medtime.html) medication reminder and dispensing system, Honeywell HomeMed (www.hommed.com), video phones from Wind Current Technologies (www.videophoneconnection.com), and American TeleCare's video patient station

and disease management monitoring station (www.americantelecare.com). Telehomecare visits were comprised of real time video interaction and “stored and forward” transmission of participants’ vital signs.

Provider Satisfaction

Care providers in all five projects were overall very pleased with the technologies and the new care modalities they enabled. Researchers report that service providers retained “brand loyalty” for the technologies they selected, and indicated that they would make the same decisions again. Some equipment management concerns were raised, such as unused telehealth peripheral devices (i.e., glucometers) because they duplicated equipment the older adult already owned. Providers felt it would be beneficial to be able to synchronize data from persons’ existing devices so consumers would not have to learn how to use new peripherals. Several staff members judged some weight scales to be “too sensitive,” making it difficult for older persons with tremors to stabilize movements sufficiently to allow the device to capture weight measurements.

Implementation Lessons

Telehomecare providers reportedly were unanimous in emphasizing the importance of identifying specific groups of clients for whom this technology can be an effective substitute for face-to-face care – such as the frail elderly, individuals with chronic illnesses or complex medical regimens, and those with medication compliance difficulties. Providers also emphasized the importance of setting specific goals for use of telehomecare technology (i.e., better care management, reduced emergency room visits, medication compliance, and greater peace of mind for consumers and providers). Finally, communication of these goals to clients and the other health professionals who interact with them was deemed paramount to successful implementation. Researchers listed 22 various barriers to implementation, ranging from lack of sufficient reimbursement to physician resistance to technical and installation issues.

Client Satisfaction

Evaluators found that a majority of clients expressed satisfaction and found the equipment to be a positive addition that enhanced their ability to be proactive with their health, have better quality of care and realize significant personal cost savings by reducing face-to-face care appointments. On some occasions, patients expressed frustration with the equipment, citing poor video picture quality or over-inflating

94% of clients typically traveled greater than 70 miles in order to receive medical care. 74% would incur additional expenses (i.e., transportation, housing, meals) costing \$75-\$150 per visit. When telemedicine was utilized, 92% of clients saved \$32 in fuel costs and 74% saved between \$75-\$150 in family expenses compared to the cost of one face-to-face trip.

blood pressure cuffs that caused inaccurate readings. Inaccuracy of readings caused some of the patients to mistrust the accuracy of the equipment. Approximately 10 percent of clients resisted installation due to the perception that the equipment is personally and physically intrusive, or that the client feels unable to master the skills necessary to operate the equipment. Individuals with certain psychiatric diagnoses, such as paranoia, may be suspicious about the motivations for using this technology. The study also revealed that the service provider's comfort with the equipment and its installation is a key factor in patient acceptance.

5. TECHNOLOGY ADOPTION RATES AND PROVIDER TOOLS

Two surveys recently have been conducted in Minnesota to assess long-term care providers' current rate of technology adoption. They are valuable not only as an up-to-date source of information but also as a baseline for future long-term care technology adoption surveys. In addition, comprehensive tools have been developed that provide valuable guidance for long-term care providers as they assess, plan and implement various aging services technologies.

5.1 Nursing Home HIT Survey

To make progress toward meeting Minnesota's legislative HIT mandates, the Minnesota e-Health Initiative and the Minnesota Department of Health (MDH) in 2008 began by assessing the status of various care delivery settings regarding electronic health record adoption, including assessing barriers and identifying solutions by delivery setting. MDH contracted with nonprofit Stratis Health to determine the level of health information technology (HIT) use in Minnesota nursing homes by surveying all Medicare-certified nursing homes in the state.

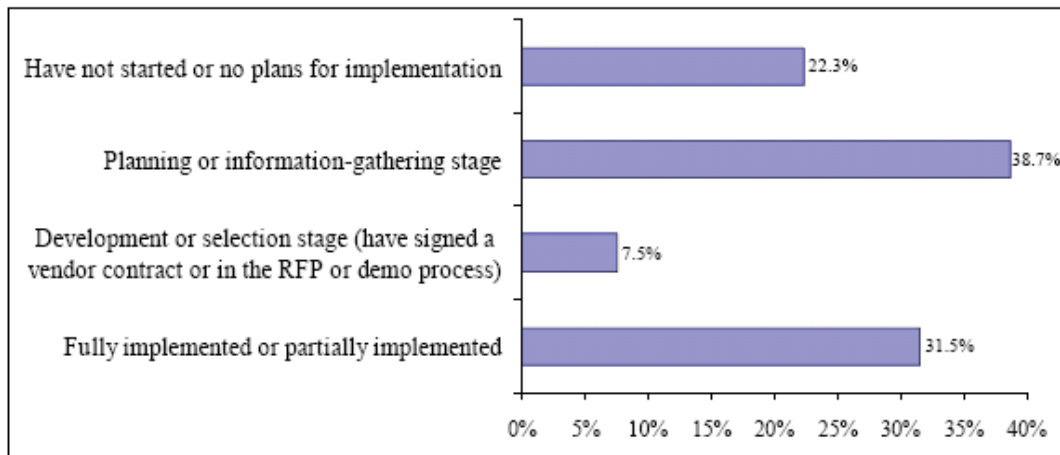
Of the 380 nursing homes surveyed, nearly 80 percent responded, yielding a statistically representative sample of Minnesota's various nursing homes, reflecting its mix of profit status, number of beds, location, and type of nursing home. 63 percent were nonprofits, 25 percent for-profit and 11.5 percent were government-owned.

In addition to assessing the level of EHR adoption, the survey queried providers on their use of software and other technologies including: resident assessment and care planning, census management, medication administration record, documentation of clinical notes, decision support tools, receiving external clinical documents, and e-prescribing between practitioner and pharmacy. Researchers took into account that HIT terminology and definitions are not universally understood and took measures to help nursing homes articulate the level of technology/software they currently use as consistently as possible.

Findings

Results show that 32 percent of Minnesota nursing homes indicate they have fully or partially implemented an electronic health record (EHR). Twenty-two percent of nursing homes reported that they have not implemented an EHR and/or have not developed plans for implementation. Thirty-eight percent of providers are in the planning or information-gathering stage, and seven percent are in the vendor development or selection stage, participating in demonstrations, or in a request for-proposal process.

EHR Implementation Status of Minnesota Nursing Homes



Source: *Stratis Health, 2008*

EHR adoption was more prevalent among larger nursing homes (>100 beds) at a rate of 40 percent, than among smaller nursing homes (27 percent). Affiliation with a group, such as a hospital, integrated system, or a regional chain is correlated to greater rates of EHR implemented. Urban providers were also more likely to have adopted EHRs.

