Project Submission:
2009 Delaware Valley Patient Safety Award

HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA

"Cultural Change in Nursing Response to Call Bells through the Implementation of New Technology and Maximizing Analysis and Dissemination of Resulting and Available Data from Multiple Sources"

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The Health Care Improvement Foundation 2009 Delaware Valley Patient Safety Award

Abstract:

A newly established nursing unit had lower than anticipated HCAHPS (Hospital Consumer Assessment of Healthcare Providers and Systems) scores for the measurement "Call Bell Response" for July and August 2008. The nurse manager identified this as an area of improvement. This single measurement relates to many connective metrics including patient safety, patient satisfaction, falls, environmental noise and staff satisfaction. It was adopted by the Unit Based Clinical Leadership as a key component for change, with threshold, target and high performance scores calculated, based on first quarter data since there was no previous year's data (being a new unit). The Unit Based Clinical Leadership (UBCL) is a triad made up of the nurse manager, a physician leader, and a quality department representative.

This new unit was the pilot unit for Hill Rom/Nurse Call bell and the COMLinx Locator. The staff utilized the locator device to navigate the clinical floor and reduce lag time in the call bell response. The system pinpointed the nurses' location and the audio boxes at bedside eliminated the need for overhead call response. The system enabled the UBCL team to audit and review data on call bell response time, frequency of call bells and peak times of call bell usage.

The resulting data changed our approach and enabled unit leadership to explore communication strategies that impact patient's perceptions. By conducting exit interviews with the patient and adopting a "Straight Arrow" approach (answer the call in person by first responder and not over the audio box) to answering the call, we have gained and sustained a significant gain in comparison to first quarter. Discussions of data provided teachable moments with individual nurses and highlighted the importance of hourly rounding, time management and meeting patient's expectations.

Title:

Cultural Change in Nursing Response to Call Bells through the Implementation of New Technology and Maximizing Analysis and Dissemination of Resulting and Available Data from Multiple Sources

Goals:

In simplest terms, the ultimate goal was to improve the HCAHPS score for "Call Bell Response". In its most complex terms, the goal was for a new nursing unit to pilot a new call system product, maximize the effect of the data available, and create a culture change in how a nurse within her daily role responds to a call bell.

Baseline Data/Interventions/Results:

A newly established nursing unit had lower than anticipated HCAHPS scores for Call Bell Response for July and August 2008. See Appendices Figure 1 scores. This single measurement related to many connective metrics including patient safety, patient satisfaction,

falls, environmental noise and staff satisfaction. It was adopted by the Unit Based Clinical Leadership (UBCL) as a key component for change, with threshold, target and high performance scores calculated, based on first quarter data since there was no previous year's data (being a new unit).

The first quarter had an HCAHPS score of 23. Threshold was calculated as a 5% increase, target was 10%, and high performance was 15% increase in the HCAHPS score. The final score for the fiscal year was 53, with June 2009 at 75 percent of patients answering that they "always" received help as soon as they wanted it.

This nursing unit was the pilot unit for Hill Rom/Nurse Call bell and the COMLinx Locator. The staff utilized the locator device to navigate the clinical floor and reduce lag time in the call bell response. The system pinpoints the nurses' location and the audio boxes at bedside eliminate the need for overhead call response. The system enabled unit leadership to audit and review data on call bell response time, frequency of call bells and peak times of call bell usage. Data analyzed from the system indicated that a majority of calls are answered in 40-50 seconds. These results changed our approach and enabled unit leadership to explore communication strategies that impact patient's perceptions. By conducting exit interviews with the patient and adopting a "Straight Arrow" approach (answer the call in person by first responder and not over the audio box) to answering the call, we have gained and sustained a significant gain in comparison to first quarter.

The new system provided analysis, sharable and distributable data on each patient and on each individual call as illustrated in the appendices Figure 2. Here we see the first page of a 128 page report that lists every call bell request placed by the patients. On this report, patient XXXXXXX placed calls at 5:27, 5:40 and 5:42 on 6/16/2009. The column farthest to the right shows the total time of response to call. Data is discussed with staff nurses, giving them patient names, room numbers, dates and exact times of each call. This discussion of data provides teachable moments with individual nurses and highlights the importance of hourly rounding, time management and meeting patient's expectations.

