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What is This?
It’s the Writing on the Wall: Whiteboards Improve Inpatient Satisfaction With Provider Communication

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Abstract
Although keeping patients informed is a part of quality hospital care, inpatients often report they are not well informed. The authors placed whiteboards in each patient room on medicine wards in their hospital and asked nurses and physicians to use them to improve communication with inpatients. The authors then examined the effect of these whiteboards by comparing satisfaction with communication of patients discharged from medical wards before and after whiteboards were placed to satisfaction with communication of patients from surgical wards that did not have whiteboards. Patient satisfaction scores (0-100 scale) with communication improved significantly on medicine wards: nurse communication (+6.4, P < .001), physician communication (+4.0, P = .04), and involvement in decision making (+6.3, P = .002). Patient satisfaction scores did not change significantly on surgical wards. There was no secular trend, and the authors excluded a trend in overall patient satisfaction. Whiteboards could be a simple and effective tool to increase inpatient satisfaction with communication.

Keywords
inpatient, communication, whiteboard, medical

In 2001, the Institute of Medicine included patient-centeredness as an essential component of quality care and described meeting a patient’s information, communication, and education needs as one of its dimensions.1 But alarmingly, communication between hospitalized adult patients and their doctors and nurses, particularly about medications and discharge instructions, is poor and may be worsening.2 Few inpatients can even name their health care providers.3 Furthermore, investigations, specifically of medical patients’ experiences with hospital-based care, have noted poor communication between the patients and their health care providers, both during hospitalization and at discharge.4-7 Clinical leaders at our institution recognized the need to find innovative solutions to this problem and created a program to place whiteboards in each patient room as a tool to improve communication with our general medical inpatients. In this report, we present a description and an evaluation of this intervention.

Methods
In July 2006, a whiteboard (Figure 1) was placed in each patient room on the 4 general medical wards at our hospital, a 430-bed urban academic medical center in the Midwestern United States. The whiteboard used is a 3-foot wide by 2-foot high dry-erase board that is mounted on the wall

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and the 6-month time period of mailing the survey and then with the total number of responses was collated by ward score. An unadjusted mean score and standard deviation by a factor of 20 and thus converted to a 0 to 100 numerical on a 5-point Likert-type scale; the score was then multiplied was approximately 28%. Patients rated their satisfaction were mailed 4 days after discharge, and the response rate of discharges from each ward (approximately 37%) placed, Press Ganey surveys were mailed to a random subset medical centers.9,10 During the period the whiteboards were encouraged patients and their families to use the whiteboards. Dry-erase markers were made widely available on the wards. The use of these whiteboards was not monitored. During the period from July 1, 2006, to June 30, 2007, the surgical services did not install whiteboards on their 7 surgical wards.

The placement of whiteboards on the 4 general medical wards but not on the 7 surgical wards set up a natural experiment that was used to examine the effect of whiteboards on inpatient satisfaction with communication. Responses to the Press Ganey Patient Satisfaction Survey were used as the outcome measure. The Press Ganey Patient Satisfaction Survey is a commercial survey instrument used in more than 7000 health care facilities, including many academic medical centers,9,10 During the period the whiteboards were placed, Press Ganey surveys were mailed to a random subset of patients discharged from each ward (approximately 37% of discharges from each ward) of our hospital. The surveys were mailed 4 days after discharge, and the response rate was approximately 28%. Patients rated their satisfaction on a 5-point Likert-type scale; the score was then multiplied by a factor of 20 and thus converted to a 0 to 100 numerical score. An unadjusted mean score and standard deviation with the total number of responses was collated by ward and the 6-month time period of mailing the survey and then reported. There was no access to patient-level data, such as demographics or clinical data, other than the discharge ward. Responses to 3 questions pertaining to communication with doctors, communication with nurses, and the involvement of patients in decisions about their care were examined, as responses to these questions would capture any effect on communication with inpatients. Patient satisfaction scores with communication were compared before and after placement of whiteboards. These comparisons were conducted for all 4 general medical wards combined and also for all 7 surgical wards combined. Simple t tests were used to compare scores during two 6-month periods: one before placement of whiteboards (January 2006 to June 2006) and one after placement of whiteboards (January 2007 to June 2007). These periods were chosen to ensure that housestaff were at comparable levels of experience and to minimize the transient effect of the novelty of the whiteboard. The surgical wards served as a natural control group that did not receive the intervention during this period. Starting July 2007, as a result of the perceived success of the intervention, similar whiteboards have been used for some patients on some surgical wards, thus ending this natural experiment.