Use of Software and Other Technology in Operations

The research revealed significant variation in rates of adoption across seven technology-supported clinical and administrative functions, ranging from 85 percent using software/technology for resident assessment and care planning to less than two percent currently using technology for e-prescribing between practitioner and pharmacies. A significant number of nursing homes reported using two or more software applications to support a single function.

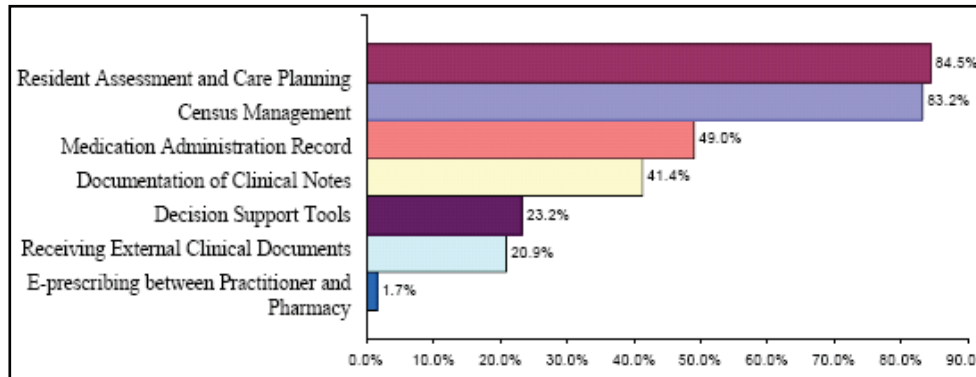
A greater proportion of rural nursing homes utilize electronic medication administration records than do urban providers (56 percent vs. 42 percent, respectively), but urban nursing homes lead rural providers in use of HIT to document clinical notes (45 percent vs. 38 percent) and receive clinical notes from other

EHR Implementation Status by Demographic Characteristics

Nursing Home Characteristics	EHR Fully or Partially Implemented % (n)
Profit Status	
For-profit	27.0% (20/74)
Not-for-profit	33.0% (72/218)
Number of Beds	
0-99	27.4% (54/197)
100 or more	40.0% (38/95)
Location*	
Rural	30.7% (46/150)
Urban	32.4% (46/142)
Type of Nursing Home	
Chain ownership	31.6% (49/155)
National	19.5% (15/77)
Regional	43.6% (34/78)
Free-standing	22.5% (20/89)
Hospital-based or integrated system	46.7% (21/45)

Source: Stratis Health, 2008

Clinical/Administrative Functions Supported by Software/Technology



Source: *Stratis Health, 2008*

healthcare sectors (26 percent vs. 17 percent). Nursing homes that are part of an integrated system or hospital were more likely to have software to receive clinical documentation and to document clinical notes than other types.

Just over half (50.4 percent) of nursing homes indicate that electronic documentation of clinical notes is done at the nurse's station, but 37 percent indicate the documentation occurs via kiosks located outside residents' rooms. Very few Minnesota nursing homes are using portable technology, such as laptops, PDA's or computers at residents' bedside, to document clinical notes.

Researchers concluded that despite significant adoption rates of EHRs and HIT by nursing homes in Minnesota, providers have much progress to make in order to meet the 2015 deadline for interoperable EHRs. They recommended the following next steps:

- ✓ Develop strong business case to support EHR/HIT investments by nursing homes
- ✓ Plan to understand and address barriers
- ✓ Support collaborations to create common [vendor] specifications for long-term care
- ✓ Conduct on-going assessments, including other components of the long-term care continuum

The complete nursing home HIT survey results can be found here:

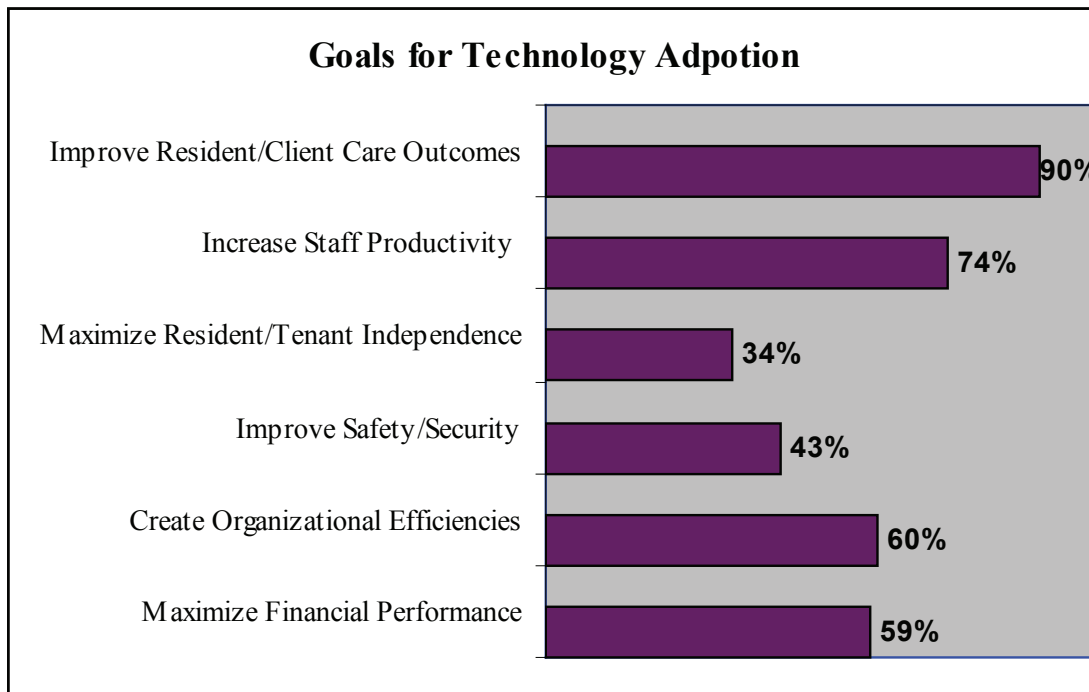
http://www.stratishealth.org/documents/HIT_LTCSurveyResults.pdf

Leading Barriers to HIT Adoption:

- Lack of capital resources (72.1%)
- Insufficient time to select, contract, install, and implement (26.5%)
- Inability to easily input historic medical record data (25.4%)
- Lack of technical infrastructure (e.g. networking, servers, other hardware) (24%)

5.2 Aging Services of Minnesota Provider Technology Survey

Aging Services of Minnesota, a membership association comprised of mission driven providers of aging services throughout Minnesota, in 2008 conducted a survey of its members to better understand the goals, barriers and implementation rates of technology in member settings. A total of 91 providers responded to the survey, 61 percent of whom are part of a multi-facility system. Slightly more than half



(52 percent) were nursing facilities, 26 percent of respondents were assisted living communities, 14 percent were housing with services, three percent were home health care and one respondent was an independent senior housing provider.

