

A LeadingAge CAST Report

ELECTRONIC HEALTH RECORD (EHR)

Clinical Decision Support, Interoperability
and Health Information Exchange:

Provider Case Studies 2013

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Information Exchange:
Provider Case Studies 2013



A program of LeadingAge

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LeadingAge Center for Aging Services Technologies:

The LeadingAge Center for Aging Services Technologies (CAST) is focused on development, evaluation and adoption of emerging technologies that will transform the aging experience. As an international coalition of more than 400 technology companies, aging-services organizations, businesses, research universities and government representatives, CAST works under the auspices of LeadingAge, an association of 6,000 not-for-profit organizations dedicated to expanding the world of possibilities for aging.

For more information, please visit LeadingAge.org/CAST

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1 INTRODUCTION

The LeadingAge Center for Aging Services Technologies (CAST) is pleased to provide the following five case studies on electronic health records' (EHR) impacts and benefits of clinical decision support systems (CDSS) and interoperability and health information exchange with other care providers. We hope they will demonstrate for providers the benefits of implementing an EHR.

The case studies are designed to help long-term and post-acute care (LTPAC) providers understand the benefits that EHR systems can offer to their care settings. They demonstrate how the use of advanced EHR functionalities available for LTPAC providers, like CDSS and health information exchange capabilities, can result in improved quality of care and better utilization of health care.

This set of case studies is a companion to the CAST whitepaper entitled [EHR for Long-Term and Post-Acute Care: A Primer on Planning and Vendor Selection 2013](#), which is an update of the whitepaper that CAST released in 2012. The whitepaper includes an [EHR Selection Matrix](#) that compares 36 EHR products available for different LTPAC settings with respect to functionalities, including expanded sections on CDSS, interoperability standards, interoperability certification, and health information exchange, among others. EHR vendors who chose to participate in the self-review were offered an opportunity to nominate a provider to write a case study on its use of the vendor's EHR product.

1.1 Case Study Guidelines

CAST provided guidance as well as a template for the case studies to help case study contributors. The template included the following required sections:

- Case Study Category (case studies may cover more than one category)
Impacts and Benefits of:
 - Clinical Decision Support Systems (CDSS) including those aimed at Reducing Inappropriate Hospital Admission and Acute Care Transfers (i.e. INTERACT, On-Time Quality Improvement, etc.)
 - Interoperability and Health Information Exchange with Other Care Providers either Directly or through a Health Information Exchange (HIE)
- Organization Name
- Organization Type (Home Health/Home Care, Hospice, Adult Day Care, Assisted Living, Acute Rehab Facilities, Long-term Acute Care Hospitals, Long-term Care Rehab Facilities, Skilled Nursing Facilities, Intermediate Care Facilities, ID/MR/DD Facilities, CCRCs, PACE)
- Organization Description
- Project Description
- Implementation Approach
- Outcomes (quality of care, staff efficiencies, workflow improvements, readmission rates, financial, etc.)
- Lessons Learned/Advice to Share with Others

CAST received five completed case studies from nominated providers. We believe that LeadingAge members and other LTPAC providers will benefit from these case studies and learn from other providers who have already selected, implemented, and used EHRs, including advanced functionalities, and are experiencing their benefits.

2 LESSONS LEARNED AND ADVICE DRAWN FROM THE CASE STUDIES

Several lessons can be learned and advice drawn from the case studies. Each participating provider took a slightly different approach to EHR, CDSS and health information exchange implementation, and shared the factors that led to success:

- **Use of EHR and its Advanced Functionalities is Key for High-Quality Health Care:** Technology is a key driver of high-quality health care. Accurate data, reporting and clinical decision support tools are no longer an option, but a requirement. Using EHR with these capabilities is absolutely essential to improving care quality, driving efficiencies, reducing hospital readmissions and strengthening partnerships and strategic positions with other care providers like hospitals, accountable care organizations (ACO) and physicians.
- **Communication between Clinical and Technology Teams is Essential for Successful EHR Implementation:** Develop strong working relationships and shared communication between clinical and technology team members. It is important to get the team's input to ensure success in the launch of the EHR or health information exchange project.
- **Use and Exchange of Electronic Health Information is the Trend of the Future:** The movement to have residents' medical information in an electronic form and available for other health care providers involved in their care is the trend of the future. The care of the resident is no longer an isolated occurrence by each provider, but a continuum of care. Having more pertinent medical information available to the caregiver leads to more effective care and better outcomes. It is important to realize that this model of data sharing across providers is in its infancy.
- **Health Information Exchange Improves Quality of Care and Patient Safety during Care Transitions:** Pertinent information provided to clinicians during resident transfer can improve quality of care. Automated clinical decision support tools can improve the quality and safety components of managing and coordinating care for older and disabled patients with complex medical conditions, who are being treated with multiple medications. Improving medication management for the patient population served by LTPAC providers can improve their transition across the continuum of care, and result in reduced readmission to acute care facilities.
- **Providers Should Address Some Challenges to Health Information Exchange:** Varying degrees of technology adoption, compliance standards, staffing turnover, information needs, interoperability capacity and standards, and lack of standardized roles and processes are all components that pose challenges to the fluid implementation of fully informed transitions of care between hospitals and LTPAC settings.

The case studies presented here represent bright examples of using advanced features and functionalities in EHRs, like quality reporting, CDSS and health information exchange, to improve the quality of care, efficiencies and transitions of care. Each case study demonstrates how using EHR features has impacted each organization, and in turn the care they provide. Building upon the experience of these organizations can help other providers write their own success stories and case studies.

3 REDUCING HOSPITAL READMISSIONS WITH EHR AND CDSS



3.1 Provider: Aloha Nursing Rehab Centre

Contributor: Donna Conner, director of clinical information systems, Aloha Nursing Rehab Centre



3.2 Vendor: American HealthTech

Case Study Category:

Impacts and Benefits of:

- Clinical Decision Support Systems (CDSS) including those aimed at Reducing Inappropriate Hospital Admission and Acute Care Transfers

Organization

Aloha Nursing Rehab Centre is a 140-bed nursing home that offers services for both long- and short-term stays for those who need intermediate or skilled nursing care. Aloha Nursing Rehab Centre is located in Kaneohe, Hawaii.

Project Description

Aloha Nursing Rehab Centre is always looking for continuous improvement and innovation. In late 2012, they partnered with American HealthTech (AHT) to improve quality and reduce hospital readmissions.

Implementation Approach

One of the first in the country to implement a Quality Assessment and Performance Improvement (QAPI) program, Aloha Nursing Rehab Centre decided to attack hospital readmissions as one of its QAPI goals. Specifically, staff members set a goal of reducing their 30-day readmissions rate to 15% or less.

Aloha Nursing Rehab Centre started out with a 30-day readmissions rate of 26.6% in Q1 2011. Using a mix of AHT Outcomes Reporting and INTERACT tools (Care pathways, Stop and Watch and Situation/Background/Assessment/Recommendation (SBAR)) and training, they drove their readmission rate down to an outstanding 9.5% by Q4 2012 – surpassing their goal.

Outcomes

- Launched QAPI well in advance of CMS regulations
- Launched INTERACT II™ tools to drive hospital readmissions down
- Attained a stellar reduction of 30-day hospital readmission rate from 26.6% to 9.5%

- Freed up one full time employee (FTE) for proactive care versus compiling manual reports
- Improved and strengthened relationships with hospitals, physicians and pharmacies

Lessons Learned/Advice to Share with Others

Technology is a key driver for high-quality health care. Accurate data, reporting and clinical decision support tools are no longer an option, but a must-have. Using EHRs with these capabilities, like AHT's, is absolutely core to improving care quality, driving efficiencies, reducing hospital readmissions and strengthening partnerships and strategic position with other care providers like hospitals, accountable care organizations (ACO) and physicians.

Link to full detailed report: <http://www.healthtech.net/aloha-case-study/>

4 IMPROVING CARE QUALITY AND EFFICIENCY THROUGH EHR, CDSS AND WORKFLOW TRIGGERS



4.1 Provider: Cross Keys Village - The Brethren Home Community

Contributors: Karl J. Brummer, CASP, SPHR, senior executive vice president, Lisa Weyant, LPN, IT clinical coordinator



4.2 Vendor: AOD Software

Case Study Category:

Impacts and Benefits of:

- Clinical Decision Support Systems (CDSS) including those aimed at Reducing Inappropriate Hospital Admission and Acute Care Transfers (i.e. INTERACT, On-Time Quality Improvement, etc.)

