

## **Creating Improved Communication Between Nursing and Physicians: Importance of Collaboration within a Hospital System**

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### **Abstract**

*Background: Optimal communication between all members of the healthcare team is important to ensure safe and efficient patient care.*

*Objective: To improve communication between nurses and resident physicians by developing and implementing a paging protocol.*

*Methods: A resident-led workgroup was assembled to identify opportunities for improving communication. A survey was designed to assess current practices and perceptions related to resident and nurse communication. A facilitated focus group of residents and nurses met on two separate occasions to review the survey results and develop a set of mutually agreeable paging guidelines. The group chose to adopt the ISBARR communication tool and planned educational interventions accordingly. Residents and nurses were resurveyed roughly three months' post-intervention.*

*Results: The results indicated a 12.8% reduction ( $p=0.017$ ) in the percentage of nurse respondents that "never" inquire whether or not another nurse on the unit needs to speak with the same physician prior to paging. A 10.3% increase ( $p=0.033$ ) in resident respondents that "usually" receive grouped pages, and an 11% reduction ( $p=0.042$ ) in the percentage of resident respondents that "never" receive grouped pages. However, only 53.3% ( $n=60$ ) of nurse respondents and 44.1% ( $n=68$ ) of resident respondents felt their ISBARR training was adequate. Moreover, only 38.4% and 30.9% of nurse and resident respondents, respectively felt the paging guidelines and ISBARR had improved overall communications between the two groups.*

*Conclusions: While the follow-up survey results revealed some improvements in paging practices, the need for continued education was clear.*

### **Introduction**

During a case-based patient safety conference, medical residents at the University of Kansas Medical Center identified poor communication between residents and nurses as an ongoing issue impacting patient care. The residents were specifically concerned with inappropriate paging practices leading to paging fatigue and less than optimal working relationships between residents and nurses. A small workgroup consisting of both resident and nursing leadership was assembled to explore the perceived inefficiencies and implement change as appropriate.

Communication using pagers is necessary for safe and appropriate care, but unnecessary paging can lead to fatigue, interruptions, and decreased quality of care. Several studies have attempted to analyze the urgency level of pages received by resident physicians. These studies suggest that the proportion of non-urgent pages received by residents range between 44-92%.<sup>1-3</sup>

As early as 1992, residency programs have recognized a need for studies to evaluate interventions aimed at decreasing unnecessary paging.<sup>4</sup> Some see promise in using health information technologies to potentially replace numeric pagers, however a study from Canada stresses the importance of meaningful improvements in clinical communication and suggests that replacement of pagers may create unintended consequences.<sup>5</sup> Fargen et al. suggest that a viable solution must address the work context of the individual being paged and the individual initiating the page to ensure that urgent communications are properly prioritized and attended to.<sup>2</sup> Moreover, reviewing the volume and content of pages can provide valuable information and insight to help identify inefficiencies within all hospital communication.<sup>6</sup>

SBAR (Situation-Background-Assessment-Recommendation) is an adaptation of a tool which originated within the aviation industry and is used as a framework for communication between members of a healthcare team, particularly nurses and physicians, about their patients.<sup>7</sup> Numerous studies demonstrate successful implementation of this tool in healthcare settings, leading to improvements in patient safety, clinical outcomes, and physician, nurse and patient satisfaction.<sup>7-11</sup>

To capture the importance of identifying oneself when communicating with another member of the healthcare team, some institutions have adopted a modified version of the original tool: ISBAR (Identify-Situation-Background-Assessment-Recommendation).<sup>12,13</sup> Other institutions have adopted a further modified version of the tool, known as ISBARR (Identify-Situation-Background-Assessment-Recommendation-Read Back), which captures the importance of read back when receiving a verbal order from a physician.<sup>14</sup>

The objective of this project was to design and begin implementation of paging guidelines to improve communication between staff nurses and resident physicians.