In addition to the individual line items on the report, aggregate data is available on a monthly basis. Figure 3 shows the system generated report, calculating that 4,363 calls were placed by patients within the month of June 2009. This downloadable (into Excel) spreadsheet could be further analyzed as to average response times, outliers, standard deviations, and other trendable data. The below dataset illustrates the average response time for several months and the standard deviations.

Months	Number of Call Bells	Average Time of Response	Standard Deviation
December	2754	1:47	2:24
January	3841	1:44	2:12
February	3840	1:48	2:09
March	4689	1:42	2:06
April	4222	1:38	2:02
May	4304	1:34	1:41
June	4341*	1:24	1:37

* Note. The difference in the Grand total number of calls between the illustration and the above chart is a result of the system recording "bed out of wall" as a call bell response. These calls are removed from the data base since no patient is involved. Beds are moved for cleaning, moving to other areas or transporting patients to tests.

The above numbers show not only the decrease in response time but the decrease in standard deviation. This decrease in standard deviation shows that the process is in more control, with less outliers and lower variation among lengths of response times. The average patient uses the call bell between 6 and 10 times per day, as shown below.

Months	December	January	February	March	April	May	June
Number of Call Bells	2754	3841	3840	4689	4222	4304	4341
Patient Days	411	537	579	515	522	494	NA
Calls per Pt. Day	6.70	7.21	6.63	9.10	8.09	8.71	NA

As shown in Figures 4, 5 and 6, the nursing unit has had a measurable and correlated increase in the PressGaney "Promptness in response to call" question. Both the PressGaney and HCAHPS scores for calls have upward linear trends for the fiscal year. The two "dips" in the graphs can be explained by the technology improvement in January and February (discussed in future paragraphs). The April-May setback may be attributed to both a significant increase in patient acuity in the population and a change in patient/service population. In an effort to maintain a stable census, Ravdin 6 partnered with the neurosurgery department to provide post operative care to patients undergoing cervical and lumbar back surgery. Staff participated in educational programs and worked to develop new relationships with our neurosurgical team. Fully anticipating the needs of this patient population required time and staff support. After a brief period of adjustment, the unit has embraced this surgical population and response rates are once again on the rise.

The PressGaney comments were reviewed by the UBCL team on a monthly basis. Individual comments made by the patients could be compared to the call bell data. It was great for nursing staff morale when patients made the comments such as "Nursing was superb" and "Never needed to use my call bell." Increased hourly rounding improved patients' PressGaney scores but it should be noted that is a patient never needed to use a call (due to hourly rounding) they could not answer "Always" to the HCAHP call bell response question. Additionally, HCAHPS showed consistently high scores in "Recommending Hospital" as demonstrated in Figure 7.

The unit was also tracking falls during the fiscal year. Being a new unit, the patient population mix was in flux over this first year so month to month trending did not show any improvement. However, we now have a baseline for next year. The unit did have the next to lowest falls rate when compared to other like units.

A survey of the nursing staff was conducted in the spring of 2009. The Nurse Call Bell Survey Post Implementation of COMLinx yielded a response rate of 40 staff members. The results of the survey demonstrated positive responses to the use of the system and delivery of patient care. When asked how timely staff believed they responded to "call lights", 82.5% indicated 0-5 minutes. Eight-five percent of the respondents indicated that the system improved overall timeliness of call light requests. This corresponds to the data collected from the system. A key element of the technology is nurse locating. Each staff member wears a badge that transmits an infrared signal and sends location data to a main console. Staff can find the nurses name and locate where on the floor the nurse may be, eliminating overhead paging and wasted time searching for staff. Survey results demonstrated 92.5% of the staff responded favorably to this feature of the system. Although 50% of survey responses indicated no change in the overall reduction of call lights, as indicated in previous graphs, 70% replied favorably that the call light system provided ease in communication.