To test if any changes in patient satisfaction with communication were a part of a broader trend in general patient satisfaction, patient satisfaction scores for 2 control items were examined before and after the period of placing whiteboards: food quality and room temperature—chosen because satisfaction with these items could not plausibly be influenced by whiteboards.

Patient satisfaction scores were also examined for three 6-month periods (total of 18 months) before the placement of whiteboards to check for continuation of secular trends that may have preceded the intervention.

All statistical analyses were performed using Stata Statistical Software: Release 10 (StataCorp LP, College Station, TX). The evaluation protocol was approved by the hospital’s institutional review board.

**Results**

Patient satisfaction scores (on a 0- to 100-point scale) with communication improved significantly on general medical wards after the placement of whiteboards. The mean patient satisfaction scores with nurse communication increased by 6.4 points ($P < .001$), satisfaction with physician communication increased by 4.0 points ($P = .04$), and satisfaction with involvement of patients in decisions regarding their own care increased by 6.3 points ($P = .002$). There was no significant change in patient satisfaction with communication for patients discharged from the surgical wards. In the examination for continuation of secular trends, it was noted that patient satisfaction scores with communication on general medical wards had been decreasing over the three 6-month periods preceding the placement of whiteboards. These results are summarized in Table 1 and depicted graphically in Figures 2, 3 and 4.
There was no significant change in patient satisfaction with food quality or room temperature on either the medical or surgical wards (Table 2).

Discussion

It was found that whiteboards can help increase patients’ satisfaction with communication with their health care providers in the hospital. Previously, there were anecdotal accounts of hospitals using whiteboards to improve communication with patients, but the current report is the first objective evaluation of the effect of whiteboards on inpatient satisfaction with communication.

The approach to evaluating this program has some limitations. The effect of whiteboards was evaluated using a natural experiment; actual use of the whiteboards was not systematically monitored nor was patient-specific data collected. The results would be more compelling if whiteboards in specific patient rooms were able to be linked to changes in satisfaction for those specific patients. However, the anecdotal experience of active caregivers on inpatient wards during the study period was that the whiteboards were used extensively. We believe that whiteboards facilitated communication by providing a convenient, effective, and durable route for information and concerns to be shared among patients and staff.

Similarly, we acknowledge that surgical patients were an imperfect control group because of the inherent differences between the hospital care of medical and surgical patients. Finally, we note that the response rates for the commercial patient satisfaction survey we used were low (28%). This rate is comparable to the average national response rate of 34% to the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey administered during a similar period.

Despite these limitations, the results, combined with the plausibility of the role of whiteboards in improving inpatient communication, are nevertheless compelling. There are many ways that whiteboards may contribute to improving communication in the inpatient setting, such as providing a visual prompt during a physician or nurse visit to a patient room to provide more information or acting as a tool to
Table 1. Patient Satisfaction With Communication