## **Methods**

A workgroup was assembled to assess the current state of resident-nurse communication and identify areas for improvement. The workgroup was led by an Orthopedic Surgery resident and included two other residents (Urology and Internal Medicine), three nursing directors, two members of the Graduate Medical Education leadership staff, and a member of the School of Medicine research faculty.

To better understand the underlying issues, the workgroup designed a novel survey instrument to assess current practices and perceptions related to communication between nursing staff and residents. Both a nursing version and a complementary resident version of the instrument were developed. Survey items were developed collaboratively through both in-person and online communications between members of the workgroup. Appendix #1 delineates the questions asked in both versions of the instrument. In parallel with the survey, Internal Medicine residents kept a detailed log of pages received over the course of several overnight calls throughout the week.

With the survey results and call log in hand, a large focus group was assembled and charged with designing the institution's first hospital-wide standardized paging protocol. Twenty-two staff nurses, two nursing leaders, 17 resident physicians, 7 attending physicians, and an impartial moderator from the School of Medicine leadership staff participated in the focus group.

A significant portion of the meeting was devoted to a discussion of the survey results and call log data. The focus group developed a protocol outlining five key guidelines: 1) nurses are to use a standard communication tool (ISBARR) to organize the conversation when receiving a return call from a paged resident, 2) nursing units are to group or batch non-urgent pages, 3) nurses are to consult with a senior nurse, nurse manager, or unit coordinator prior to paging a resident, 4) nurses are to be immediately available to take a return call for at least ten minutes after paging a resident, and residents are to return pages within ten minutes, and 5) residents and nurses are to escalate concerns with the new system to chief residents and nurse managers as appropriate. In selecting ISBARR as the standard communication tool for the organization, the desired outcome was to educate

both those sending as well as those receiving pages about the level of communication necessary to ensure optimal information transfer and safe patient care.

Implementation of the protocol began simultaneously for both nursing staff and resident physicians. Nursing education consisted of “badge buddies” (small visual aids that attach to identification badges), unit-specific educational sessions led by unit educators, addition of an ISBARR and paging protocol overview to the new nurse orientation curriculum, and email delivery of a resident-created instructional video to all nursing staff. Resident education consisted of resident-led presentations at two house-wide resident conferences. The presentations included a discussion of the survey results, and overview of ISBARR, and a viewing of the resident-created instructional video.

Following the initial implementation, roughly three months post-intervention, residents and nurses were surveyed again. The same survey instrument, with the addition of several questions related to the new paging protocol and associated educational activities, was utilized. Appendix #2 shows the questions that were added to the original survey.

Between the two surveys, repeated questions were directly compared to identify any significant changes in response patterns. A Fisher exact test for significance was employed to assess the differences in proportions.  $P < 0.05$  was considered significant.

The Institutional Review Board granted exempt approval for this quality improvement project. There are no conflicts of interest to report.

## Results

The initial survey was delivered in August 2012 to 160 nurses across four nursing units (two medical and two surgical) and 120 residents across three residency programs (General Surgery, Internal Medicine, and Orthopedic Surgery). The response rates were 38.8% ( $n=62$ ) and 54.2% ( $n=65$ ) for nurses and residents, respectively. Table 1 and 2 show the characteristics of the survey participants for the nursing and residents.

The initial survey results revealed that 58.1% of nurse respondents “rarely” or “never” consult their charge nurse to determine whether or not a situation warrants paging the doctors, prior to paging that doctor. Moreover, only 17.7% of nurse respondents “always” or “usually” inquire whether or not another nurse on the unit needs to talk to the same doctor prior to paging. Not surprisingly, 52.3% of resident respondents characterized the majority of the pages they receive as not needing any action for 1-4 hours, and 58.5% of resident respondents “rarely” or “never” receive grouped pages.