Findings

It should be noted that provider interpretation of the various technologies covered in the survey may not be entirely uniform. Further education and research will be needed to ensure full reliability of the data. The greatest rates of technology adoption were for wireless call systems, fall detection, electronic medical/health records, wearable monitoring (i.e., wander monitoring), and electronic care documentation at the point of care.

TECHNOLOGY	CURRENT	PLANNED
Wireless Call Systems	36%	29%
Fall Detection	36%	22%
Electronic Medical Records	35%	32%
Wearable Monitoring (i.e., wandering)	34%	22%
Electronic Health Records	29%	33%
Electronic Care Documentation	14%	45%
Wound Care	14%	22%
Assistive Devices	12%	23%
Telemedicine	11%	26%
Passive Monitoring	11%	30%
Cognitive Stimulation/Entertainment	11%	25%
Medication Compliance	10%	33%
Electronic Care Coordination	10%	27%

Just eighteen providers responded to a question about the interoperability of existing EHR systems. Of respondents, 10 reported their EHRs are interoperable with nursing facilities, nine with assisted living, four with hospitals, and five with home health care, clinics/physicians and pharmacies.

When asked regarding sources of startup funding for technologies, most indicated internal organization funding (88 percent), sixteen percent received state grants, twelve percent received foundation grants, and eight percent received federal grants or venture capital.

Consistent with survey responses that indicated significant provider interest in more assistance with the process of understanding, evaluating and implementing technologies, Aging Services of

Minnesota conducted a technology conference in 2008 to further educate providers regarding aging services technologies and provide opportunities to research technology vendors.

Leading Barriers to Technology Adoption:

- High Costs (89%)
- Training Needs (38%)
- Need Additional Information/Research (30%)
- Insufficient Computer/IT System (22%)

5.3 HIT Adoption Toolkits for Nursing Homes and Homecare/Assisted Living

Aging Services of Minnesota funded the development of a health information technology (HIT) toolkit for nursing homes and a homecare HIT toolkit for home health agencies, private duty nursing services, home-based hospices, and other organizations providing health care services in the home (such as assisted living). The toolkits were developed in partnership with Stratis Health, Minnesota's Quality Improvement Organization in 2008/09. Both toolkits are robust and include a great deal of written material on issues from assessment of HIT attitudes to interoperability, as well as webinars, such as a "Vision and Strategic Plan for HIT Webinar." They supply tools, tested in each corresponding care environment, to help providers plan and make informed choices in technology adoption.

"A carefully constructed foundation and the right tools to plan and implement HIT can mean the difference between systems that are not well-used or even add administrative burden, and those that achieve value."

– *Aging Services of MN, Stratis Health*

The HIT toolkits can be used for implementing comprehensive HIT or EHR systems, for acquiring individual applications, or for overhauling existing systems. While the toolkit developers strongly recommend that providers pursue an overall organizational strategy, which is aptly supported through the many tools, the toolkit allows each organization to construct its own timeline based on the applications, technology, and operational activities being undertaken.

The HIT toolkits consist of seven stages categorized into three main sections. Descriptions of the individual tools are available on the Web pages for each section:

- Section 1. Adopt: Assess - Plan - Select
- Section 2. Utilize: Implement - Effective Use
- Section 3. Exchange: Readiness - Interoperate

For example, assessment tools include: communication plan, HIT attitudes assessment, computer skills survey, total cost of ownership and return on investment analysis, IT staffing inventory, IT system inventory, HIT security risk analysis and controls assessment, contingency plan assessment, application interface inventory, and financing resources components. Interoperability tools include: health information exchange (HIE) data stewardship, HIE interoperability, personal health record (PHR) technology, HIE policy and procedure for PHR.

Both toolkits are made publicly available at no charge and can be used by providers nationwide. The toolkits are also updated regularly to reflect new tools, best practices, and user suggestions.

Nursing Home Toolkit:

<http://www.stratishealth.org/expertise/healthit/nursinghomes/nhtoolkit.html>

Home Health/ Assisted Living Toolkit:

<http://www.stratishealth.org/expertise/healthit/homehealth/hhtoolkit.html>

6. EARLY ADOPTERS OF AGING SERVICES TECHNOLOGIES

Five examples of “early adopter” organizations are presented in detail below. While the providers highlighted vary in size and approach, all have been innovative leaders and have relied heavily on collaborations with other providers to pilot and implement new technologies in providing care to older adults. Examples of technology adoption range from interoperable electronic health records (EHRs) to “therapeutainment” technologies and everything in between. These early achievements can serve as a point of reference for other providers in the field, as well as a foundation to evaluate and improve the application of specific emerging technologies.

6.1 Ecumen

Ecumen is a mission-focused, faith-based, older adult services organization that serves over 12,000 seniors across a wide array of service options in more than 70 communities primarily in Minnesota, Wisconsin, Iowa, and North Dakota (www.ecumen.org).

A New Direction

Ecumen believes that the combination of technology advances and the burgeoning 65-plus population will change the face of older adult services as we know it today. As a result, Ecumen is taking a fresh look at the future of their business and believes continued success in technology implementation will become a core competency for the future. A key Ecumen strategy is to invest significant time and resources into innovation across all business lines. Ecumen tests and implements new technology in three key categories including: 1) core business functions (e.g. accounting/billing); 2) care-related technology (e.g. point-of-care systems), and 3) consumer-centric technology (e.g. cognitive fitness).

Like many not-for-profit older adult services providers, Ecumen’s history is rooted in skilled care communities. In 2001, Ecumen embarked on an aggressive transformation strategy that recognized the need to re-balance its portfolio, namely, to reduce the number of nursing home beds and increase the range of residential living options and enhance community-based services. Now well down the path of achieving this balance, Ecumen sees its next frontier as providing services beyond bricks and mortar and

“Technology is not a magic bullet but it is an enormous piece of the solution to care for a new generation of aging people.”

– Ecumen

to do so in innovative ways that meet consumer needs and desires while addressing overall well-being issues such as loneliness and isolation. It believes technology is key to creating this future.

To this end, Ecumen is proactively working on ways in which new models, such as the Village Model (Beacon Hill, Mill City Commons) can be combined with new technology to create an entirely new framework for supporting older adults in the communities in which they live. This vision will play out in both Ecumen's "bricks and mortar" settings as well as in a new business model under development entitled "Ecumen at Home" that will bring together the best of traditional home health services combined with high technology options. Ecumen at Home will be launched in early 2010.

The Pilot Framework

A critical component to Ecumen's approach to technology is the pilot. Ecumen believes that pilots lower the financial and operational risks of being an early adopter of technology. At the same time, the experience and insights gleaned from piloting new technologies significantly enhance their ability to get maximum benefits from their post-pilot implementation. They also see pilots serve a critical role in identifying internal staff "champions" and staff "buy-in" without which new technology can be viewed as a burden – just more work for already-busy staff.

