Financial Impacts of Electronic Patient Room Whiteboards

*CONFIDENTIAL*

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Introduction

Healthcare leadership is constantly looking for ways to improve HCAHPS, patient care, and patient experience. Now that we are in 2017, Centers for Medicare & Medicaid Services (CMS) has increased reimbursement for providers to 2%, leaving a substantial amount of revenue dollars at risk. Much effort is going into the development of strategies to protect those dollars and to make those initiatives profitable for healthcare organizations. How can technology play a critical role in supporting these strategies and what can your organization do to implement them?

How have healthcare organizations benefited from using MEDI+SIGN electronic patient room whiteboards?

In this report, we will examine quantitative and qualitative evidence-based outcomes that contribute heavily to the value-based reimbursement model that challenges most hospitals.
Executive Summary

The financial impact report outlines the outcomes and return on investment (ROI) that has been achieved with MEDI+SIGN.

MEDI+SIGN solutions have been reported to make the following improvements:

- Nurse Communications achievement points increase 7 points
- Doctor Communications achievement points increase by 3 points
- Pain Control achievement points increase by 2 points
- Overall point increase by 24 points
- Saves on average 136 hours per bed annually by eliminating the manual workflow of filling out the patient room whiteboards.

Qualitative outcomes include improved patient experience with MEDI+SIGN automatically translating and displaying patient’s information in an easily understandable format and in their preferred language.

MEDI+SIGN has been proven to help with attraction of new talent. Additionally, MEDI+SIGN helps hospitals tap into the millennial market for new frontline staff. One report indicated that a new staff member joined the hospital with MEDI+SIGN instead of a hospital closer to home because of the high-tech hospital rooms, knowing that they would not have to manually fill out the whiteboards.

Upon go-live of the electronic patient room whiteboards, HCAHPS surveys started including the names of the nurses, proving that the patients are using the MEDI+SIGN boards as well as giving commendation to nurses and staff by name.
Evidence-based Outcomes for MEDI+SIGN® Electronic Patient Room Whiteboards

We will be analyzing three critical elements of evidence-based outcomes with electronic patient room whiteboards: dry-erase whiteboard time-cost analysis, HCAHPS evidence, sustainability and qualitative data from staff and patients.

Dry-erase Whiteboard Time-Cost Analysis

A nursing survey was performed at five Maryland and Pennsylvania based hospital systems. The survey participants included nurse managers and nurses from multiple Med/Surg units. In the survey, participants were asked to describe their own patient room whiteboard, including the care team identification section; clinical information, such as the patient’s diet, mobility, oxygen, and fall risk; patient’s plan for the day and time for their next round; pain medication schedule and pain scores; discharge times, and general notes. This feedback was used to determine the most common data points on a whiteboard that were used on average throughout all five hospital systems.

Next we asked what challenges were most commonly experienced with filling out the whiteboards. Survey results found that the majority of nurses listed ‘can’t find dry-erase markers,’ at the top of the list of challenges of filling out the whiteboards. Participants stated that searching for a dry-erase marker adds to the amount of time it takes to fill out the board. This explains why some nurses fail to fill out the whiteboard in whole or part, and to keep it updated. This evidence corresponds to the third-party research found in a study performed by the Society of Hospital Medicine and published in The Journal of Hospital
Medicine entitled “Patient Whiteboards as a Communication Tool in the Hospital Setting: A Survey of Practices and Recommendations.” The study reported that “the greatest barrier to using whiteboards was not having pens easily available.”

As part of the survey, nurses were asked to estimate how much time it would take to fill out each section of the patient room dry-erase board for the first time when the patient was admitted into the room and for each purposeful round following, knowing that information would have to be updated accordingly. Based on the common data points provided by the nurses for common whiteboard structure, a design was constructed for the survey. In the first section, it includes the patient’s name, the date, and the names for the care team. On average, respondents estimated that it takes three minutes to research this information and to add it to the whiteboard initially, and 30 seconds for updates during purposeful rounding.

The second section includes the clinical information, including the patient’s diet, mobility, oxygen, and fall risk. Respondents estimated an average of two minutes for this section to be filled out initially and one minute for each purposeful round, since, in most scenarios, research in the
Electronic health records (EHR) would have to be done simply to make sure the dry-erase board was filled out with accurate statuses and physician orders.