Internal medicine residents kept logs of paging patterns from specific nursing units and throughout a 10 hour shift overnight, an average of 38 pages were received. When the page was returned by the resident, on average 5 per night were not claimed and the unit stated that no one needed to speak with that person. At least 3 times per night, the resident would receive more than 3 pages from the same unit within one hour, and on 2 occasions, 5 pages from the same unit between 4:15 and 5:15 AM. The follow-up survey was delivered in April 2013, roughly 3 months’ post-intervention. The survey was delivered to 160 nurses across the same four nursing units and 120 residents across the same three residency programs. Response rates were similar to the initial survey with 37.5% ( $n=60$ ) of nurses responding, and 56.7% ( $n=68$ ) of residents. While the follow-up survey results revealed some improvements in paging practices, the need for continued education was clear. Only 53.3% of nurse respondents and 44.1% of resident respondents felt their ISBARR training was adequate. 38.3% of nurse respondents and 36.8% of resident respondents had not yet seen the ISBARR teaching video. And only 38.4% of nurse respondents and 30.9% of resident respondents felt the paging guidelines and ISBARR implementation had improved communication between nurses and resident physicians. Figure 1 depicts the impact of the ISBARR implementation on the quality of communication between residents and nurses, as perceived by the respective respondents.

Statistically significant improvements in the paging culture included a 12.8% reduction ( $p=0.017$ ) in the percentage of nurse respondents that “never” inquire whether or not another nurse on the unit needs to speak with the same physician prior to paging. A 10.3% increase ( $p=0.033$ ) was found in resident respondents that “usually” receive grouped pages, and an 11% reduction ( $p=0.042$ ) in the percentage of resident respondents that “never” receive grouped pages.

## **Discussion**

Over 50% of the pre- and post-survey resident respondents characterized the majority of the pages they receive as not needing immediate attention. This is consistent with previous studies that have found the percentage of non-urgent pages to fall somewhere between 44-92%.<sup>3-5</sup>

Although only a small improvement, the ISBARR implementation and associated educational interventions significantly increased the number of residents who reported receiving grouped pages. This is consistent with a similar study that used NNAPPS (Nighttime Nurse and Physician Paging System) to reduce non-urgent pages, total number of pages, and streamline paging systems.<sup>3</sup>

This key outcome was achieved with minimal time investment. Members of the small workgroup and the large focus group volunteered their time. The small workgroup held four hour-long meetings supplemented by electronic communications to refine the survey instrument and work out logistical issues. The large focus group met for a single two-hour meeting over dinner. The educational interventions employed were built into existing and ongoing educational activities within the institution. The instructional video was developed by several volunteer residents and nurses over the course of an afternoon with a nominal fee paid for in-house video production and editing services.

As with all projects and studies there are recognized limitations. All nursing units and residency programs function differently in the ways they communicate, round on patients and perform other regular duties. Both nurses and residents work many different hours and shifts and residents often rotate to other participating institutions. Although it has been discussed by the resident council, the implementation of these guidelines has not taken place at other supporting and participating institutions.

Our institution employs approximately 2400 nurses and 517 resident and fellow physicians. Though our sample is small in comparison to the total population, the respondents were fairly representative. The majority of the nurses surveyed reported between 1-6 years of experience, which is consistent with the total population. The residents responding to the initial survey were split fairly evenly between the PGY 1, 2 and 3 levels (37%, 23%, and 22% respectively), with a smaller percentage of upper level residents (18%) making up the remainder.

We recognize that self-report data using an invalidated novel survey instrument is subject to strong social desirability bias. We are also unable to rule out environmental changes or other institutional protocols that could account for any observed differences.

## **Conclusions**

Change in any form can be quite a task to accomplish, even with the support needed to make it happen. Implementation of paging guidelines within an institution cannot occur with one simple intervention. Our results show us that progress can often be slow, but any improvement should be considered a success.

At our institution, this project validated the need for residents to play an instrumental role in developing hospital guidelines. Many collaborative ideas were discussed between the physicians and nurses during the large focus group. This is the community that is necessary to improve the lives of all involved including the safety and satisfaction of our patients and employees.