Ecumen has developed a technology pilot framework, a "living document" that provides a structure for decision making regarding which technologies to pilot, management of the pilot process, evaluation of pilot results, and post-pilot implementation considerations. It is Ecumen's goal to improve on this framework with every pilot experience.

Among the critical considerations for Ecumen's post pilot implementation is the technology's business case or return on investment (ROI). The organization has found that establishing a concrete ROI for many technologies is often difficult, which they attribute to: 1) newness of the technology and subsequent lack of long term data; 2) lack of resources and time to collect long term data; and 3) difficulty in isolating factors that substantiate ROI even in the short term. Given these constraints, they have chosen to take a broad perspective on ROI by incorporating a logical business case with supporting first-hand data and other factors, including the contribution of the technology to Ecumen's culture, values, mission, and vision. Ecumen believes that waiting for definitive ROI prior to implementation stifles innovation and, most importantly, penalizes the older adult population that could benefit today.

Transformation at Work

Each technology implemented post-pilot has changed the way Ecumen provides service to its residents and clients. "Staff-facing" technologies like QuietCare, Caretracker, and Eldermark Software serve as valuable tools at Ecumen for improving a care delivery system that is focused on the individual, not age nor disease. For example, QuietCare has become a tool to enable Ecumen staff to live up to its "Lifestyle

Covenant” which focuses on personalizing the care for each resident, respecting each individual’s right to make choices regarding their day-to-day quality of life, and keeping each resident safe by alerting staff to potential issues. Resident or “client-facing” technologies like Dakim BrainFitness has entertained many of Ecumen’s residents while providing them with an elective tool to exercise their brains and help mitigate the long-term risks for developing memory-related diseases.

Funding Partnerships

To date, Ecumen has funded most pilots and technology expansions on its own. In some cases, Ecumen seeks to develop a long-term partnership with the technology vendor, believing that a close provider-technology vendor partnership will yield improvements to the technology itself through constant communication, better service delivery by the vendor enabling Ecumen staff to take greater advantage of the technology’s benefits, and better financial outcomes long term for both parties. In certain circumstances, Ecumen has sought grant funding to help subsidize some of the costs of piloting and/or implementation. For example, the first two years of Ecumen’s deployment of Ivivi SofPulse wound care technology is being funded through a \$650,000 award in 2008 from Minnesota’s Nursing Facility Performance Incentive Payment Program (see section 4.3 above).

Activity/Wellness Monitoring

First piloted in 2006 at Lakeview Commons, QuietCare® by GE Healthcare and the Living Independently Group (www.quietcare.com), is now 900 installations strong in housing sites throughout Ecumen. The wellness/activity monitoring system empowers older adults to live independently with peace-of-mind in private residences. It uses small, non-intrusive wireless activity sensors combined with



computer-based algorithms to analyze and report changes in key behaviors. Changes in behavior are often an early indicator of emerging health conditions or potential emergency situations. In addition to being deployed in Ecumen’s congregate settings, QuietCare is also being made available to the community-at-large through several Ecumen campus-based home health programs. For staff, the system provides a series of critical reports that enable staff to view the status of its resident population at a glance, develop customized care plans to accommodate an individual’s lifestyle, and prioritize workload and enable more efficient scheduling according to actual resident needs.

Ecumen's QuietCare® deployment:

- ✓ **Size:** 900 installations/900 users;
- ✓ **Cost:** \$125 installation fee, \$65 monthly monitoring fee;
- ✓ **Who is Paying:**
 - o Ecumen in assisted living communities;
 - o Five MN counties will reimburse for QuietCare via the Elderly Waiver; (see section 3.6 above)
 - o Consumers in independent living sites and private homes;
- ✓ **Outcome:** Life-saving, preventative health, increases resident sense of safety and security, can prevent or delay expensive nursing home placement;
- ✓ **Stage of Implementation:** Completed pilot and expansion. Currently working with the vendor on product improvements and an "in home" pilot for use of this technology in private homes in the community;
- ✓ **Measurements underway or expected/ROI:** Ecumen's ROI model for this technology holds that if a resident stays in an apartment one more month than he/she would have otherwise, the system has more than paid for itself. ROI can also be realized as a result of knowing what additional services residents might need as individuals age-in-place and through direct sales of QuietCare. Additionally, early detection of a disease or prevention of a hospital visit can easily save thousands in overall health dollars;

Ecumen plans to work with Living Independently and GE to pilot an in-community (private home) pilot in the fall of 2009. Provided the pilot demonstrates positive outcomes, Ecumen plans to feature QuietCare as the centerpiece for its new model called "Ecumen at Home" which will be launched in early 2010. Clearly, Ecumen believes that potential for growth/expansion of this technology is significant.

Cognitive Fitness

Ecumen in 2006 was selected as one of eleven pre-release sites throughout the country for the **Dakim BrainFitness** (www.dakim.com) technology. Piloted at Ecumen's Lakeview Commons community in 2007 and expanded to nine new sites in 2008, Dakim BrainFitness is a computer-based "cognitive fitness" program designed to enhance quality of life for older adults through cognitive stimulation that is fun and easy to use.

Ecumen's Dakim BrainFitness deployment:

- ✓ **Size:** 10 units/200 users in 2009;
- ✓ **Cost:** \$7,000 per unit plus \$1,200 annual subscription fee;
- ✓ **Who is Paying:** Ecumen in owned communities, consumers in private homes;
- ✓ **Outcome:** Very high resident satisfaction;

- ✓ **Stage of Implementation:** Completed pilot, expansion in 2008; begin marketing an in-home version in 2009;
- ✓ **Expected/ROI:** In “bricks and mortar” settings, ROI comes in the form of increased marketing appeal, increased resident satisfaction scores, and less staff time spent on activities. Ecumen is currently in discussion to market the in-home version of Dakim BrainFitness directly to consumers starting in the fall of 2009;

In 2009, Ecumen plans to pilot a cognitive fitness application by **Vigorous Mind** (www.vigorousmind.com), a web-based program that offers cognitive exercises as well as other social connection applications such as calendar, email, photo sharing, and games. As a web-based application, Vigorous Minds offers older adults a low-cost option to participate in brain fitness and network with family and friends.



Hi-Tech Wound Care

Ecumen conducted a successful clinical evaluation of the **Ivivi SofPulse** (www.ivivitechnologies.com) wound-care technology in the fall of 2006 and continues to use this therapy at selected sites. SofPulse is an advanced modality wound care therapy that uses pulsed electromagnetic frequency to promote healing. In 2007 Ecumen expanded the deployment of this technology to three other communities.



Given its outstanding clinical experience, Ecumen received a \$650,000 performance incentive payment from the State of Minnesota to implement this technology at 12 new sites in 2008 and 2009.

