



Using Technology to Support Frail Elderly in the Community

Lessons Learned from Cokato Charitable Trust and Other Communities

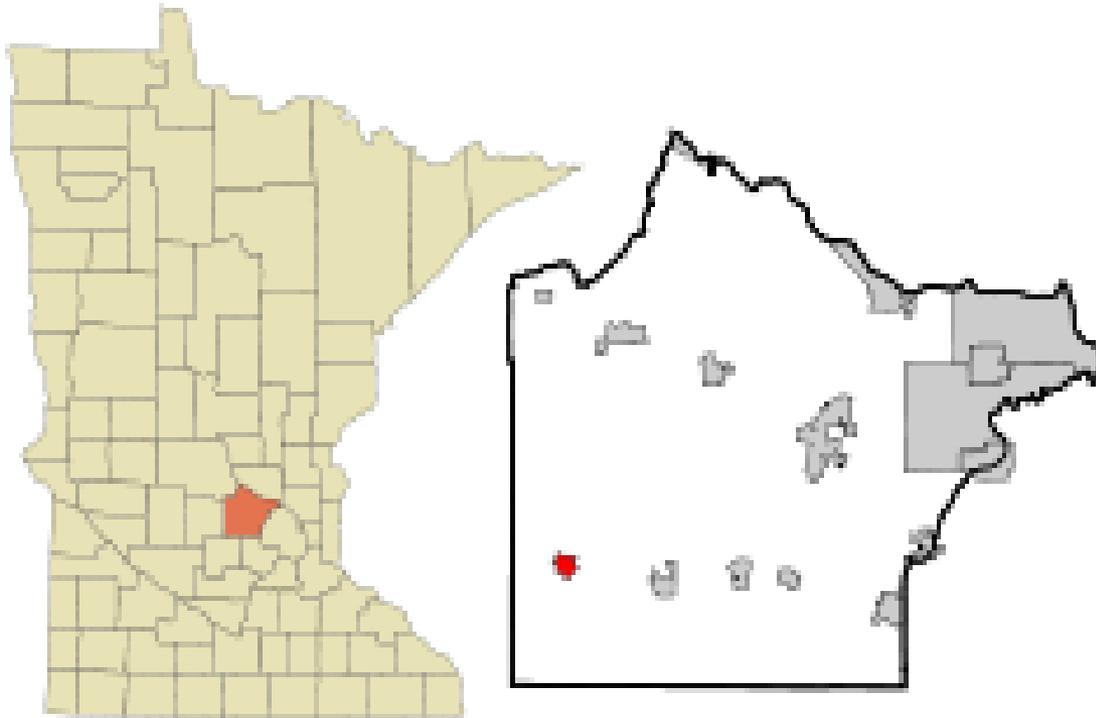
What is Cokato Charitable Trust

- **We're not a bank!**
- **Our campus includes:**
 - Nursing home
 - 16 unit assisted living building
 - 10 bed dementia care unit – licensed as HWS
 - 30 unit building that is catered – offering independent living and/or assisted living options
- **Outreach programming:**
 - Child day care
 - Adult day care
 - Congregate senior dining and home delivered meals
 - Home health (Medicare certified) in a 30 mile radius



In total we serve about 200 people

Rural – as we see it in Cokato



- What's “Cokato” rural?

Framing the need

- Converting an independent building with 2 floors and 2 long hallways to catered living with 24 hour staffing
- Adding technology to provide a higher level of service
- Using technology to differentiate ourselves
- Looking for technologies to meet future needs
- Needing to support our nursing staff to better care for patients and residents with much higher acuity without increasing staffing levels
- In our assisted living building we had been using a nurse call pendent very similar to systems like Life Line, with additional pull cords in the bathroom
- Past involvement in initiatives: Matter of Balance, Fit 4 Life

Minnesota Fall Facts

- In 2007, the mortality rate for falls in Minnesota exceeded motor vehicle mortality for the first time
- Falling is the leading cause death in seniors age 75+
- The MN seniors fall death rate is 2X the national average
- 1/3 of all older adults fall each year
- Half of seniors with hip fractures cannot return to independent living