Organization

Located in New Oxford, Pennsylvania, Cross Keys Village - The Brethren Home Community is a fee-for-service continuing care retirement community (CCRC) offering spacious residences, resort-like amenities, and a focus on wellness and lifelong learning. Situated on over 250 acres of rolling south central Pennsylvania land, this caring commu-

nity is guided by a Church of the Brethren theme: “Continuing the work of Jesus. Peacefully. Simply. Together.”

Project Description

Within its Personal Care program, Cross Keys Village needed to implement a stronger emphasis on using technology to support care plans of its 90+ residents. AOD Software’s solution suite, Answers™, helped staff members monitor changes in resident health/behavior with touch charting and allowed them to easily document changes and monitor patterns. Alerts were setup within Answers™ to immediately notify managers of concerning changes with the resident. The Answers™ workflow system allowed Cross Keys Village to design a systemic plan for many areas of care from admissions and social services to Minimum Data Set (MDS).

Workflow prompts were created, within the health care and clinical departments, to address the areas of admissions/re-admissions, falls, monitoring of BPs, pain assessments from therapy, diet changes, and psychotropic medication reductions. Each workflow contains a list of tasks to be completed and a time frame that is uniquely created for that specific area.

Associated with each workflow is key information and required forms for staff to use during this process. This includes therapy notes or forms for staff to review, with space to note items such as diet changes. Having this important information within the workflow allowed dietitians, speech therapists

and nurses to view the same critical notes on a specific resident. Nursing evaluation forms are also included and can be easily completed.

Certain forms, when finalized, set off a chain of tasks within the workflow. This allows administration/managers to easily see what work and tasks have been completed and by whom. They can monitor the workflows for timely solutions to issues that may occur (like falls or other incidents).

Implementation Approach

Strong partnerships between the clinical leadership and the technology teams made this project effective in ensuring that the project delivered the necessary outcomes.

Outcomes

Significant improvement in efficiencies of personal care program staff was realized through this initiative and hence improved quality of care for the residents of Cross Keys Village - The Brethren Home Community.

With alerts and workflow, Cross Keys Village is able to save hours of time, reduce paper use and provide better documentation tracking. Information is kept in one central location inside Answers™ and is easily accessible to team members.

- Workflow is available to each staff member on their own computer/laptop.
- Alerts and workflows are automatically generated from events like a fall.
- Appropriate persons are notified immediately when an event occurs.

- All staff members know exactly what their responsibilities are and when they are to be completed.
- Phone calls to the busy nursing neighborhoods to relay information are no longer necessary.

All of this allows Cross Keys Village - The Brethren Home Community to better serve residents and help prevent injuries and readmissions.

Lessons Learned/Advice to Share with Others

Develop strong working relationships and shared communication between clinical and technology team members. It is important to get the teams' input to ensure success in the launch of the project.

5 ENABLING HEALTH INFORMATION EXCHANGE WITH EHR



5.1 Provider: Maria Joseph Continuing Care Community

Contributor: Deirdre Galvin, PR, Maria Joseph Continuing Care Community

NTT DATA

5.2 Vendor: NTT DATA

Case Study Category:

Impacts and Benefits of:

- Interoperability and Health Information Exchange with Other Care Providers either Directly or through a Health Information Exchange (HIE)

Organization

Maria Joseph Continuing Care Community (CCC), a CCRC in Danville, Pennsylvania, is a non-profit community, sponsored by the Sisters of Saints Cyril and Methodius. Maria Joseph CCC offers skilled nursing & rehabilitation, independent living, personal care, and Alzheimer's/dementia care. Its Emmanuel Center of Nursing & Rehabilitation, a skilled nursing facility, is participating in the health information exchange (HIE).

Project Description

Maria Joseph CCC's Emmanuel Center for Nursing is electronically sharing Minimum Data Set (MDS) 3.0 data in their NTT DATA NetSolutions EHR system to complete Continuity of Care Documents (CCD) that reside with Keystone Health Information Exchange (KeyHIE). Led by Geisinger Health System, KeyHIE makes patients' health data available to other health care providers, with patients' permission.

