

## Critical Conversations: A Call for a Nonprocedural “Time Out”

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**BACKGROUND:** Communication failures are an ongoing threat to patient safety. Procedural “time outs” were developed as a method to enhance communication and mitigate patient harm. Nonprocedural settings generate equal risks for communication failure, yet lack a similar communication tool or practice that can be applied, particularly with a patient-driven focus.

**INNOVATION:** Rapidly changing clinical states and care plans are common in the hospital setting, placing patients at risk for adverse events. Certain junctures allow for the highest potential of patient harm—at the time of admission, at a change in clinical condition, and at the time of discharge. Direct communication among healthcare providers at these junctures, which we have dubbed *Critical Conversations*, can provide an opportunity to clarify plans of care, address or anticipate concerns, and foster greater teamwork. Information exchanged during *Critical Conversations* includes a combination of checklist-type items and more open-ended questions but they ultimately create a structure and expectation for communication.

**LESSONS LEARNED:** Integration of *Critical Conversations* into practice requires provider education and buy-in, as well as expectations for them to occur. Monitoring adherence, capturing stories of success, and demonstrating effectiveness may enhance implementation and continuous improvement in the process.

**CONCLUSIONS:** Communication tools designed to reduce the likelihood of patient harm remain a focus of patient safety efforts. *Critical Conversations* are an innovative communication tool, intervention, and policy that potentially limits communication failures at critical junctures to ensure high quality and safe patient care. *Journal of Hospital Medicine* 2011;6:225–230. © 2011 Society of Hospital Medicine.

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Communication and teamwork failures are the most frequently cited cause of adverse events.<sup>1,2</sup> Strategies to improve communication have focused on implementing formal teamwork training programs and/or teaching specific communication skills.<sup>3–6</sup> For instance, many institutions have adopted SBAR (Situation-Background-Assessment-Recommendation) as a method for providers to deliver critical clinical information in a structured format.<sup>7</sup> SBAR focuses on the immediate and urgent event at hand and can occur between any 2 providers. The situation is a brief description of the event (eg, “Hi Dr. Smith, this is Paul from 14-Long, I’m calling about Mrs. Jones in 1427 who is in acute respiratory distress). The background describes details relevant to the situation (eg, “She was admitted with a COPD exacerbation yesterday night, and, for the past couple hours, she appears in more distress. Her vital signs are. . .”). The assessment (eg, “Her breath sounds are diminished and she’s moving less air”) and recommendation (eg, “I’d like to call respiratory therapy and would like you to come assess her

now”) drive toward having an action defined at the end. Given the professional silos that exist in healthcare, the advent of a shared set of communication tools helps bridge existing gaps in training, experience, and teamwork between different providers.

Regulatory agencies have been heavily invested in attempts to standardize communication in healthcare settings. In 2003, the Joint Commission elevated the concerns for wrong-site surgery by making its prevention a National Patient Safety Goal, and the following year required compliance with a Universal Protocol (UP).<sup>8</sup> In addition to adequate preoperative identification of the patient and marking of their surgical site, the UP called for a “time out” (TO) just prior to the surgery or procedure. The UP states that a TO requires “active communication among all members of the surgical/procedure team, consistently initiated by a designated member of the team, conducted in a ‘fail-safe’ mode,” so that the planned procedure is not started if a member of the team has concerns.<sup>8</sup> Simply, the TO provides an opportunity to

clarify plans for care and discuss events anticipated during the procedure among all members of the team (eg, surgeons, anesthesiologists, nurses, technicians). This all-important “pause point” ensures that each team member is on the same page.

Whereas a TO involves many high-risk procedural settings, a significant proportion of hospital care occurs outside of procedures. Patients are often evaluated in an emergency department, admitted to a medical/surgical ward, treated without the need for a procedure, and ultimately discharged home or transferred to another healthcare facility (eg, skilled nursing or acute rehabilitation). In this paper, we introduce the concept of *Critical Conversations*, a form of nonprocedural “time out,” as a tool, intervention, and policy that promotes communication and teamwork at the most vulnerable junctures in a patient’s hospitalization.