Ecumen’s Ivivi SofPulse deployment:

- ✓ **Size:** 35 units; 14 sites, approximately 400 residents at any given time;
- ✓ **Cost:** \$9,000 per unit (volume purchase discounted rate), plus \$990 extended warranty per unit;
- ✓ **Who is Paying:** 2006 and 2007 Ecumen/2008 and 2009 Ecumen and State of MN;
- ✓ **Outcome:** Outstanding clinical outcomes;
- ✓ **Measurements underway or expected/ROI:** Will be studied as part of the Performance Incentive Program via the State of Minnesota. It is also possible that HMOs and therapy companies will reimburse Ecumen for this therapy.

Charting and Care Management Technology

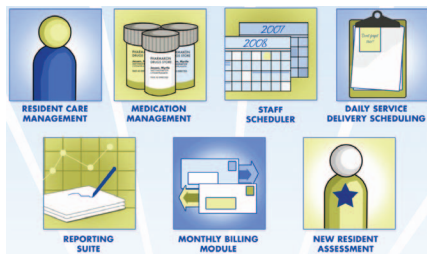
Ecumen in 2006 first piloted point-of-care technology at its Grand Village community with the **CareTracker** technology by **Resource Systems** (www.resourcesystems.net). Using a computer touch screen to document care rather than paper forms, CareTracker has increased Ecumen’s accuracy

of assessments, simplified the MDS process, improved care plans, improved staffing patterns, and empowered staff. They have found the technology to be simple to use and has been enthusiastically embraced by staff.

Ecumen's CareTracker Deployment:

- ✓ **Size:** 8 sites in 2008, hundreds of staff users;
- ✓ **Cost:** \$50- \$60K per site;
- ✓ **Who is Paying:** Ecumen;
- ✓ **Outcome:** Improved care plans/resident care, improved clinical documentation leading to higher reimbursement and increased staff efficiency and satisfaction;
- ✓ **Stage of Implementation:** Piloted one site in 2006, added three more sites in 2007 and added 4 more sites in 2008;
- ✓ **Measurements underway or expected/ROI:** By increasing the accuracy of assessments, appropriate data is captured for reimbursement. Added operational efficiencies, such as saving significant staff time, are also part of the ROI.

EHRs & Point of Service Technologies



Ecumen has been actively pursuing new technology to advance its use of electronic health records (EHRs) and to improve point of care solutions in its assisted living, memory care and skilled nursing environments. It's goal for the technology is to put critical information into the hands of care providers and enable them to electronically record actual services delivered. For example, Ecumen has piloted the use of handheld PDA technology and

plans to test touch-screen technology via **Eldermark's Service Minder** solution (www.eldermark.com) in the assisted living and memory care sites.

Ecumen's skilled nursing facilities are beginning to rollout **Keanecare's KeaneNet Solutions (KNS)** (www.keanecare.com), a browser-based software program with integrated clinical, financial and resident information applications. The program interfaces with CareTracker to import caregiving information. NetSolutions will operate on tablet PCs with wireless network connections to allow point-of-care data entry and access to resident EMRs. In addition to KNS, Ecumen is preparing to implement Keane's ePrescribing module on tablet and notebook computers in its



skilled nursing facilities. Establishing secure wireless capabilities at each of the sites is a prerequisite for this rollout.

Ecumen is also participating with a **Community Health Information Collaborative (CHIC)** in a pilot study of a health record locator service (**MEDNET RLS**) which will enable area providers to more efficiently determine the location of health records where patients might have previously received care (www.mednetworld.com/pdf/MEDNET.TS-003.pdf). This project promises to lead to the electronic exchange of EHR data for participating providers. This project via **CHIC** received grant funding to cover costs for the first year of the initiative.

Socialization and Engagement

Ecumen has supported the development of **Mill City Commons** (www.millcitycommons.org), a neighborhood, nonprofit membership organization based on the successful Beacon Hill Village model. It is designed to build community and meet the lifelong health and lifestyle needs of its members. It seeks to provide the connections, resources and support needed to ensure residents can live in their homes for as long as they choose. A member-only Web site currently in development will allow members to complete on-line profiles that will populate a member directory and provide contact and personal interest information, and will feature interest groups created by members around various interests and activities. It will link members directly with a wide range of in-home services vendors at group rates, from plumbers and electricians to home health care. Finally, the program will allow members to post their personal needs (i.e. assistance with grocery shopping) directly to the site. Members can then view and sign up to fill volunteer requests immediately and receive an e-mail reminder prior to their activity. Mill City Commons plans to provide other technology-enabled services to its members in the future.

6.2 Mahnommen Health Center

Mahnomen Health Center (MHC), a public nonprofit health care facility is comprised of an 18-bed acute care hospital, a 47-bed nursing home, a clinic and ambulance service serving the Mahnomen area of Minnesota, located entirely within the boundaries of the White Earth Indian reservation (www.mahnomenhealthcenter.com). MHC's mission is to "provide quality progressive healthcare services to all." It has made the adoption of appropriate aging services technologies a center piece of achieving that mission. It also places emphasis on patient-centered care, coordination of care to specialty services, education and health prevention among other goals. One of MHC's keys to success was adding a dedicated Information Technology manager to coordinate technology systems and maximize capacities and new opportunities.

Charting and Care Management Technology

MHC is phasing in the **PointClickCare®** (www.pointclickcare.com) electronic charting and care management system in its nursing facility. The system has a suite of integrated components including MDS, assessments, care plans, point-of-care documentation, physician order entry, medication administration records, pharmacy integration, and quality improvement administration among others. MHC chose PointClickCare in part due to its prorated fee structure based on the number of residents per day versus a large lump-sum.



Currently MHC's Medicare minimum data set (MDS) nurse coordinators are using the system, which is integrated with PointClickCare's "business office" billing system. MHC is planning an expansion of the technology so that all care staff utilize the web-based charting features and enable CNAs to collect resident's vital signs through PDAs. MHC has plans to make all clinical functions electronic, including ordering and viewing labs and x-ray imaging for nursing home residents.

EMRs

Mahnomen Health Center currently utilizes **GE Healthcare's Centricity®** EMR electronic medical records in conjunction with its acute care hospital (www.gehealthcare.com/us/en/hit/products/centricity_practice/emr_index.html). Centricity EMR enables physicians and clinical staff to document patient encounters and securely exchange clinical data with other providers, patients, and information systems. For example, when nursing home residents go to a specialist appointment and the physician utilizes the system's electronic template for documentation, MHC's nursing facility MDS coordinators can have results before the residents return from their appointment.

Telemedicine

Mahnomen Health Center relies on a T1 broadband connection to enable telemedicine services for residents in both its hospital and skilled nursing settings. Using Polycom's TelePresence (www.polycom.com) MHC can utilize peripheral devices to allow high definition, real time images to be shared, such as images of a patient's throat, ears or skin. For example, in an instance where a skilled nursing resident refused to leave the building to see a wound specialist, MHC used the telemedicine technology for wound care by a specialist hours away. On the hospital side, MHC often uses the system for follow-up visits in the burn unit to avoid subjecting patients to the six-hour drive to see the burn specialist.