Implementation Approach

Following initial grants awarded to Geisinger Health System by the Agency for Healthcare Research and Quality (AHRQ), in 2010 Geisinger received a \$16 million three-year award from the Office of the National Coordinator for Health Information Technology (US Department of Health and Human Services) to lead an initiative that involved hospitals, doctors' offices, nursing homes, and home health agencies throughout five central Pennsylvania counties in an effort to better coordinate patient care and, ultimately, improve patient health.

"We were approached to participate several years ago because we work closely with Geisinger Health System and our medical director is one of their physicians," said Steve Warriner, IT director for Maria Joseph CCC. "Up until then, there were no standard formats for skilled nursing facilities (SNF) to share data with other providers. Since then, the CCD was developed as a standard for use by all health care providers. As work proceeded in KeyHIE we realized that SNFs already collected much of the data called for in the CCD in the MDS 3.0 assessment."

“KeyHIE talked to a lot of SNFs about participating, but many didn’t have electronic medical records and thought that they didn’t have anything to contribute. With the idea of mapping MDS data to the CCD, everyone could contribute because virtually all long-term care (LTC) providers have electronic MDS records,” continued Warriner.

Now that KeyHIE participants could see how it would work, they needed software that would facilitate the vision for Maria Joseph CCC and all SNFs. To start the process they needed an interface that could send MDS data to the HIE securely and in a standard format. Warriner contacted Matt Walker, applications system manager for NTT DATA LTC Solutions, Inc. about exporting MDS files from NetSolutions.

“We met with KeyHIE participants and developed an interface that embeds the standard MDS files created by Maria Joseph CCC in a new HL7 message type that can be exported to KeyHIE,” said Walker. “We also partnered with a third party to communicate the HL7 message.”

“It’s an automatic process for providers, starting when MDS assessments are locked. We added a feature in NetSolutions so facility staff can enter whether patients give their consent for data sharing. If they refuse, their files are flagged to prevent sharing,” continued Walker.

Other software would need to be developed to map MDS data to the CCD, filling in the blanks in a CCD with responses from MDS 3.0 software such as advance directives, payer source, immunizations, and medications. That software, an “MDS-to-CCD Transformer,” was developed by a third party. Then the CCD can be accessed by licensed clinicians who

have agreed to keep the information private and secure.

According to Jim Walker, MD, Geisinger Health System’s chief health information officer, the MDS-to-CCD Transformer will facilitate health exchange connectivity for SNFs across the country. “Any skilled nursing facility can now share a patient’s information inexpensively and securely, which helps the patient’s care team work better together,” notes Dr. Walker.

Outcomes

KeyHIE is part of the Keystone Beacon Community project, one of 17 sites nationwide that have received federal grants. Keystone Beacon is a network of health care providers in central Pennsylvania – doctors, hospitals, long-term care, and others – who have joined together to help coordinate and manage their patients’ care, reduce hospital admissions, and improve their patients’ quality of life.

About 62% of residents in the Emmanuel Center (99 out of 160) agreed to participate in publishing their MDS and census data through KeyHIE. This reflects a high acceptance of information sharing and willingness of SNF residents to participate in health information exchange.

“We are proud to have the Emmanuel Center for Skilled Nursing and Rehabilitation involved in establishing this initiative with the Keystone Beacon Community,” said Tom Conlin, chief operating officer of Maria Joseph CCC.

“The ability to exchange information about our residents’ medical treatment more easily will enable us to offer more complete assessments of their needs when they are first admitted and after they

receive care at another facility. This process will also expedite the admission from other health care facilities to us. Better communication among health care providers can help us avoid unnecessary costs and procedures and will help skilled nursing facilities provide the most personalized care possible.”

Lessons Learned/Advice to Share with Others

“As participants in this project, we are now convinced that the movement to have residents’ medical information in an electronic form and available for other health care providers involved in their care is the trend of the future. The care of the resident is no longer an isolated occurrence by each provider, but a continuum of care. When more pertinent medical information is available to the caregiver, this should result in better and more effective care being delivered leading to improvement in outcomes. However, I also realize that this model of data sharing across providers is in its infancy stage of development,” stated Conlin.