### Rationale for Critical Conversations: a Case Scenario

*An 82-year-old man with hypertension and chronic obstructive pulmonary disease (COPD) is admitted to the hospital with community-acquired pneumonia and an exacerbation of his COPD. The admitting physician evaluates the patient in the emergency department and completes admission orders. The patient arrives on the medical/surgical unit and the unit clerk processes the orders, stimulating a cascade of downstream events for different providers.*

#### Nurse

*The nurse reviews the medication list, notices antibiotics and bronchodilators, and wonders why aren’t we administering steroids for his COPD? Do any of these medications need to be given now? Is there anything the physician is worried about? What specific things should prompt me to call the physician with an update or change in condition? I’m not sure if it’s safe to send the patient down for the ordered radiographic study because he still looks pretty short of breath. I hate paging the physician several times to get these questions answered because I know that person is busy as well. I also know the patient will have questions about the care plans, which I won’t be able to answer. I wonder if I should finish administering evening medications for my other patients as I’m running behind schedule on my other tasks.*

#### Respiratory therapist

*At the same time, the respiratory therapist (RT) is contacted to assist with nebulizer therapy for the patient. In reviewing the order for bronchodilators, the RT silently asks, do we think he is going to need continuous nebulizers? What is our oxygen saturation goal—do we want him at 90% or above 95%? I wonder if this patient has a history of CO<sub>2</sub> retention and if I should have a BiPAP machine at the bedside.*

#### Physician

*After completing the orders for the patient, the physician remains in the emergency department to admit a different*

*patient with a gastrointestinal bleed. This is the fifth admission in the past few hours. The physician feels the impact of constant paging interruptions. A unit clerk pages asking for clarification about a radiographic study that was ordered. A bedside nurse pages and asks if the physician can come and speak to the family about the diagnosis and treatment plans for an earlier admission (something the nurse is not clear about, either). A second bedside nurse pages, stating a different admission is still tachycardic after 3 liters of intravenous fluids and wants to know whether the fluids should be continued. Finally, the bedside nurse pages about whether the new “COPD admission” can go off the floor for the ordered chest CT or remain on continuous pulse oximetry because of shortness of breath.*

Our case scenario is representative of most non-surgical admissions to a hospital. The hypothetical questions posed from different provider perspectives are also common and often remain unanswered in a timely fashion. Partly because there is no site to mark and no anesthesia to deliver, the clinical encounter escapes attention as an opportunity for error prevention. In our experience, there are specific times during a hospitalization when communication failures are most likely to compromise patient care: the time of admission, the time of discharge,<sup>9</sup> and any time when a patient’s clinical condition changes acutely. Whereas handoff communications focus on transitions between providers (eg, shift changes), these circumstances are driven by patient transitions. Indirect communications, such as phone, email, or faxes, are suboptimal forms of communication at such times.<sup>10</sup> We believe that there should be an expectation for direct communication at these junctures, and we define these direct communications as *Critical Conversations*.

### Description of a Critical Conversation

In the hours that follow an admission, providers (and often the patients or their family as well) invariably exchange any number of inefficient calls or pages to clarify care plans, discuss a suspected diagnosis, anticipate concerns in the first night, and/or highlight which orders should be prioritized, such as medications or diagnostic studies. A *Critical Conversation* at time of admission does in this circumstance exactly what a TO attempts to provide before a procedure—foster communication and teamwork as a patient is about to be placed at risk for adverse events. The exchange involves discussion of the following:

- Admitting diagnosis
- Immediate treatment plan
- Medications ordered (particularly those new to a patient to anticipate an adverse event)
- Priority for completing any admitting orders
- Guidelines for physician notification when a change in patient condition occurs.

At the other end of a hospitalization, with the known complications arising from a patient’s discharge,<sup>11,12</sup> the

same process is needed. Rather than having each discipline focus on an individual role or task in getting a patient safely discharged, *Critical Conversations* allow the entire team, including the patient,<sup>13</sup> to ensure that concerns have been addressed. This might help clarify simple measures around follow-up appointments, whom to call with questions after discharge, or symptoms to watch for that may warrant a repeat evaluation. Nurses anecdotally lament that they first learn about a planned discharge only when the discharge order is written in the chart or if a patient informs them. Both scenarios reflect poorly on the teamwork required to assure patients we're working together, and that key providers are on the same page with respect to discharge planning. The exchange at discharge involves discussion of these elements:

- Discharge diagnosis
- Follow-up plans
- Need for education/training prior to discharge
- Necessary paperwork completed
- Anticipated time of discharge.