The COMLinx system provides information on nurse response time to patient call bells. Call bells can be answered in person or by using the systems intercom capability. During the first 3 months of system utilization, the unit depended on both methods to answer call lights. At the beginning of a shift, the unit administrative assistant would enter staff assignments to correlate to patient rooms. Staff answered call lights in person, as well as, calls were dispatched through the front desk to the nurse assigned to the patient for the shift. Initial data demonstrated that calls were answered equally using either method. The corresponding HCAHPS response to "call bell help as soon as needed" did not reflect what we considered to be admirable results. Upon further analysis of the data, a delay of time to direct face to face contact with the patient became apparent when calls were dispatched through the system. The following scenario explains what was discovered: A patient places a call for assistance; the call is answered at the front desk and is dispatched to the nurse assigned to that patient. Unfortunately, we did not have a method in place to answer that call if the assigned nurse was busy and not available. The call bell was answered, but the patient did not receive timely attention. After reviewing the results of our data, a team decision was made to significantly decrease the dispatching of calls and to answer as many calls in person. Every team member that can offer direct contact with the patient was included and provided with a system locator. In those few instances where calls may be answered through the intercom system, our administrative assistants now dispatch the call to the first person available, not necessarily the assigned nurse.

A second change that occurred as a result of data analysis was the redesign of the Hill-Rom Versacare Bed and pillow speaker product for best utilization. During early implementation of the technology, we experienced a significant number of broken and malfunctioning pillow speakers, the hand held device patients use to call for assistance. Patients and family would report that they had called for help and received no response. The data retrieved from the system frequently demonstrated beds off line. This Hill-Rom product is designed to collect data on call bells, as well as, height of patient's bed, number and position of side rails, brake position and function and bed exit alarms to prevent patients from exiting unassisted.

After several meetings with the vendor regarding our concerns, we determined that the position of the unit interface device at the head of the bed was key to correct function of the system. The Versacare Bed has a large metal structure attached to the head of the bed to allow staff to move the bed easily through hallways. This structure frequently collided with the interface device and would either destroy the pillow speaker or break the bed interface connection preventing communication with the system. In collaboration with the vendor a work redesign was completed. The metal structure was removed, not affecting the bed, and a pillow speaker which allows for a 90 degree angle of flexion was installed. Interruptions in service and interface communication no longer exist, providing no further gaps in data collection. These events occurred in January and February and are reflected in previously discussed graphs.

Frequent review of data and sharing dissemination of data made this project successful. It is known that data is not actionable unless analyzed and shared. Nursing needed to be involved with the data that resulted from their daily efforts. Teachable moments were an absolute necessity and one's empowerment to improve the data was the key to individualized and personalized success. As a result, the HCAHPS score could be viewed as a direct result of the day-to-day efforts of staff and not a meaningless and immoveable statistic.

Staff committed themselves to excellence. A collaborative effort was recognized by all levels of staff. It was discussed within Nursing and UBCL leadership that a patient's perception of a request being answered is not when the nurse or nurse assistant enters the room. A patient informing their caregiver of an increase in pain may feel their response is answered when the pain medication is changed or increased. To a patient complaining about a wrong meal tray, the response time ends when a new tray is delivered. Changing the patient's response to the survey HCAHPS question was not only the result of the new call bell system, but the collaboration of the entire unit staff including physicians, dietary, environmental services, and pharmacy. The change in culture was the embodiment that we are all response for the quality of the patient's stay and that each of our roles has a direct and measurable influence.

How this initiative may be replicated throughout the region: **DVPSA-2009-33**

While not all health systems will be purchasing a new call bell system, the key finding of this project was not the purchase but the use of the data available. When the vendor presented a print-out report, we asked for downloadable data that was sortable and actionable. Key learnings were translated into teachable moments with individuals within the department. To the staff, HCAHPS measures became the direct result of their daily actions because they could see daily data accumulate, illuminating the cause and effect. Individualized daily efforts were flowing into team efforts and support. In turn, the productive staff could see rewards for their daily efforts in monthly, quarterly and yearly measures.

"*Putting the patient first*" became the main focus of nursing. Continuous review of patient comments allowed nursing staff to see the patient perspective. Patient safety, satisfaction and communication became interlocked with sustained improvement.