Health care provider communication is recognized to be a very pertinent and high priority issue at our institution, including recognition of these guidelines by hospital leadership (CEO and CNO of the institution).

Educational efforts related to the paging guidelines and the ISBARR communication tool is ongoing. It is understood that education on these topics is now a permanent segment of all orientation sessions at the institution. The plan is to continue implementation efforts and evaluate the continued progress with additional follow-up surveys for comparison.

Creating improved communication and paging within an academic institution can be challenging. Continued education of all involved is of utmost importance. Resident physicians can have a strong voice in making improvements for patient safety when given the opportunity.

### Conflicts of Interest

The authors declare no conflicts of interest.

Table 1: Nursing Survey Participant Variables

	Pre-Intervention Survey (n=62)	Post-Intervention Survey (n=496)
Unit		
Medical	30 (48%)	244 (49%)
Surgical	32 (52%)	251 (51%)
Shift		
Day	41 (66%)	313 (63%)
Night	21 (34%)	183 (37%)
Years working as RN		
<1 year	5 (8%)	72 (14%)
1-3 years	24 (39%)	119 (24%)
4-6 years	19 (30%)	120 (24%)
7-9 years	11 (18%)	47 (10%)
≥10 years	3 (5%)	138 (28%)

Pre-Intervention: 160 surveys distributed and 62 returned for 39% response rate

Post-Intervention: 1800 surveys distributed and 496 returned for 27.6% response rate

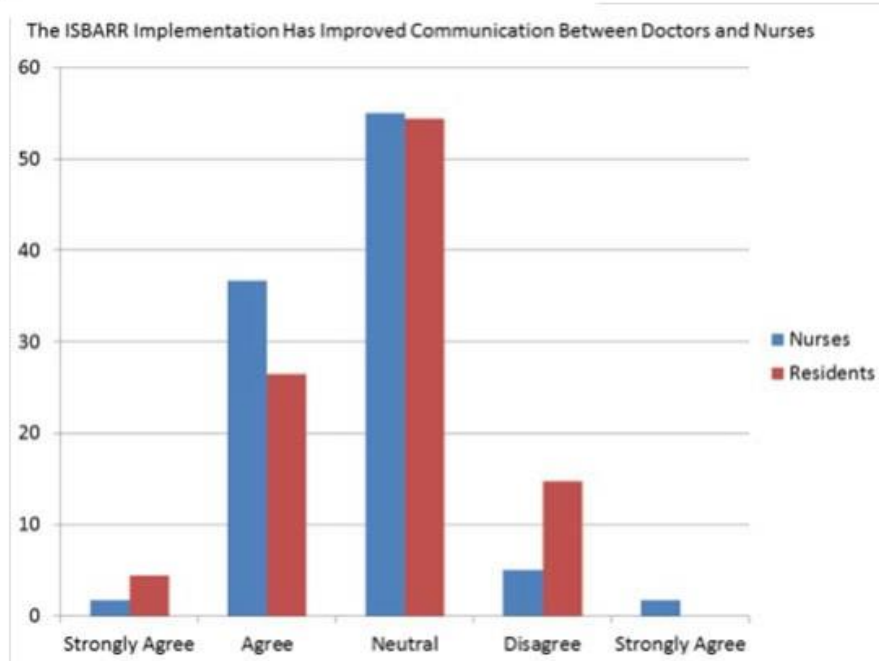
Table 2: Resident Survey Participant Variables

	Pre-Intervention Survey (n=65)	Post-Intervention Survey (n=155)
Specialty		
Medical	31 (48%)	71 (46%)
Surgical	34 (52%)	84 (54%)
Post-Graduate Year Level		
1	24 (37%)	40 (26%)
2	15 (23%)	40 (26%)
3	14 (22%)	43 (28%)
4	6 (9%)	22 (14%)
5	6 (9%)	9 (5%)
6 and up	0 (0%)	1 (1%)