Finally, where many patients are admitted to a hospital, improve, and then return home, others develop acute changes during their hospitalization. For example, the patient in our case scenario could develop respiratory failure and require transfer to the intensive care unit (ICU). Or a different patient might have an acute change in mental status, a new fever, a new abnormal vital sign (eg, tachycardia or hypoxia), or an acute change re existing abdominal pain—all of which may require a battery of diagnostic tests. These circumstances define the third time for a *Critical Conversation*: a change in clinical condition. Such situations often require a change in the care plan, a change in priorities for delivering care at that time (for the patient in need and for other patients being cared for by the same nurse and physician), a need for additional resources (eg, respiratory therapist, phlebotomist, pharmacist), and, ultimately, a well-orchestrated team effort to make it all happen. The specific item prompting the *Critical Conversation* may impact the nature of the exchange, which involves discussion of these components:

- Suspected diagnosis
- Immediate treatment plan
- Medications ordered (particularly those new to a patient to anticipate an adverse event)
- Priority for completing any new orders
- Guidelines for physician notification when a change in patient condition occurs.

In addition to the above “checklist” for each *Critical Conversation*, each exchange should also address two open-ended questions: 1) what do you anticipate happening in the next 24 hours, and 2) what questions might the patient/family have?

One may ask, and we did, why not have a direct communication daily between a physician and a bedside nurse on each patient? Most physicians and nurses know the impor-

**TABLE 1. Example of a Critical Conversation (Using the Sample Case Scenario)**

**Physician:** “Hi Nurse X, I’m Dr. Y, and I just wrote admission orders for Mr. Z whom, I understand, you’ll be admitting. He’s 82 with a history of COPD and is having an exacerbation related to a community-acquired pneumonia. He looks comfortable right now as he’s received his first dose of antibiotics, a liter of IVF, and 2 nebulizer treatments with some relief of his dyspnea. The main thing he needs up on the floor right now is to have respiratory therapy evaluate him. He’s apparently been intubated before for his COPD, so I’d like to have them on board early and consider placing a BiPAP machine at the bedside for the next few hours. I don’t anticipate an acute worsening of his condition given his initial improvements in the ED, but you should call me with any change in his condition. I haven’t met the family yet because they were not at the bedside, but please convey the plans to them as well. I’ll be up later to talk to them directly. Do you have any questions for me right now?”

**Nurse:** “I’ll call the respiratory therapist right now and we’ll make sure to contact you with any changes in his respiratory status. It looks like a chest CT was ordered, but not completed yet. Would you like him to go down for it off monitor?”

**Physician:** “Actually, let’s watch him for a few hours to make sure he’s continuing to improve. I initially ordered the chest CT to exclude a pulmonary embolus, but his history, exam, and chest x-ray seem consistent with pneumonia. Let’s reassess in a few hours.”

**Nurse:** “Sounds good. I’ll text-message you a set of his vital signs in 3-4 hours to give you an update on his respiratory status.”

tance of direct communication, but there are also times when each is prioritizing work in competing fashions. Adopting *Critical Conversations* isn’t meant to deter from communications that are vital to patient care; rather, it is intended to *codify* distinct times when a direct communication is required for patient safety.