The last two sections were more challenging. The majority of nurses expressed that they generally do not have the time to fill out the plan for the day, additional notes, and pain medication schedules on a regular bases. They provided estimates for what they felt it would take IF they were to fill them out. The estimations included two minutes initially and 30 seconds for each round to fill out the plan for the day, time of next round, and pain assessment score on the standard Wong-Baker Scale.

The last section was also a gray area for the nurses. This section included pain medication schedule, notes, discharge schedule, medication side-effects, and patient questions. Since these items take much more time and are, for the most part, only found on the whiteboards and not in the patient’s EHR, the respondents reported that these sections were rarely filled out. Their estimation for 100% compliance was five minutes for initial completion and one minute and 30 seconds for each round.
Since the evidence yielded a lack of definition for the last two portions of the whiteboard, and it was only on rare occasions that nurses reported completing the last two sections, **outcomes will not include any time estimates for those sections.** An important point to consider is that these reports were common across all healthcare networks in the survey. The results confirm that nurses are extremely busy and that when something is in their way that requires additional work with little perceived benefit to the patient or to staff, they fail to follow through, even though all information on the patient room whiteboards have been proven to be critical for the coordination of care.

Additional parameters from the survey include:
- Average nurse hourly wage: $35 per hour
- Average shifts per day in the Med/Surg unit: two shifts
- On average, purposeful rounds occurred once each hour in the daytime and once every two hours in the nighttime.
- Average number of beds for a single Med/Surg unit in the survey: 25 beds
- Average daily census for the Med/Surg unit: 20 beds
- Average length of stay per patient (LOS): four days

**Results**

Nurses only filled out the first two sections regularly on the dry-erase boards in the patient rooms and it takes five minutes initially and one and a half minutes during each purposeful round for updates. The time-costs were astonishing. Results showed the cost of having a partially filled out whiteboard in the patient’s room was $5,935 per bed per year. This is derived by combining the estimated time spent on the commonly filled out sections of the whiteboard with the average hourly wage for nurses. That compounds to $118,701 on average per year for a 25 bed Med/Surg unit. Further findings show that the time used is a 1.63 Full-Time-Equivalent (FTE) or 3,391 hours per year. With costs compounded over 5 years, we land at an outstanding $593,505.
$600k in time-cost is a large investment to make in the dry-erase whiteboard. This is an unsustainable solution that cannot yield the desired results because the boards are only being partially filled out and not updated regularly.

To demonstrate why it is not physically possible for the nurses to do any more than what is indicated on the surveys is evident when you consider the sheer amount of time involved to fill out the entire dry-erase board. Up to now we have only considered the cost of only partially filling out the dry-erase boards. When we consider the possibility of fully maintaining the the dry-erase boards, the labor costs shoot up to $13,866 per bed, per year, or $277,324 annually per 25 bed unit. This translates to 3.81 FTEs or 7,924 hours annually and $1,386,620 over five years.

Dry-erase whiteboards have been recorded to make a noticeable difference, according to the article “Harnessing the power of the simple whiteboard: A shout-out to Sentara Bayside Hospital,” published by The Advisory Board Company. During a three-month initiative, whiteboards were reported to be making a difference for the hospital. “We have seen a 17% increase in our Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) rate the hospital score and recently achieved top 75% in HCAHPS nurse communication scores.” says Jennifer Kreiser, Director Inpatient Nursing/Customer Experience.

However, dry-erase board initiatives have been unsustainable. The moment that the initiative is no longer under the scrutiny of leadership, the nurses focus their time back
to the patient, while the dry-erase boards revert back to being filled out only partially. These studies coincide well with our surveys. According to the data, nurses report that they simply do not have the time to fill out the boards. One nurse actually admitted that she would hide markers in her gloves and throw them away so that they had an excuse NOT to fill out the dry-erase boards. However, ALL nurses feel that having information on the dry-erase boards is valuable to staff and patients.

It is important to note that the hospital is empowered to reinvest the 1.63 nurses per Med/Surg unit saved by MEDI+SIGN back to the bedside and utilizing the LEAN approach and eliminating waste. By reinvesting these budgets into automation, the hospital system will be accomplishing MUCH more than paying the nurses to fill out the dry-erase boards in their entirety. The answer to why you will accomplish more is in the next section.