MHC plans to expand its use of telehealth technologies. One expansion for which MHC hopes to receive federal grant funding is deployment of a vascular testing device to diagnose Peripheral Arterial Disease (PAD) using BioMedix's PADnet technology (www.biomedix.com) in diabetic and other at-risk residents. With this non-invasive technology, MHC will be able to electronically transmit PAD scans to specialists for review. By diagnosing poor circulation in these residents MHC hopes to prevent other vascular restrictions such as heart attacks. This technology is especially relevant to MHC's resident population where approximately 90 percent of residents have diabetes.

Interoperable EHR Collaborative

Mahnomen Health Center together with Perham Memorial Hospital and Home, MeritCare Hospital and MeritCare Physicians Clinics joined together as a Community e-Health Collaborative to achieve interoperable EHRs. In 2008, the Collaborative was awarded \$500,000 through Minnesota's e-Health Grant Program (*see section 4.1 above*). The project's goal is to adopt, utilize and implement the core clinical functions of EHRs within the collaborative to enhance health care experiences at all points of contact, and especially improvement of patient safety and quality of care.

The Collaborative plans to adopt the **Healthland Healthcare Solution** system to incorporate various functions into a comprehensive and interoperable EHR (www.healthland.com). Components include scanning of historical records, clinical documentation, discharge instructions, bar code medication administration, emergency room documentation and nursing home documentation.

Key desired interoperable EHR benefits include:

- ✓ **Safe Medication Administration.** Recognizing that even the most experienced RNs can on occasion make medication errors in a time of crisis, particularly with no pharmacist on site, MHC and its partners hope to achieve fool-proof medication administration safeguards with the technology. Currently, staff must refer to medication cards from a model of medication delivery three decades old. The Healthland EHR system features automatic alerts to verify labs or orders before proceeding with medication administration through the use of bar codes.
- ✓ **eRx.** While the partnering organizations currently have some interoperability with labs for clinics and hospital usage, they plan to achieve ubiquitous ePrescribing throughout their care settings. The eRx capabilities will enable the providers to electronically submit prescriptions and eliminate issues such as patient tampering with paper prescriptions. Although MHC currently uses "tamper-proof" prescription pads, the slips are subject to being lost or sold.
- ✓ **Efficient and Accurate Care Transfers.** Partners seek greater ease and accuracy in transfers of care between emergency rooms and/or acute settings to the tertiary hospital and skilled nursing homes. With the interoperability of the EHR, duplication of lab tests, radiology, etc. will be eliminated when crossing into other levels of care to a much greater extent than enabled by current systems. This will save money, time and emotional stress on patients/residents and their families.

- ✓ **Streamlined Quality Reporting.** Collaborative partners hope to achieve greater ease and accuracy in data collection for purposes of quality reports to oversight agencies such as the Centers for Medicare and Medicaid Services (CMS) and the state's quality improvement organization. Current methods of data collection are very labor intensive and subject to error and misinterpretation.

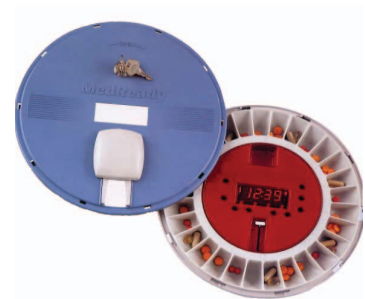
6.3 Spring Valley Senior Living

Spring Valley Senior Living is a rural nonprofit aging services provider comprised of a skilled nursing facility, a 14-unit assisted living community, a 20-unit flexible living housing with services community, home health and adult day care among other services. Spring Valley has undergone an organizational transformation over the past decade, with technology and collaboration playing key roles.


Piloting New Technologies in the SE Minnesota Consortium

Spring Valley and a group of 10 other rural long-term care providers in Fillmore and Houston Counties formed a South East Minnesota Consortium to explore new insurance financing models and other collaborative efforts. The group pursued a grant opportunity through Minnesota's Community Service/Service Development (CS/SD) (see section 4.4 above). While at first unsuccessful, the consortium applied for the next round and in 2004 received a \$250,000 grant over three years. Expanding home care services to areas of southeastern Minnesota that did not have home care services close became the primary focus for the consortium. Aging services technologies were seen as a means to help accomplish that goal.

- **Medication Dispensers** by **MedReady** were purchased through the consortium grant to enhance the services home health could offer to their clients (www.medreadyinc.net). The dispensers provided greater automation, security and reminders for clients. The MedReady sounds an alarm to alert clients when they are to take medications. While the alarms provide no guarantee that clients in fact take medications, the units were received as a significant improvement over past medication management methods.
- **Portable INR** units by **ProTime** were piloted to lessen the frequency that clients would need to travel to a clinic or lab and to provide a more timely interventions and medication if needed. The ProTime Microcoagulation System conducts the International Normalized Ratio (INR) blood test via a portable instrument, a 3-channel cuvette and a unique finger incision device. Simultaneous analysis of two levels of controls aids in the accuracy of the 3 channel cuvette. The consortium found the greatest drawback of using the portable INR devices is the acceptability of the results by physicians. While clinics often work with providers and clients to incorporate use of



the portable INR units into care management, other physicians have concerns about the accuracy of the portable testing devices. However, the units were found to be a great asset to the 31 participating clients, and utilization continued after the grant period ended. Because access to transportation is an issue in this rural area, the convenience offered by this technology enabled prolonged independence for clients.

- **Telemonitoring Video phones by Wind Currents Technologies (TeleVyou 500)** (www.videophoneconnection.com) were deployed by the participating home care agencies to increase the level of service they could provide to clients without adding travel costs. While the quality of the picture at the time was not as crisp and clear as hoped, it still produced a visual contact with a care provider that provided comfort to a home-bound client in need of a reassurance call.
 
- **Home Health Management System by Allegheny Software** (www.hhc3000.com) was implemented for the participating home health care agency that had been entirely paper-based in its operations. The software provides integrated billing, payroll, visit tracking and care planning. Providers found it greatly enhanced accuracy and the streamlined data integration for OASIS and other government reporting, and provided new management and billing tools. The greatest benefit was spending less time on paperwork and more time on care visits.
- **Activity/Wellness Monitoring by QuietCare** (www.quietcare.com) was piloted in the home setting through the home care agency and in Spring Valley's housing with services setting. The wireless motion-sensing technology was piloted in 20 homes, with the monthly fee waived for the first six months by QuietCare to test the technology. Providers experienced some difficulty gaining acceptance of the technology by home care clients due to the perception that they were being watched when the sensors were installed. When clients understood that the sensors were only motion, not video, these concerns were minimized. Benefits of the technology emerged. In one situation, a urinary tract infection was caught early by detecting unusually frequent bathroom visits.