6 IMPROVING TRANSITIONS OF CARE WITH CDSS AND HEALTH INFORMATION EXCHANGE



6.1 Providers: Norman Regional Health System, Yeaman Consulting

Contributor: Brian Yeaman, MD, hospitalist and CMIO, Norman Regional Health System



6.2 Vendor: Cerner Corporation

Case Study Category:

Impacts and Benefits of:

- Clinical Decision Support Systems (CDSS) including those aimed at Reducing Inappropriate Hospital Admission and Acute Care Transfers
- Interoperability and Health Information Exchange with Other Care Providers either Directly or through a Health Information Exchange (HIE)

Organization

Norman Regional Health System is an acute-care facility working with five long-term care (LTC) facilities. Norman Regional Health System is a multi-campus system that serves health care needs throughout south central Oklahoma. The acute-care facility on the Porter Avenue Campus is licensed for 324 beds and offers a full range of services.

Project Description

Norman Regional Health System is improving transitions of care between acute and skilled-nursing organizations by working with five nursing homes, an established regional health information exchange (HIE), and the Cerner Corporation.

Implementation Approach

In February of 2011, ten nationwide Challenge Grants were awarded by the Office of the National Coordinator for Health Information Technology (ONC). The project was designed with the express purpose of fostering the advancement of HIE toward a network that supports nationwide HIE and interoperability. To facilitate the improvement in long-term and post-acute care (LTPAC) transitions, \$1.7 million was awarded to only four HIE grant recipients. Oklahoma was chosen as one of the four State HIE Cooperative Agreement Program grantees.

As part of the Oklahoma grant, Norman Regional Health System is working with five long-term care (LTC) facilities and a regional, and a well-established, health information organization to develop

the IT infrastructure to allow nursing homes and hospitals in the region to share information to improve care transitions.

The project team worked diligently to ensure the nursing homes participating in the project had the infrastructure in place to exchange electronic information. One initial step was to select the best clinical documentation tool for employees in the nursing home to record patient information. After engaging in an extensive process including lengthy conversations and workflow analysis, the CareTracker clinical documentation tool by the Cerner Corporation was selected.

Caregivers at the five LTC facilities use CareTracker to record the activities of daily living for each resident. As the information is entered, CareTracker analyzes the information to identify any changes in resident conditions. CareTracker then sends an alert to management staff when it identifies a resident that might be at risk for a condition like congestive heart failure.

When a change in condition takes place, a nursing document known as an SBAR (Situation/Background/Assessment/Recommendation) is completed and sent from CareTracker to health care providers (HCP) by way of Direct, a secure e-mail based data transfer method to preapproved recipients, promoted by ONC. This immediately provides the HCP with discernible information for the care transition. Once the initial process has taken place, a universal transfer form (UTF) is sent providing a more comprehensive account of the patient. The patient information is also accessible to Norman Regional Health System by means of requesting it from the regional HIE. A similar flow of information follows the patient back after being discharged

from Norman Regional Health System to an LTC facility.

Kelly Bowers, RN and director of nursing at Cedar Creek Living Center, shared her first-hand experiences on the solutions the grant provided. “We have decreased emergency department (ED) visits by being more aware of our residents’ conditions. CareTracker has made it easy for my staff to chart, which in turn makes it easier for me to monitor. The health alerts let my nurses know that they need to look at someone to try and prevent an ED visit. We are very happy with this product and its ability to streamline our time to allow more efficient resident care.”

Through comprehensive transfer forms and improved access to information during ED visits, Norman Regional Health System is already showing reduced acute hospital readmissions. Along with a successful technological implementation to sustain electronic exchange of patient-specific information, Norman Regional Health System is also concentrating on refining the processes associated with transitions to safeguard the correct use of information to improve patient care.

The solution outlined above includes no proprietary developed software; it is all highly reproducible as elements of a standard data set available in the approved Continuity of Care Document (CCD) and Direct messaging for all HIEs in Oklahoma. This model ensures that the interoperability, CCD format, HIE, and Direct access can be standardized across platforms and will facilitate proven clinical and technological pathways and workflows that improve outcomes and reduce care transitions.

Outcomes

- Norman Regional Health System has observed a significant reduction in readmissions during the early stages of the project - up to 40% overall on all five facilities.
- LTC facilities show a 70% reduction in ED visits to Norman Regional Health System.
- LTC facilities show 98% compliance with daily assessments.
- One facility, Cedar Creek Living Center, successfully reduced readmissions up to 50% since April 2012.
- Cedar Creek Living Center also projects a return of approximately \$52,560 on increased Medicaid reimbursement.
- LTC facilities participating in this initiative have shown drastic improvements in the Oklahoma state Focus on Excellence program.