Falls-related mortality for older adults in the United States: 2009

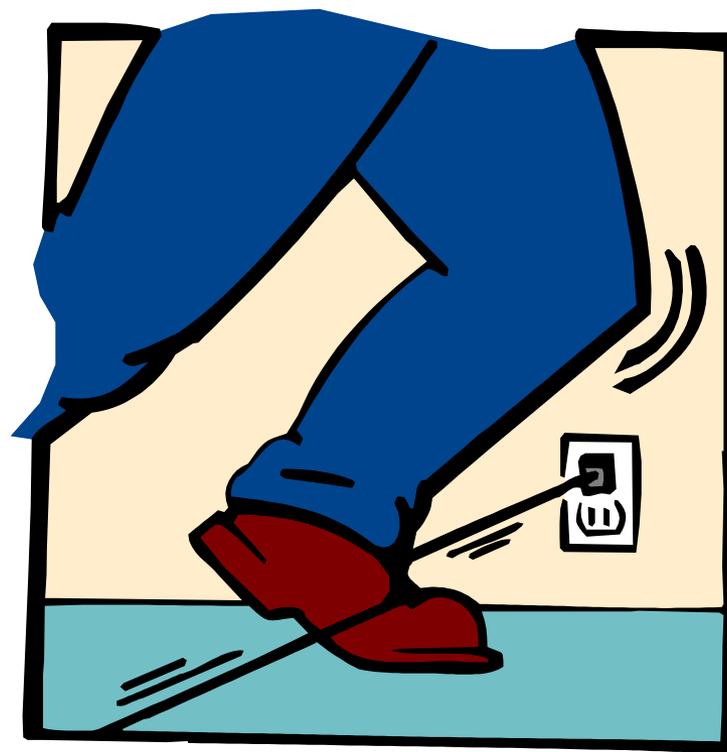
- *States with highest rates of death from falls:*

<u>State</u>	<u>Rate per 100,000*</u>
• Vermont	117.12
• New Mexico	101.60
• Wisconsin	97.87
• Minnesota	85.11
• Colorado	84.53

** Rate adjusted for age, in the year 2000; all races, both sexes, adults aged 65-85. Rate in Alaska (26.85) not included due to inadequate sample size. Source: Centers for Disease Control and Prevention. (2011).*

National Fall Facts

- Falls are the leading cause of fatal and nonfatal injuries of seniors in the United States ... every 35 minutes a senior in our country dies from a fall
- Falls are the leading cause of ER injury visits for older adults in our nation
- Fall related injuries account for 6% of all medical expenditures for persons age 65 and older.



Associated Costs of Falling



- In 2000, the estimated direct medical care cost for falls-related injuries among older adults in the United States was \$19 billion
- With baby boomers eventually swelling the older adult population and an overall increased life expectancy, this number may reach over \$32 billion by 2020

Why do people fall?

- **Individual/Environmental risk factors**
- **More risk factors = more likely a person is to fall.**
 - Those with 1 risk factor have a 19% chance of falling
 - Those with 4 or more risk factors increase their chances of falling to 78%



Individual & Environmental Risk Factors

Not Modifiable	Modifiable
Older age	Muscle weakness
Female	Gait & balance problems
Chronic diseases	Vision problems
Mentally impaired	Psychoactive medications

Not Modifiable	Modifiable
Cold temperatures	Clutter in walkways
Uneven pavement	No stair railings or grab bars
Poor public space designs	Loose rugs
	Dim lighting

Choosing a Technology Partner

- How does the system work?
- Is it staff friendly?
- Will patients/residents use the system?
- Is it easy to incorporate into the existing IT infrastructure?
- Can it be modified easily?

Choosing a Technology Partner (Cont.)

- Can we use it in our Home Health application?
- Are the company representatives available and easy to work with?
- Is the system able to interface with existing programs?
- Is the system research based? (credibility...)
- Is there a reimbursement path for the system?