Theraputainment

Spring Valley in 2007 incorporated "theraputainment" technology into its rehabilitation and therapeutic recreation program using the **Nintendo Wii** (www.nintendo.com). Use of the Wii began in the activities departments for housing and skilled care residents. Spring Valley's therapy staff then utilized the Wii for certain clients to improve balance and neurological functioning. The organization is investing in more Wii units and accessories to continue to expand theraputainment uses.

Safety Technologies

To help residents avoid falls and better manage unsafe wandering, Spring Valley has piloted several safety technologies. They are currently using **Stanley Senior Technology's TABS®** alert system ([Center for Aging Services Technologies \(CAST\)](http://www.</p>
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seniortech.com) using **UMP sensors** and **Personal Sentry**. These devices integrate Stanley Senior Tech's Arial® wireless call system in place throughout Spring Valley's campus. The Arial system is used in the nursing home as a traditional call system with pagers and a central computer that provides reports for management to monitor the length of time it takes to answer call lights and other trends. Spring Valley has found the technology to be a valuable tool for enhancing staff performance and evaluating residents' needs. It's housing with services community utilizes a variation of the Arial system by using a call pendent for tenants to alert care staff when assistance is needed. Home care agency staff are able to monitors trends in the use of the pendants in reviewing a tenants' health status.



Charting and Care Management Technology

A leading project this year for Spring Valley is the adoption of a point-of-care charting and care management system, using **PointClickCare** (www.pointclickcare.com) (*as discussed in section 6.2 above*). For the past four years, Spring Valley staff has been analyzing various software systems and is now planning an August 2009 rollout. Its main goal is to be able to provide more face-to-face contact with residents and minimize the amount of time used for documentation. Spring Valley also plans to utilize the electronic medication administration record (eMAR) component of the system, and is working with PointClickCare to develop a case study of the implementation process.

6.4 The Lutheran Home Association

The Lutheran Home Association (TLHA), based on a 22 acre campus in Belle Plaine, Minnesota, provides comprehensive services to older adults and persons with disabilities in Minnesota and Wisconsin (www.tlha.org). The range of services featured includes rehabilitation therapy services, intermediate care for persons with disabilities, assisted living, independent living, Alzheimer's and dementia care, adult daycare and home health care services. In addition, The Lutheran Home Association offers hospice services, spiritual care, respite services, skilled nursing services and a complete continuum of care.



TLHA has fully embraced technology-enabled services and has plans for significant expansion in its use of aging services technologies, pioneered at its newest independent and assisted living community, Kingsway Retirement Living.

Integrated Technology Solution from the Start

The Kingsway Retirement Living community is a unique and expansive German-style center consisting of 36 apartments of assisted living – 14 with memory care services, and 45 apartments for adults age 55 and older. When Kingsway opened in June of 2008, it was fully equipped with integrated aging services technologies provided through **Healthsense** (www.healthsense.com). Employees had received extensive training, educational materials were provided to prospective and new residents and the use of technology was made a natural and vital part of the living environment. Technology costs were incorporated into the business model.

Through an innovative service model which includes health and wellness services, advanced technology and community resources, Kingsway is able to support individuals in independent apartments who would otherwise need assisted living services if this model were not in place. Wellness monitoring and other technologies are coupled with home care services. In addition, an office of the Metropolitan Area Agency on Aging is located within the center to provide streamlined access to community services.



Kingsway named its wellness technology program “WatchCare,” which utilizes the eNeighbor™ system by Healthsense. This program provides independence and safety simultaneously as residents and their loved ones are able to choose what options best fit their needs. When necessary, staff is silently alerted to possible problems, such as someone falling or significant changes in routine, via WiFi or cellular phones. It promotes prevention and early intervention by detecting potential health risks and facilitating appropriate services. A series of sensors monitoring different types of routines are able to “learn” the behavior of residents and mitigate false alarms.

Kingsway is extensively utilizing the Healthsense eNeighbor system’s Wi-Fi connectivity to interface to telehealth peripherals to record and store residents’ vital sign data, such as blood pressure, pulse rate, weight, blood glucose and blood oxygen, customized to each resident’s needs and interests. Medication reminder phone calls are also generated by the system if desired. TLHA has found that such systems reduce the stress and exhaustion of family caregivers, including spouses.

Kingsway has also deployed the Healthsense personal emergency response system (PERS) with pull cords in each apartment and wearable call pendants as appropriate. In one example, the spouse of an independent living resident who had been hospitalized suddenly felt alone and vulnerable and asked for a call pendant for added security. The system was able to accommodate this request within an hour. Wander management tools are utilized to ensure safety in memory care assisted living as well.

Expanding Campus-wide and Beyond

The experience gained with the technology deployment in Kingsway Retirement Living has provided The Lutheran Home Association with a solid foundation for extending these technology-enabled service solutions to the variety of care settings at its Belle Plaine campus, naturally occurring retirement communities, and residences in communities surrounding TLHA living settings. On its main campus, the technology solutions will be made available to residents of affordable senior housing and skilled nursing as well as housing for persons with disabilities.

“We have implemented an innovative combination of technology tools and services, which work effectively to successfully support individuals in maintaining optimum independence in their independent or assisted living homes.”

– *Kingsway Retirement Living*

The community expansion is the next step in TLHA’s vision for combining cost effective services and advanced technology to support aging in place in rural communities surrounding campuses offering a complete continuum of care. The service will begin within the Belle Plaine school district boundary and will then be offered to neighboring communities. TLHA is pursuing a federal grant opportunity of \$500,000 to launch an additional community initiative. The extension of Healthsense technology solutions is facilitated by the use of a standard Wi-Fi wireless network that can be configured to provide campus-wide or single residence wireless network coverage for a broad variety of advanced technologies and devices.

TLHA is collaborating closely with other not-for-profit organizations and community resources for utilizing technology to support aging in place. This collaboration allows for improved resource sharing, such as on-call nursing staff, interaction among clinical staff and training. TLHA also has benefited from benchmarking practices from the successful use of technology to enable older adults to remain in independent living or to transfer from skilled nursing residences back to independent settings, as demonstrated by NewCourtland Elder Services in Pennsylvania.

Lessons Learned

The lessons learned with implementing remote monitoring technology within Kingsway Retirement Living have greatly increased the likelihood of success for its community technology expansion initiative. These include:

- In addition to extensive up-front training, ongoing staff training is essential.
- Regular, systematic educational training is also needed for the population being served and their families. Place emphasis on the value of the technology in terms of the added safety being provided – such as preventing a fall or providing services sooner rather than later.

- Enabling people to live as independently as possible is more cost effective for both individuals and service providers.
- A rapid response to technology and home health care service requests is a necessary component of this service model.