**HCAHPS Evidence**

An article published by the American Sentinel University entitled “Effective Nurse Communication Key to Patient Satisfaction in Health Care System,” discusses the immense impact that nurse communication scores have on the overall satisfaction scores for the hospital. When there are good nurse communication scores, positive effects are felt throughout the rest of the survey responses from the patients. The article also discussed how the scores impact the hospital’s bottom line. “HCAHPS is part of Medicare’s new value-based purchasing program, which is an effort to shift to reimbursement models that pay for high-quality care rather than a high quantity of care... In addition, HCAHPS is the opportunity for which nurses have waited to demonstrate that what they do does make a difference in health care.”

The St. Luke’s University Health Network identified a need for an improvement in their HCAHPS scores at their Miners Campus. Since MEDI+SIGN is a connected platform, the St. Luke’s Miners Campus realized that digital whiteboards will fill themselves out, repurposing the nurses’ time, putting the patients first; having a synergistic effect on all surrounding processes, methodologies, and technologies. With a solid dry-erase
board strategy, they were able to identify that patient room communication automation would be the ‘tipping point’ for their organization. They implemented MEDI+SIGN digital patient room whiteboards.

What are the results? Measured outcomes show a sharp increase in HCAHPS scores in a very short period of time and have proven to be sustainable.

The electronic patient room whiteboards went live in April of 2016. In just three months after deployment, dramatic changes were seen. Nurse communication scores raised immediately by 11.8 points. Pain Control scores went up by 10.7 points. The evidence shows that physicians, in three months time, bought into the electronic whiteboards as a communications medium and teaching tool, and began introducing the digital patient room whiteboards into their bedside processes. That is evident in the 9.2 point increase in Communication with Doctors. Paralleling the article written by the American Sentinel University, nurse communication improved immediately and those improvements cascaded throughout the rest of the scores in the following months. Such improvements include an 8 point increase in discharge scores, and an 18.6 point improvement in transition of care scores. With liberation from the nurse communication ‘bottleneck’, it opened up the healthcare organization to operate with the initiatives that they already had in place much more efficiently. This resulted in an overall rating of the hospital improvement of 80 points, a 17.1 point increase in only
three months! The evidence is conclusive and, per LEAN methodology, we now measure, adjust, and expand as needed. St. Luke’s Miners Campus thereby expanded MEDI+SIGN patient room displays to their Critical Care Unit and Emergency Department in 2017.*

One way to define ROI with MEDI+SIGN is to look at performance improvements with increases in the 10 point range as seen in the HCAHPS evidence above and determine how those improvements can impact the value-based reimbursement model in 2017 for your organization.

Sustainability
What measures are being taken to ensure that results can be sustained and spread?
Like a healthy ecosystem, the MEDI+SIGN solution is self-sustaining, fully automated, updated, and managed by a network of MEDI+SIGN engineers, utilizing systems and platforms that the hospital already has in the resource pool which connects to the legacy infrastructure. There is no new workflow for staff to learn and no new software for staff or patients to use. The only training involved is how to orient the patient with their information during the initial round, creating a best practice to involve the patient and their family in their own care by educating them about their healthcare information and how they can be better informed about their care. This culture of an educated patient spreads throughout the entire organization by utilizing MEDI+SIGN as a patient education aid. Reaching out for connectivity with other systems is always the top priority for MEDI+SIGN because we know that broadening our level of automation and improving our impact on the type of information displayed is critical for the hospital to greatly impact the patient experience.

In the research document from St. Luke’s Hospital Miners Campus entitled “Electronic Whiteboards: Enhancing the Patient Experience” by Kimberly B. Sargent MSN, RN, NE-BC, it says that “[t]he results showed improvement in both nurse and doctor communication as evidenced by HCAHPS scores post implementation of the electronic
whiteboard. Communication with nurses' domain yielded a 6.2 point increase in the mean "top-box" score post implementation of the electronic whiteboard from 78.65% to 84.85%. This was associated with a decrease in occurrences that were below the 50th percentile ranking. Also shown in Figure 1 is an improvement in the number of “top box” occurrences of the 75th and 90th percentile ranking, respectively.