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<td>Medicine wards</td>
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<tr>
<td>“Nurses kept you informed”</td>
<td>87.4 (19.4), 85.1 (20.1),</td>
<td>82.2 (23.2), 85.7 (20.2), 88.6 (17.2),</td>
<td>N = 297, N = 270, N = 241, N = 277, N = 335</td>
<td>.001</td>
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<td>“Physician kept you informed”</td>
<td>85.1 (22.6), 82.8 (24.1),</td>
<td>81.0 (24.4), 83.0 (24.1), 85.0 (21.6),</td>
<td>N = 300, N = 274, N = 242, N = 258, N = 324</td>
<td>.040</td>
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<td>“Staff included me in decisions”</td>
<td>85.1 (22.3), 80.4 (24.6), 78.8 (24.3), 80.7 (24), 85.1 (20.7),</td>
<td>N = 266, N = 245, N = 230, N = 246, N = 277</td>
<td>.002</td>
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<td>“Nurses kept you informed”</td>
<td>84.8 (19.7), 84.5 (21.8), 86.2 (19.8), 85.0 (20.9), 86.5 (18.8),</td>
<td>N = 526, N = 513, N = 529, N = 597, N = 640</td>
<td>.791</td>
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<td>“Physician kept you informed”</td>
<td>83.5 (23.5), 84.2 (22), 85.1 (21.7), 85.0 (20.9), 85.7 (21.6),</td>
<td>N = 530, N = 507, N = 527, N = 585, N = 632</td>
<td>.639</td>
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<tr>
<td>“Staff included me in decisions”</td>
<td>81.1 (22.6), 83.1 (22.2), 83.2 (21.1), 83.0 (21.6), 84.3 (21),</td>
<td>N = 461, N = 456, N = 503, N = 549, N = 581</td>
<td>.392</td>
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*Values are mean patient satisfaction scores (standard deviation) for three 6-month periods before and two 6-month periods after placement of whiteboards in each patient room on medicine wards (July 2006) but not on surgical wards.

*t test comparing the periods Jan-Jun 2006 versus Jan-Jun 2007 (boldface).

Table 2. Patient Satisfaction With Food Quality and Room Temperature

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<tr>
<td>“Food quality”</td>
<td>76.5 (22.9), 73.7 (24.0), 71.5 (25.2), 72.0 (24.0), 74.4 (22.9),</td>
<td>N = 298, N = 274, N = 256, N = 279, N = 329</td>
<td>.132</td>
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<td>“Room Temperature”</td>
<td>79.1 (20.6), 77.2 (21.2), 75.4 (22.2), 77.1 (20.5), 77.7 (21.5),</td>
<td>N = 298, N = 276, N = 265, N = 288, N = 334</td>
<td>.185</td>
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<td>Surgical wards</td>
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<tr>
<td>“Food quality”</td>
<td>69.8 (25.7), 71.3 (24.9), 70.4 (24.8), 68.9 (25.9), 70.8 (23.6),</td>
<td>N = 507, N = 491, N = 560, N = 615, N = 617</td>
<td>.768</td>
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<tr>
<td>“Room Temperature”</td>
<td>76.7 (22), 76.7 (21.8), 77.3 (20.4), 76.8 (21.8), 76.8 (20.6),</td>
<td>N = 533, N = 513, N = 578, N = 626, N = 639</td>
<td>.660</td>
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*Values are mean patient satisfaction scores (standard deviation) for three 6-month periods before and two 6-month periods after placement of whiteboards in each patient room on medicine wards (July 2006) but not on surgical wards.

*t test comparing the periods Jan-Jun 2006 versus Jan-Jun 2007 (boldface).

record patient concerns throughout the day, which could then be addressed during rounds. A diagram drawn on a whiteboard visually explaining the patient’s illness may have a greater impact than a verbal explanation. Seeing the names of the physicians written out on a whiteboard may be reassuring to the patients.

Patients’ experiences in US hospitals are being publicly reported for the first time in a standardized way via the HCAHPS survey; of the 6 domains reported, 3 directly depend on effective communication between health care providers and patients. As our data suggest, whiteboards may be a simple yet effective tool to improve patients’ satisfaction with communication in the inpatient setting and to engage them in decisions about their own care. Future studies should confirm the effect of whiteboards in other hospitals and clarify why they work. This work should include quantifying the amount and types of communication that occur via whiteboards and how whiteboard communication affects traditional face-to-face communication. Such work will be essential for hospitals that want to optimize the use of whiteboards and take advantage of the capabilities of more sophisticated messaging systems such as interactive electronic screens.

Authors’ Note

This work was presented in poster form at the Society of General Internal Medicine (SGIM) national meeting, Miami, Florida, May 2009, and the Midwest SGIM regional meeting, Chicago, Illinois, 2008.

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