In addition...We looked for

- **Looking to keep residents safe in an assisted living setting while keeping them as independent as possible**
- **Giving a sense of security to residents concerning the risk of falling**
- **“Reverse Marketing” – maybe get them so they can go back home**
- **Looking for a product that will allow residents to “Age in Place” – flexibility to add on if needed.**
- **Looking for flexibility, grow as we grow, newest technology.**
- **AFrame intriguing: one of 2 in the state / 10 in the country at the time. (Like being a leader 😊)**

Our Chosen Technology

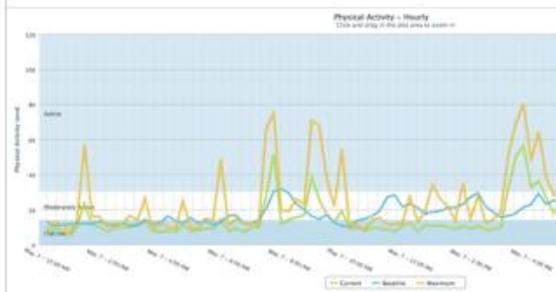
- AFrame offered a comprehensive platform that included everything we were looking for all in one system.
- They were research based and had an FDA cleared system.
- They had an automatic impact detection system that allowed us to take a proactive approach to falls.
- The plug and play system makes it easy.
- Access anywhere and anytime.
- Participants wear a Personal Help Device (PHD)
 - The “Watch” and it really does tell time as well!
- It is a Real Time Monitoring system.

Continuous, Non-Intrusive Monitoring for Timely and Proactive Interventions

✓ Personal Emergency Response – Panic Button



✓ Activity, Wellness & Location



✓ Impact/Fall Detection



✓ Automatic Vitals Collection



✓ Medication Reminder

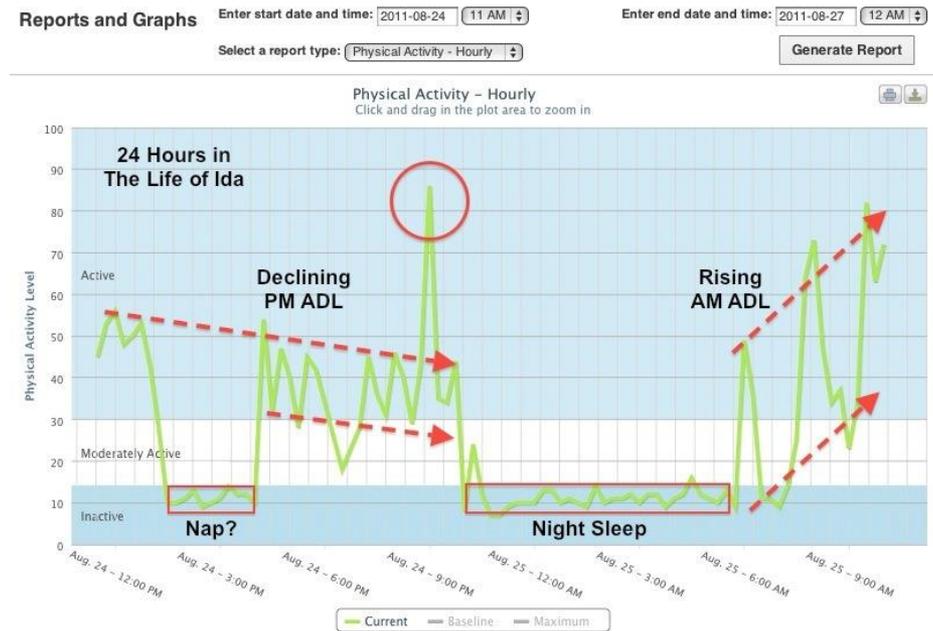


✓ Survey Device



Solving the Problem

- Began with basic AFrame Digital set up with 4 watches, now at 13 people covered
- Recognized the value in ability to identify precursors of falls or impacts by reviewing previous impact alerts.

