



Utilizing Innovative HIT Partnerships to Reduce Inpatient Falls

Mission Health's Approach

Domain: Health IT

Competency: Test and utilize technology that will maximize outcomes and improve efficiency

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BACKGROUND

Mission Health is an independent community hospital system recognized for its commitment to value and innovation. Mission's culture of improvement is attributed to leadership who believe health care must become more innovative to improve the patient experience. As part of this forward-thinking vision, Mission has cultivated relationships with strategic partners who share an interest in developing new health care solutions. In one such partnership, Mission and Cerner have collaborated to recognize intersections between Mission's needed care delivery improvements and Cerner's technological capabilities, such as the common issue of patient falls. In 2015, Mission and Cerner jointly funded a three-month pilot program to test Cerner's "virtual sitter" technology and successfully reduced unassisted patient falls to zero during that time.

About Mission Health

Mission Health includes six hospitals, a post-acute care provider, a long-term acute care provider, 500 directly-employed physicians and advanced practitioners, and a health plan. Its ACO, Mission Health Partners, includes all Mission providers along with others in the region.

Location: Western North Carolina

Website: www.mission-health.org

VBP Activity:

- MSSP (~58k lives)
- Mission Health employees (~18k lives)
- Humana MA (~8.5k lives)
- UnitedHealthcare MA (~4.7k lives)
- Healthy State MA and direct-to-employer (~1.5k lives)

APPROACH

As part of their ongoing collaborative partnership, Mission and Cerner meet several times a year to discuss challenges in health care delivery and promising new technologies. Focusing on the problems experienced most frequently by providers, the organizations seek to identify opportunities for solutions with the greatest impact on care quality that are cost-effective research investments. In early 2015, Mission raised the issue of inadvertent patient falls, which remain a serious problem nationwide despite hospitals' multi-component fall prevention programs. Hundreds of thousands of hospital patients fall each year in the United States, and 30-50% of those who fall are injured.¹

Mission and Cerner realized that patient falls could be decreased by using Microsoft® Kinect® technology to sense a patient's movement within a 20-foot range, using infrared cameras that would work under any ambient light. Instead of having a CNA "sitter" in the room with patients at high risk for falls, this technology could allow one "virtual sitter" to monitor multiple patients from a central location. Before pursuing the pilot, Mission asked its nursing leadership for feedback on the idea. Mission and Cerner then spent the next several months working with their legal and IT security departments to ensure this technology could be piloted safely at Mission.

When determining where to pilot the technology, Mission identified units with high engagement among department leaders and a high risk of patient falls. They chose Mission Hospital's 34-bed neuroscience unit because the nursing unit manager was passionate about the initiative and the unit had the highest historical fall rate during the previous year—5.74 total falls, 4.77 unassisted falls, and 0.91 injuries per 1,000 patient-days of care.² Mission encouraged provider buy-in by bringing together nursing leadership, unit nurses, and the Fall-Prevention Team to discuss how to fit the new technology into the existing workflow, and how patients should be identified for monitoring.

Cerner's team of engineers built a mobile prototype that could integrate into Mission's network and tested the prototype in the Mission Innovation Lab. Mission then set up a monitoring station and trained CNA staff with previous sitter experience who felt comfortable using technology. The virtual sitters watched six patients on a 42-inch monitor and were alerted by the software when movement was detected in high-risk zones. Because the virtual sitters could mark where the high-risk zones should be located for each patient, there were few false alerts. The sitters could communicate directly with patients via two-way audio, which was found to be highly effective in keeping patients from getting out of their bed or chair. If additional assistance was needed, the virtual sitters contacted the appropriate caregiver using a voice-over-internet phone. Virtual sitter fatigue was avoided by rotating the position frequently.

During the pilot, the Project Implementation Team met weekly to identify opportunities for improvement. This allowed Mission and Cerner to address logistical issues, and quickly solve technological problems. These frequent meetings meant that most of the major challenges were addressed within the pilot's first month.

RESULTS TO DATE

During the three-month pilot, the 98 patients monitored by the virtual sitter experienced zero unassisted falls and zero injuries during 348

patient-days of care. During that same period, patients in the neuroscience unit that was not participating in the pilot had an unassisted fall rate of 4.06 falls and 2.45 injuries per 1000 patient-days of care.² The pilot also showed that verbal communication from the virtual sitter was effective in helping patients stay in their bed or chair, keeping other providers from getting involved. Mission concluded from the pilot that one virtual sitter could likely monitor up to 12 patients successfully.

The virtual sitter technology has the potential to reduce fall-related costs significantly, since the average cost of an injury from a fall is \$14,000.³ While the technology does require an initial investment, Mission expects that it could become as necessary as a telemetry unit for monitoring cardiac patients. Mission has continued to use the technology since the end of the three-month pilot and is working to expand its use.

TOOLS & VENDOR PARTNERS

Mission has cultivated a unique relationship with Cerner that goes beyond the typical vendor relationship. Not only does Mission use Cerner products, but Mission is a site where transformative technology is developed and tested. Cerner collaborates with Mission to understand care delivery problems that are common across health systems and to find new solutions to those problems. By working together to pilot virtual sitters, Mission and Cerner may have found a way to largely eliminate patient falls.

CHALLENGES WITH IMPLEMENTATION

Mission was concerned that its providers would see the virtual sitter technology as one more administrative task taking them away from patients. However, by including providers in the planning process and by making the technology compatible with existing workflows, Mission minimized the additional administrative burden.

Although the voice-over-internet phone worked for the purposes of the pilot, Mission found that a faster and more reliable solution will be necessary when scaling the virtual sitter technology.

The intervention's success was another unexpected challenge. While Mission's leadership hoped virtual monitoring would decrease falls, they did not realize how quickly they would want to expand the technology throughout the health system, otherwise they could have planned for expansion earlier in the process.

KEY LEARNINGS

- **Develop strategic partnership**– Build relationships with partners to explore new health care innovations.
- **Design products that solve important problems** – Find innovations that are mutually beneficial to you and your strategic partner by solving problems that could result in a viable product.
- **Seek provider feedback early and often**– Involve practitioners in the planning and implementation of innovations.

¹http://www.jointcommission.org/assets/1/18/SEA_55.pdf

²<http://catalyst.nejm.org/reducing-inpatient-falls-virtual-sitter/>

³http://www.jointcommission.org/assets/1/18/SEA_55.pdf

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