St. Luke’s Hospital – Miners Campus
HCAHPS/Communication with Nurses (Top Box)

As shown in Figure 2 below, there was a 4.49 point increase in the mean “top-box” score post implementation communication with doctors post implementation of the electronic white board 81.46 percent to 85.95 percent. Also noted was a decrease in the number of occurrences below the 50th percentile along with improvement of occurrences in the 75th and 90th percentile ranking for doctor communication."
Qualitative evidence has always been the purest form of data available and it continues to align itself with quantitative data that is pouring in. The personal stories tell us why the HCAHPS scores are improving. Here are just a few of those stories.

**Beverly, Multi-Language Support and Patient Satisfaction**

Beverly, a patient with multiple lacerations to the face was wheeled into the room for a live trial. The patient was in her late 70’s and was on pain medication. During the assessment review, the nurses discussed her preferred written and spoken languages with her and Beverly responded that she preferred Russian. As the staff documented
the event, MEDI+SIGN sensed the language preference in the assessment data and displayed the whiteboard in Russian, with English captions for staff. When Beverly noticed the language translate to Russian she lit up. Even though her face was stitched, she smiled big and started reading the entire whiteboard out loud. Nurses said that she talked about the “Russian Whiteboard” throughout the rest of her visit as a patient.

Kayla, Nurse

Chose Miners Campus Because of Digital Whiteboards

Kayla, a new hire, was asked why she chose to work at Miners Campus when she could have accepted a position at a medical center closer to home. She said that she preferred Miners because it was “high-tech.” When questioned further, she liked how she felt when she walked into the hospital rooms and how the boards show the nurses’ pictures. She felt that she wouldn’t be burdened with the manual, time wasting workflow of the whiteboards.

HCAHPS Surveys Include Staff Names

The moment that MEDI+SIGN went live with staff names, staff pictures, and staff phone numbers displayed in real time on the displays, patients began mentioning staff members by name in the HCAHPS surveys. This was a surprising result to the hospital. It was common for them to receive feedback that the “nurse with black hair” was nice, but now the patient reports that “Jenny did a good job”, or that “Dr. Lupcho listened very well.” This has enabled the hospital to put together initiatives for staff recognition and accountability, and makes it much easier for staff reviews.
Conclusion

It is evident that MEDI+SIGN has a positive impact on outcomes within the healthcare organization. We outlined surveys performed at five hospitals. The reports concluded that the time spent partially filling out dry-erase whiteboards in the patient room was a 1.63 Full-Time-Equivalent (FTE) or 3,391 hours per year, with costs compounded over five years at $593,505. Investment in the MEDI+SIGN solution should be viewed from the perspective of reinvesting or converting the time-cost of the nurses into high-impact activities including bedside care, coordination of care, and more accurate documentation, allowing MEDI+SIGN to fill out the critical information in its entirety and in a way that is easy to read.

The difference that MEDI+SIGN can make is evident in the HCAHPS report for St. Luke’s Hospital Miners Campus, with Nurse Communication scores increasing immediately by 11.8 points and an overall hospital score increase of 17.1 points and through automation, making these outcomes sustainable.

The qualitative evidence reviewed in this report helped us peer into the human story that translated into the point increases experienced along with reasons why they improved. These reports included how translating the patient’s information positively impacts patient satisfaction, how technology can attract good talent, and how MEDI+SIGN enables patients to mention staff by name in the HCAHPS surveys, empowering leadership initiatives.

All healthcare organizations share a common goal and are seeking out technologies, methodologies, and processes that will result in improvements in patient satisfaction and safety, supported by the new value-based care reimbursement model and most importantly, because it is the right thing to do. However, the impact that MEDI+SIGN solution has on the organization’s bottom line is specific to each healthcare organization and is best answered by each executive in the C-Suite. One thing is certain
though, MEDI+SIGN is here to help your organization along your journey of patient-family-centered value-based care.

To learn more about the MEDI+SIGN connected platform for healthcare, visit us at www.medisigndisplays.com and be sure to watch the video on the main page for more information on the impact that MEDI+SIGN can have on your organization.

* Two other noticeable improvements were experienced, Responsiveness of Hospital Staff, up 15.9 points, and Hospital Cleanliness & Quietness, up 10.9 points. When early assessments were analyzed, a new nurse call system was what assisted with the staff responsiveness and a refresh/renovation was the reason for the increase in cleanliness scores.