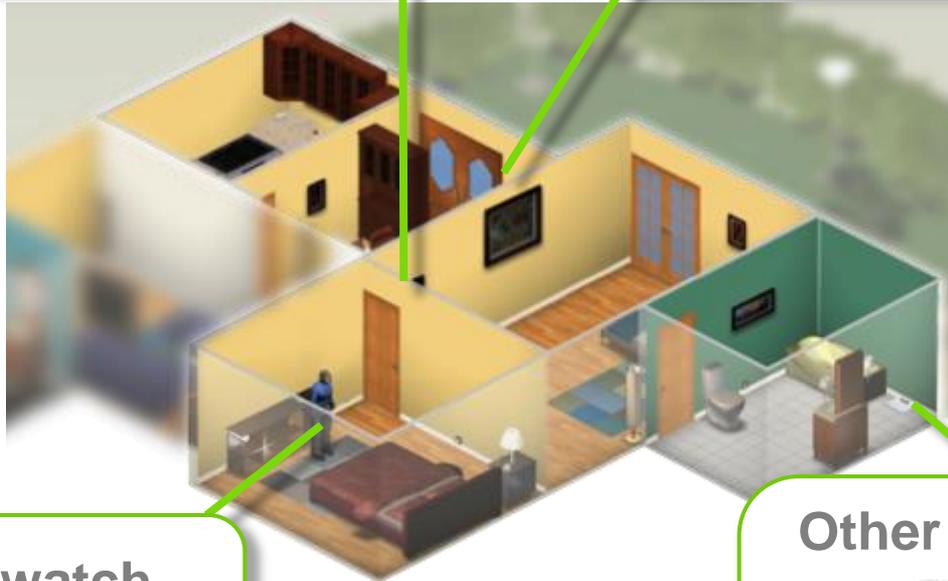


Remote Monitoring System for Home or Facilities



Wireless Mesh Network
5-Minute Install

DSL or Cellular Gateway



Wristwatch Monitor

Other Wireless Devices



Implementation Challenges

- **Infrastructure must be set up for it**
 - Go into WiFi / iPod Touch right away
 - Provide effective staff training of new technology
 - Watch battery life / Need good protocols for staff on charging schedules
 - Charger/Watch Technology challenges/upgrades
 - Moving the mesh around to create better environment
 - Making sure IT and Wireless company are involved in the set up since AFrame can run on most wireless channels
- **Understand the equipment needs as the system grows.**
- **Make sure the iPod Touch is properly set up so you get the real-time alerts.**

Set Up and Training

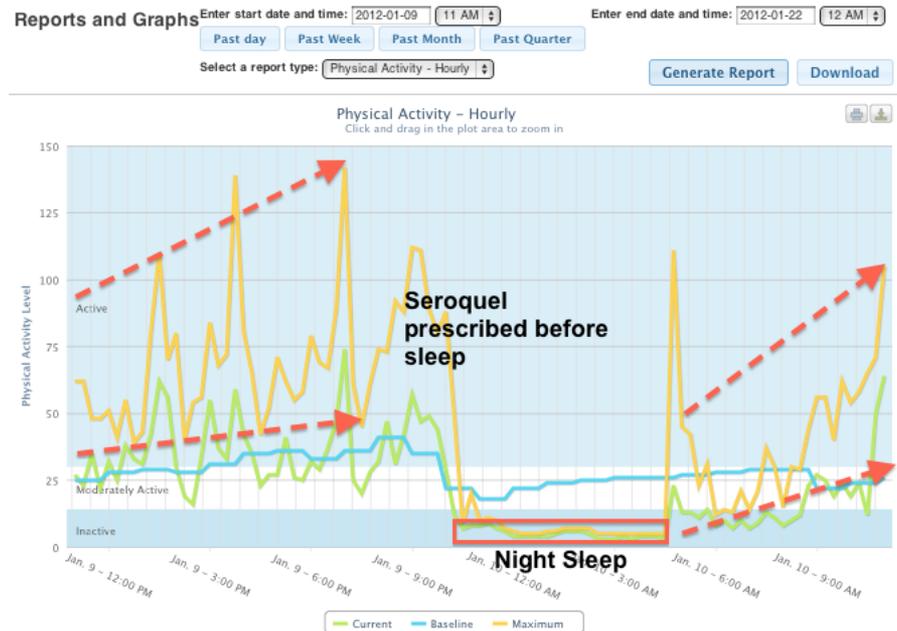
- **Once delivered, set up is easy.**
 - Set the watch up on CareStation (Web Based Monitoring station) – 5 minutes maximum; includes a fall assessment survey to set the sensitivity of the watch
 - Plug a “Walter” into a resident’s room
 - Instruct resident on the proper button to push
 - Put watch on resident and let the monitoring begin!!! 😊
- **Once monitored, remote technicians can monitor and see how effective the monitoring is**
 - Can assist you in tweaking the system to adapt to the residents way of life
- **Staff to respond immediately. (typically within 2 min)**
- **Watch/Charger cleaning and maintenance training**
 - Weekly alcohol rub down and connector cleaning
- **iPod Touch training**
 - How to acknowledge an alert and how to resolve an alert