Lessons Learned/Advice to Share with Others

Degrees of technology adoption, compliance standards, staffing turnover, information needs, interoperability capacity and standards, and lack of standardized roles and processes are all components that pose challenges to the fluid implementation of fully informed transitions of care between hospitals and LTPAC settings. Oklahoma is identifying and implementing necessary solutions to those unique challenges that the participating LTC providers face in health information exchange.

7 IMPROVING TRANSITIONS OF CARE AND CARE QUALITY THROUGH HEALTH INFORMATION EXCHANGE AND CDSS



7.1 Providers: Parker Jewish Institute for Health Care and Rehabilitation and Continuum of Care Improvement through Information New York

Contributors: Dr. Conn Foley, SVP medical services, Parker Jewish Geriatric Institute for Health Care and Rehabilitation, Harrison Fox, executive director, Continuum of Care Improvement through Information New York



7.2 Vendor: SigmaCare

Case Study Category:

Impacts and Benefits of:

- Interoperability and Health Information Exchange with Other Care Providers either Directly or through a Health Information Exchange (HIE)

- Clinical Decision Support Systems (CDSS) including those aimed at Reducing Inappropriate Hospital Admission and Acute Care Transfers

Organization

Parker Jewish Institute for Health Care and Rehabilitation is composed of a skilled nursing facility, long-term care rehabilitation, home health and home care, adult daycare, and rehabilitation. Continuum of Care Improvement through Information New York (CCITI NY) is a not-for-profit engaged in health information exchange.

Since its inception in 1907, Parker Jewish Institute has evolved into a nationally recognized 527-bed, non-profit center for the health care and rehabilitation of adults, and a comprehensive network of community health care programs for adults. Parker Jewish Institute provides on-site dialysis and medical transportation to its residents and patients, and to the region's communities. It is also a leading academic campus for the training of health care professionals, an important research center for studies related to aging, and a partner in a New York State-authorized managed long-term care plan, AgeWell New York.

CCITI NY was established to improve the quality, patient safety, cost, and satisfaction aspects of transferring patients between acute, post-acute, and ambulatory care organizations in the greater New York metropolitan region. The CCITI NY Care Coordination System (CCS) will combine the strength of a standardized electronic transfer form process

with an automated clinical decision support tool.

Project Description

Improve the quality and effectiveness of care provided to patients transitioning between acute and post-acute settings by providing key information to care providers in advance of patient arrival.

Implementation Approach

In 2010, Parker Jewish Institute first went live with the CCITI NY CCS, allowing clinicians to be digitally connected with their counterparts at nearby Long Island Jewish Medical Center. Long Island Jewish Medical Center's staff and clinicians employ SigmaCare, an EHR system for long-term and post-acute care (LTPAC) facilities that automates the complete clinical workflow. The clinicians utilize the Healthix Regional Health Information Exchange (RHIO) to gain access to patient data generated by their hospital and community provider partners, and are enabled to launch a transfer form with pertinent data from the RHIO. The clinicians at the facility were trained on, and adopted, an electronic workflow for sending and receiving important patient data when transfers take place. They also benefit from a sophisticated drug-drug and drug-allergy clinical decision support system (CDSS) tool that reduces the potential for medication errors.

Outcomes

Reduced Medication Errors: During an initial pilot study of the impact of CCITI NY, a 10% reduction in the rate of medication errors, post intervention, was found. The study examined medication errors over a 6-month post-implementation period in 2011, for approximately 500 patients. Additional studies are planned to reexamine these outcomes.

Reduced Avoidable Hospital Admissions: Between January 2011 and July 2011, the re-hospitalization rate associated with the nursing home's partner hospital, using the CCS system, was 20.2 percent, lower than the total re-hospitalization rate of 22.9 percent for non-participating sites.

Lessons Learned/Advice to Share with Others

Pertinent information provided to clinicians during resident transfer can improve quality of care. The quality and safety components of managing and coordinating care for older and disabled patients with complex medical conditions, who are being treated with multiple medications, can be improved through automated clinical decision support tools. Improving medication management for this patient population can potentially improve their transition across the continuum of care, and result in reduced readmission to acute care facilities.