6.5 Volunteers of America

Volunteers of America (VOA) is a national, nonprofit, faith-based organization providing a wide range of services and housing for people of all ages. VOA provides nursing care, assisted living, memory care, home health care, rehabilitation and other services to older adults with 25 facilities throughout the United States, including 11 communities in Minnesota.

A Journey in Technology Investment

Phase I: Wellness and Safety Monitoring Technology

Volunteers of America began its journey in technology approximately 5 years ago when it developed a research relationship with scientists at the **University of Virginia** around home wellness and safety monitoring technology. The monitoring technology includes a “suite of sensors” that range from motion, contact, and bed sensors to monitoring sleep patterns, as well as a fall detector. These sensors, through the concept of inference, allows a medical professional to review the changes of a persons activities of daily living and associate those changes in the context of the chronic disease and/or medicines that person may be taking. This assembly of information allows the care provider to be very specific and targeted in their investigation of the person’s condition and allows a timely intervention where possible.

Initially, VOA’s intent was merely to be part of the study to determine the effectiveness and benefits of preventative tools and monitoring to enable interventions for residents’ health. As VOA became more involved with the project and sponsored two pilot projects in assisted living, it became clear to them that there was an opportunity for this type of technology to become beneficial in care delivery systems and models.

In an effort to further develop, promote and deploy this type of technology, VOA initiated a relationship with The **Good Samaritan Society** in Sioux Falls, South Dakota to pilot the monitoring technology in home and community based settings. VOA found the care outcomes in these settings to be compelling as well. For example, they observed that the technology would reveal minor issues such as urinary tract infections, that if untreated could become precursors to falls and other complications. VOA concluded that the technology presented substantial benefits to residents, families, and caregivers and could yield a positive economic impact for payors.

Key benefits include:

- ✓ Proactive approach to care delivery

- ✓ Early identification of potentially adverse medical symptoms and safety concerns
- ✓ Reduction in the cost of care
- ✓ Improved peace of mind and reinforced sense of well-being

VOA's involvement with the technology transitioned to an ownership interest in a new company to market this technology originally referred to as Home Guardian in its research phase and recently renamed WellAWARE (www.wellawaresystems.com). The first commercial products have just recently been installed in several locations. VOA will continue to deploy the WellAWARE technology to its communities throughout the rest of the year. VOA is now discussing opportunities for involvement and early adoption with other organizations. They believe that because this technology was developed in close partnership with the provider community it is grounded in real-world factors important to providers.



Phase II: Social and Cognitive Engagement Technology

Over a period of time Volunteers of America also has become engaged with social and cognitive engagement technology through the **It's Never 2 Late (IN2L)** system. The system allows for specialized content and adaptability for older adults and persons with disabilities (as discussed in section 4.2 above). VOA began its relationship with IN2L as a purchaser of the systems. But over time as its interest continued to grow and its collaboration with the founders of IN2L continued to develop, it joined two other long-term care providers in making an investment to provide additional capital for further expansion of the IN2L system. VOA believes the social and cognitive engagement that IN2L can bring to its older adults is as important as the medical monitoring that is provided in its various care settings. They feel strongly that the ability for a person to feel connected, to be continually challenged to learn and to interact with others is vitally important as we age.

While VOA is a minority investor in IN2L it continues to benefit as an early adopter of new technology applications, including a new more economical version that provides much of the access and the functionality at a lower price point. These enhancements and others continue to be driven by an interface with the senior community providing information and feedback on the development of IN2L.

Phase III: Formation of Senior Technology Investment Organization

Through the process leading to its investment in IN2L, VOA joined together with the **Health Resources Alliance (HRA)** and the **Covenant Health Group**, two long-term care providers serving older adults in Illinois, Arizona and Colorado, to form an organization named **Alliance Senior Technology Solutions (ASTS)**. The purpose of ASTS is to identify and to promote senior technology formation and applications

throughout the country. The group is first exploring ways to further the application of the IN2L technology through resources, connectedness and information transfer that can allow it to become a vital part of the aging experience.

7. CONCLUSION

States and aging service providers across the country have a great deal to learn from Minnesota's innovative state policies, incentives and support, and from providers' innovation, collaboration, and willingness to adopt aging services technologies. Because of the state's legislative HIT requirements and diligence in providing guidance and support to providers, including aging service providers, Minnesota is ahead of most states in advancing HIT and is well-positioned to benefit from federal stimulus funds. Moreover, because of extensive state grants and other incentives, and provider's entrepreneurial approach to utilizing technology, Minnesota's aging service providers have developed a great deal of expertise with telehomecare, telehealth and many other technologies. The state of technology in aging services in Minnesota is strong.

As Minnesota moves forward with interoperable EHRs and other HIT, CAST encourages the state to build upon its track record of including aging service providers by involving them in the federal stimulus activities to the greatest extent possible. Reimbursement of aging services technologies could be further developed to cover a wider array of technologies, similar to coverage provided in Pennsylvania's TeleCare program. CAST commends the leadership and initiative shown by Aging Services of Minnesota in providing tools, advocacy and other support to its members to advance the effective utilization of technology in aging services.

ABOUT CAST

The Center for Aging Services Technologies (CAST) is leading the charge to expedite the development, evaluation and adoption of emerging technologies that will transform the aging experience.

CAST four focus areas:

1. Driving a global vision of how technologies can improve the quality of life for seniors while reducing health care costs;
2. Accelerating technology research and development through pilot evaluations with seniors;
3. Advocating to remove barriers to the rapid commercialization of proven solutions; and
4. Promoting dialogue about standards to ensure interoperability and widespread access to aging-services technologies.

CAST is now an international coalition of more than 400 technology companies, aging-services organizations, businesses, research universities and government representatives working together under the auspices of the **American Association of Homes and Services for the Aging** (www.aahsa.org). The members of **AAHSA** help millions of individuals and their families every day through mission-driven, not-for-profit organizations dedicated to providing the services that people need, when they need them, in the place they call home.

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ABOUT AGING SERVICES OF MINNESOTA

Aging Services of Minnesota (formerly Minnesota Health & Housing Alliance) is Minnesota's largest association of aging services organizations. Its 680+ members serve over 40,000 Minnesotans in settings across the continuum from their home to congregate housing to assisted living to care centers. Aging Services members are diverse but share a common focus on person-directed living, missions of service to their communities and choice in older adult services.

Committed to excellence and to innovation, Aging Services is a leader in pioneering new service delivery models and is nationally recognized for expertise in aging services issues related to long term care, senior housing and supportive services. Through effective grassroots advocacy, cutting edge information, education, and public information aimed at increased consumer awareness, Aging Services of Minnesota is dedicated to creating the future of aging services.

Aging Services of Minnesota is the state affiliate of the American Association of Homes and Services for the Aging (AAHSA).



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