Benefits we have realized

- **Staff Efficiencies and Accountability –**
 - We can “monitor” staff responsiveness
 - Resolution instantly to care station
- **Family/tenant accountability -**
 - When they say “nurse call not answered for hours” we can track that - - is it true? is it a concern?
- **Supporting Aging in Place**
- **We’ve been able to “catch” indications for impending UTI by body temp**
 - Reduced ER visits
 - Reduced hospitalization
 - Reduced leave from home
 - Family doesn’t have to take off work

24/7 Activity Assessment

- Safety and stability trends
- First movement of new admission
- Behavior assessment and trend
- Sleep quality
- Medication reaction and timing



Individual new to center with widening amplitudes of volatility 2 hours apart during the day. Doctor prescribed Seroquel before sleep. What is patient's reaction and the best timing of medication?

Location: Safety and Social

Home Campus Map Assign Measurements Configuration Logged in: aframe Logout Mute Help

CareStation 16 / 22 Currently Monitored No Open Alerts

Home > Resident View: Ida Bowie



Mary Smith
Dining Room

Birthdate: 1931-07-31 (80 years old)
Primary Alert Contact: 8048392752@vtext.com
Skin Temperature: 86.0° F at 01/22/12 10:53 AM
(Ambient: 74.0° F)
Total Wellness: 

Alerts Graphs and Reports Wellness Indicators Notes Map Settings



Home Campus Map Assign Measurements Configuration Logged in: aframe Logout Mute Help

CareStation 16 / 22 Currently Monitored No Open Alerts

Home > Resident View: Ida Bowie



Mary Smith
Dining Room

Birthdate: 1931-07-31 (80 years old)
Primary Alert Contact: 8048392752@vtext.com
Skin Temperature: 87.0° F at 01/22/12 11:03 AM
(Ambient: 74.0° F)
Total Wellness: 

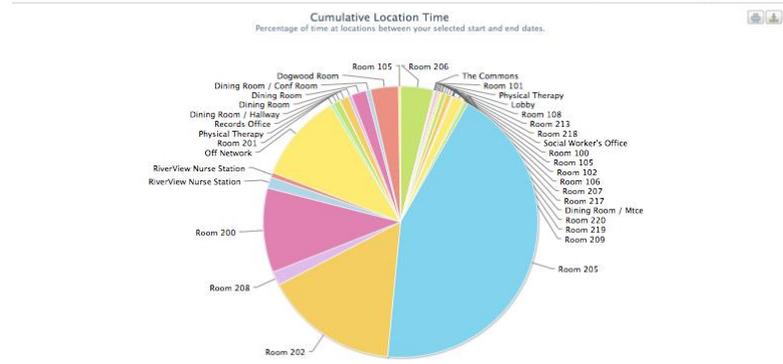
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Reports and Graphs

Enter start date and time: 2012-01-18 12 AM | Enter end date and time: 2012-01-21 12 AM

Past day Past Week Past Month Past Quarter

Select a report type: Cumulative Location Time | Generate Report Download



Continuous, Non-Intrusive Monitoring for Timely and Proactive Interventions

Wearable Monitor



- ✓ PERS
- ✓ Fall Detection
- ✓ Activity
- ✓ Location
- ✓ No stigma

CareStation and Patient App



- ✓ Surveys
- ✓ Wellness Indicators
- ✓ Medication Check
- ✓ HIPAA-compliant

Telehealth



- ✓ Weight, BP
- ✓ Glucose
- ✓ PulseO2
- ✓ FDA-Cleared
- ✓ Automated

Mobile, Intelligent Alerts



- ✓ Secure, Real-Time
- ✓ Alerts on Trended Baselines or Targets
- ✓ Configurable Alert Protocols
- ✓ Graphs and Reports

Real-time Location and Alert Resolution

Home Campus Map Assign Measurements Configuration Logged in: aframe Logout Unmute Help

CareStation

1 / 3 Currently Monitored 1 Open Alert

Home > Resident View: Harriet Thomas



Harriet Thomas Birthday: 1932-05-17 (79 years old)
Primary Alert Contact: 5712097028@txt.att.net
Skin Temperature: 68.0° F at 02/19/12 1:14 AM
(Ambient: 68.0° F)

157 Maple St
Arlington, VA
Kitchen

[Show Recent Locations](#)