Appendix

Figure 1

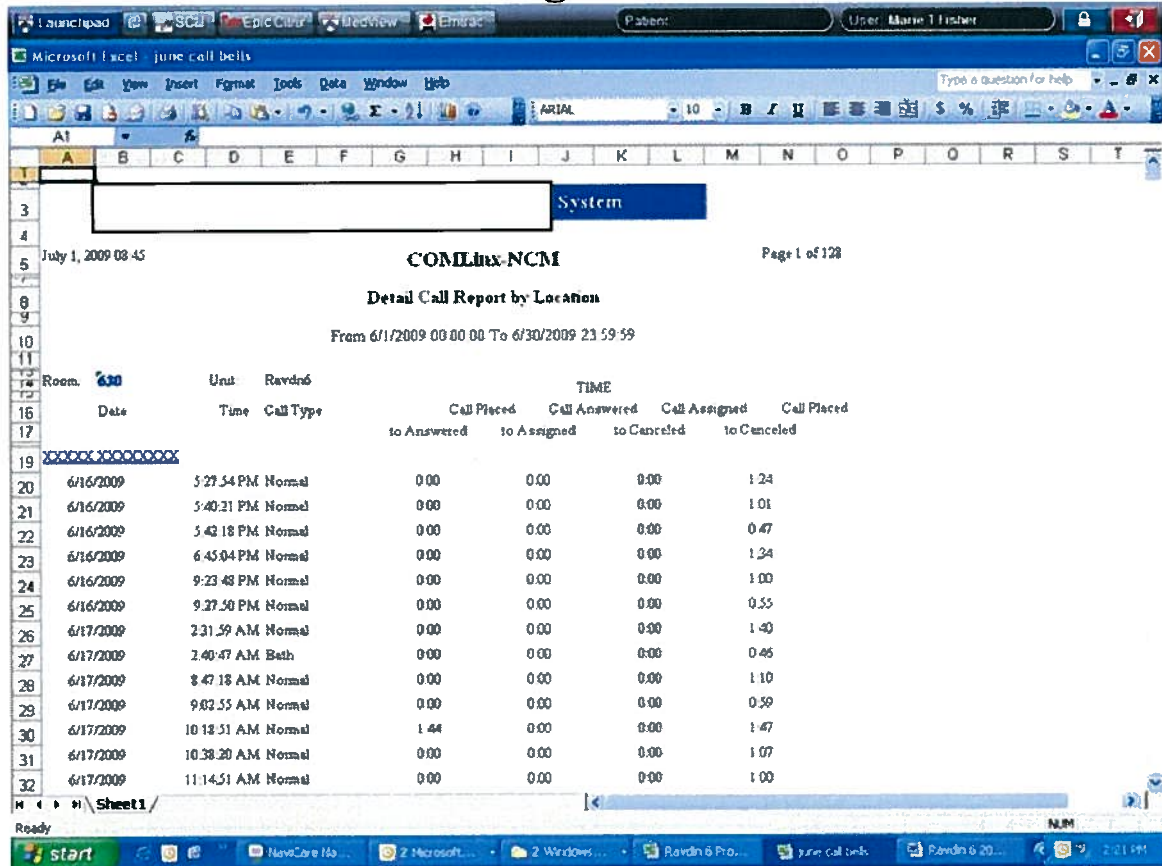
HCAHPS data FY09

	FY08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	FY09 YTD
Call bell help as soon as wanted it	NA	25	20	n<7	44	50	52	50	43	67	44	45	75	53

Threshold	Target	High Performance
24.2	25.3	26.5

* based on Q1 data

Figure 2



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Detail Call Report by Location