Pre-Intervention: 120 surveys distributed and 65 returned for 54% response rate

Post-Intervention: 422 surveys distributed and 155 returned for 37% response rate

Figure 1: Results of Post-Survey Evaluating how ISBARR implementation has affected physician and nurse communication



## References

1. Young JB, Baker AC, Boehmer JK, Briede KM, Thomas SA, Patzer CL, et al. Using NNAPPS (Nighttime Nurse and Physician Paging System) to Maximize Resident Call Efficiency within 2011 Accreditation Council for Graduate Medical Education (ACGME) Work Hour Restrictions. *J Surg Educ.* 2012; 69(6): 819-25.
2. Fargen KM, O'Connor T, Raymond S, Sporrer JM, and Friedman WA. An Observational Study of Hospital Paging Practices and Workflow Interruption among On-Call Junior Neurological Surgery Residents. *J Grad Med Educ.* 2012; 4(4): 467-71.
3. Rose JS, Waibel BH, and Schenarts PJ. Resident Perceptions of the Impact of Paging on Intraoperative Education. *Am Surg.* 2012; 78(6): 642-6.
4. Blum NJ and Lieu TA. Interrupted Care: The Effects of Paging on Pediatric Resident Activities. *Am J Dis Child.* 1992; 146(7): 806-8.
5. Quan SD, Wu RC, Rossos PG, Arany T, Groe S, Morra D, et al. It's Not about Pager Replacement: An In-Depth Look at the Interprofessional Nature of Communication in Healthcare. *J Hosp Med.* 2013; 8(3): 137-43.
6. Patel SP, Lee JS, Ranney DN, Al-Holou SN, Frost CM, Harris ME, et al. Resident Workload, Pager Communications, and Quality of Care. *World J Surg.* 2010; 34(11): 2524-9.
7. Leonard M, Graham S, and Bonacum D. The Human Factor: The Critical Importance of Effective Teamwork and Communication in Providing Safe Care. *Qual Saf Health Care.* 2004; 13(Supp 1): 85-90.

8. MFerran S, Nunes J, Pucci D, and Zuniga A. Perinatal Patient Safety Project: A Multicenter Approach to Improve Performance Reliability at Kaiser Permanente. *J Perinat Neonatal Nurs.* 2005; 19(1): 37-45.
9. Uhlig, PN, Brown J, Nason A, Camelio A, Kendall E, Dooley W, et al. Reconfiguring Clinical Teamwork for Safety and Effectiveness. *Focus on Patient Safety-National Patient Safety Foundation Newsletter.* 2002; 5(3): 1-2.
10. De Meester K, Verspuy M, Monsieurs KG, and Van Bogaert P. SBAR Improves Nurse-Physician Communication and Reduces Unexpected Death: A Pre and Post Intervention Study. *Resuscitation.* 2013; 84(9): 1192-6.
11. Radmaa M, Martensson G, Leo Sweene C, and Engstrom M. SBAR Improves Communication and Safety Climate and Decreases Incident Reports Due to Communication Errors in an Anaesthetic Clinic: A Prospective Intervention Study. *BMJ Open.* 2014; 4(1).
12. Marshall S, Harrison J, and Flanagan B. The Teaching of a Structured Tool Improves the Clarity and Content of Interprofessional Clinical Communication. *Qual Saf Health Care.* 2009; 18(2): 137-40.
13. Eggins S and Slade D. Clinical Handover as an Interactive Event: Informational and Interactional Communication Strategies in Effective Shift-Change Handovers. *Commun Med.* 2012; 9(3): 215-27.
14. Enlow M, Shanks L, Guhde J, and Perkins M. Incorporating Interprofessional Communication Skills (ISBARR) into an Undergraduate Nursing Curriculum. *Nurse Educ.* 2010; 35(4): 176-80.