1 Open Alert(s)

Wellness Indicator

31

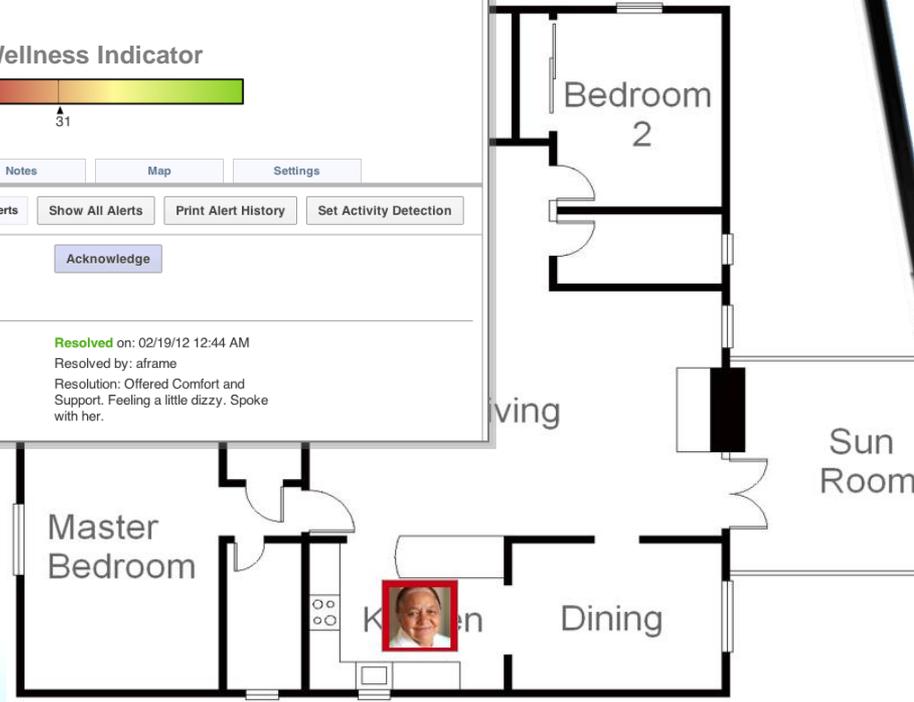
Alerts Graphs and Reports Wellness Indicators Notes Map Settings

Resident Alerts

Showing 20 Most Recent Alerts Show All Alerts Print Alert History Set Activity Detection

Help Requested Alert sent to: 5712097028@txt.att.net Acknowledge
157 Maple St Arlington, VA Kitchen
Alert sent: 02/19/12 12:44 AM

Help Requested Alert sent to: 5712097028@txt.att.net Resolved on: 02/19/12 12:44 AM
Bedroom Resolved by: aframe
Alert sent: 02/19/12 12:42 AM Resolution: Offered Comfort and Support. Feeling a little dizzy. Spoke with her.
Alert acknowledged: 02/19/12 12:43 AM
Acknowledged by: aframe



Tablet for Patient Self-Reporting, Motivation, and Biofeedback



Examples of AFrame R&D

- **NIH Ph01 and Ph02: Aging Surveys**
 - Is remote monitoring of vitals and activity easy to use and acceptable to seniors?
 - *“Metrics for Assessing the Reliability of a Telemedicine Remote Monitoring System”* (accepted for publication in Telemedicine and E-Health)
 - Does remote monitoring make any difference in the health and wellness of CHF patients?
- **NIH Ph01: Walking vs. Activities of Daily Living**
 - Feasibility of transforming observations of daily living (ODLs) into clinically relevant data
 - Can a remote monitoring system infer changes in health status from changes in activity?
 - Presented at 2012 mHealth Summit

Cokato and AFrame: The Future

- Continued monitoring after leaving facility
- Expand into the community via home health
- Continued research regarding effectiveness of the system in population management, including prevention of unnecessary readmissions and fall prevention
- Evaluation of other sensors and monitoring device for integration to be able to add further data for the Wellness Indicator
- Develop specific protocols to address conditions/diagnoses common in the SNF population utilizing AFrame system and data

Innovative Care Delivery

- MobileCare Monitor is an integrated patient health and safety platform
- Patient-focused promoting independence and engagement in their wellness
- Personalized models allows caregivers to be proactive and stay ahead of a crisis
- Better care, lower costs and better outcomes.