From 6/1/2009 00:00:00 To 6/30/2009 23:59:59

Room 630 Unit Ravdn6

Date	Time	Call Type	Call Placed to Answered	Call Answered to Assigned	Call Assigned to Canceled	Call Placed to Canceled
XXXXX XXXXXXXX						
6/16/2009	5:27:54 PM	Normal	0:00	0:00	0:00	1:24
6/16/2009	5:40:21 PM	Normal	0:00	0:00	0:00	1:01
6/16/2009	5:43:18 PM	Normal	0:00	0:00	0:00	0:47
6/16/2009	6:45:04 PM	Normal	0:00	0:00	0:00	1:34
6/16/2009	9:23:48 PM	Normal	0:00	0:00	0:00	1:00
6/16/2009	9:27:50 PM	Normal	0:00	0:00	0:00	0:55
6/17/2009	2:31:59 AM	Normal	0:00	0:00	0:00	1:40
6/17/2009	2:40:47 AM	Bath	0:00	0:00	0:00	0:46
6/17/2009	8:47:18 AM	Normal	0:00	0:00	0:00	1:10
6/17/2009	9:03:55 AM	Normal	0:00	0:00	0:00	0:59
6/17/2009	10:18:51 AM	Normal	1:44	0:00	0:00	1:47
6/17/2009	10:38:20 AM	Normal	0:00	0:00	0:00	1:07
6/17/2009	11:14:51 AM	Normal	0:00	0:00	0:00	1:00

Figure 3

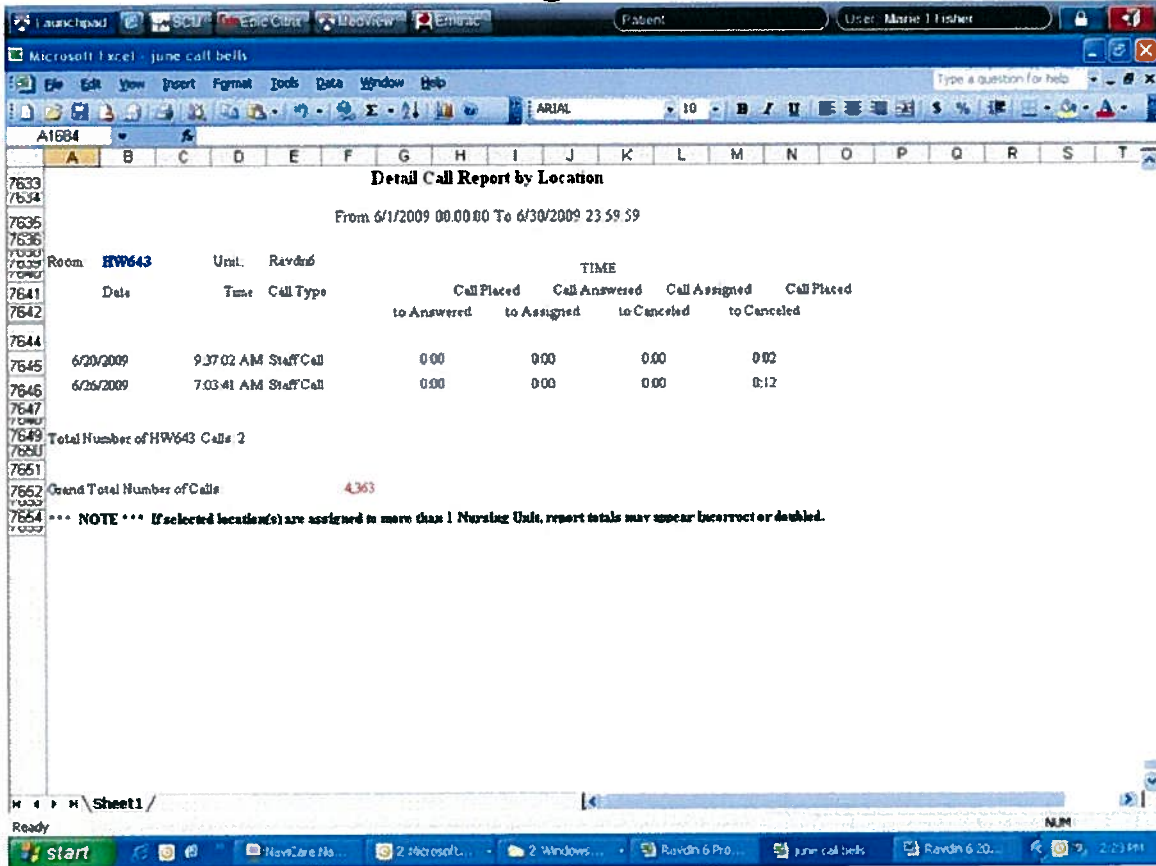

Figure 4

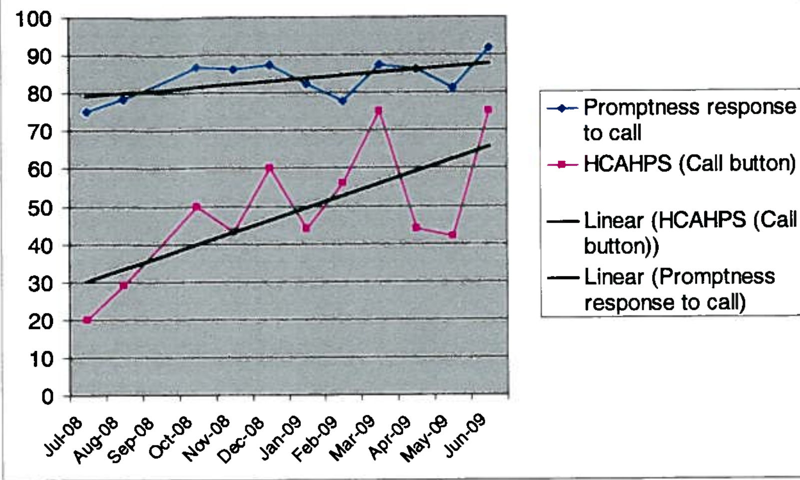

Figure 5

Question	Month	Promptness response to call (PressGaney)	HCAHPS (Call button)	Total Surveys: n
7/1/08 7/31/08 mean	Jul-08	75	20	10
8/1/08 8/31/08 mean	Aug-08	78.3	29	15
10/1/08 10/31/08 mean	Oct-08	86.7	50	15
11/1/08 11/30/08 mean	Nov-08	86.1	43	9
12/1/08 12/31/08 mean	Dec-08	87.5	60	14
1/1/09 1/31/09 mean	Jan-09	82.5	44	10
2/1/09 2/28/09 mean	Feb-09	77.8	56	9
3/1/09 3/31/09 mean	Mar-09	87.5	75	16
4/1/09 4/30/09 mean	Apr-09	86.1	44	9
5/1/09 5/31/09 mean	May-09	81.3	42	12
6/1/09 6/30/09 mean	Jun-09	91.7	75	18
Total mean	Year End	84.9	53	142

Figure 6

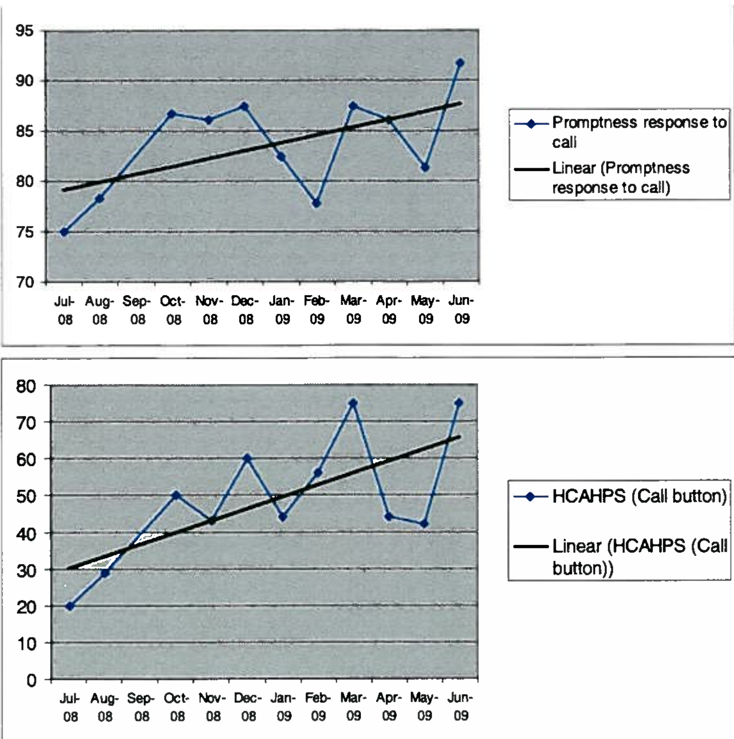

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Figure 7