### Lessons Learned

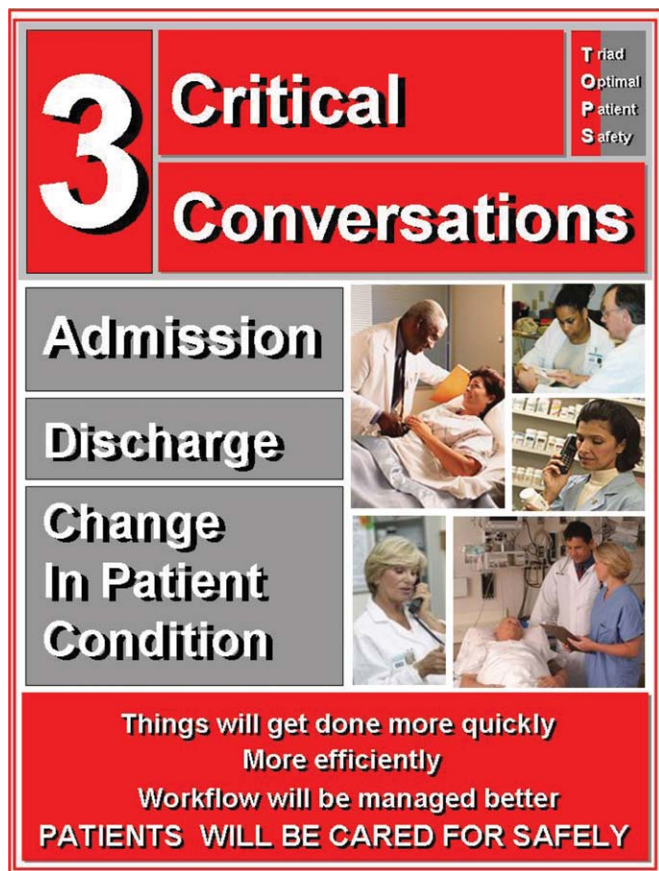
Table 1 provides an example of a *Critical Conversation* using the sample case scenario. Table 2 lists the most frequent outcomes that resulted from providers engaging in *Critical Conversations*. These were captured from discussions with bedside nurses and internal medicine residents on our primary medical unit. Both tables highlight how these deliberate and direct communications can create a shared understanding of the patient’s medical problems, can help prioritize what tasks should take place (eg, radiology study, medication administration, calling another provider), can improve communication between providers and patients, and potentially accomplish all of these goals in a more efficient manner.

### Making *Critical Conversations* Happen

Integrating *Critical Conversations* into practice requires both buy-in among providers and a plan for monitoring the interactions. We recommend beginning with educational efforts (eg, at a physician or nurse staff meeting) and reinforcing them with visual cues, such as posters on the unit (Figure 1). These actions promote awareness and generate expectations that this new clinical “policy” is being supported by clinical and hospital leadership. Our experiences have demonstrated tremendous learning, including numerous anecdotes about the value of *Critical Conversations* (Table 3). Our

**TABLE 2. Examples of Potential Outcomes Resulting From a Critical Conversation**

General Themes	Specific Examples
Clarity on plan of care	<ul style="list-style-type: none"> <li>• Clear understanding of action steps at critical junctures of hospitalization</li> <li>• Goals of admission discussed rather than gleaned from chart or less direct modes of communication</li> <li>• Discharge planning more proactive with better anticipation of timing among patients and providers</li> <li>• Expectation for shared understanding of care plans</li> </ul>
Assistance with prioritization of tasks (as well as for competing tasks)	<ul style="list-style-type: none"> <li>• Allows RNs to prioritize tasks for new admissions or planned discharges, to determine whether these tasks outweigh tasks for other patients, and to provide early planning when additional resources will be required</li> <li>• Allows MDs to prioritize communications to ensure critical orders receive attention, to obtain support for care plans that require multiple disciplines, and to confirm that intended care plans are implemented with shared sense of priority</li> </ul>
Ability to communicate plans to patient and family members	<ul style="list-style-type: none"> <li>• Improved consistency in information provided to patients at critical hospital junctures</li> <li>• Increased engagement of patients in understanding their care plans</li> </ul>
More efficient and effective use of resources	<ul style="list-style-type: none"> <li>• Better model for teamwork curative for patients when providers on the “same page” with communication</li> <li>• Fewer pages between admitting RN and MD with time saved from paging and waiting for responses</li> <li>• Less time trying to interpret plans of care from chart and other less direct modes of communication</li> </ul>
Improved teamwork	<ul style="list-style-type: none"> <li>• Improved sharing and knowledge of information with less duplication of gathering from patients and among providers</li> <li>• Fosters a culture for direct communication and opens lines for questioning and “speaking up” when care plans are not clear</li> </ul>



**FIGURE 1.** A *Critical Conversations* poster displayed on the patient care unit.

implementation efforts also raised a number of questions that ultimately led to improved clarity in later iterations.

**Who should be involved in a *Critical Conversation*?**

Identifying which healthcare team members should be involved in *Critical Conversations* is best determined by the

**TABLE 3. Provider Experiences Using Critical Conversations**

“Nothing is worse than meeting a patient for the first time at admission and not being able to answer the basic question of why they were admitted or what the plan is. It gives the impression that we don’t talk to each other in caring for patients. [Critical Conversations] can really minimize that interaction and reassure patients, rather than make them worried about the apparent mixed messages or lack of communication and teamwork.”—Bedside Nurse

“[Critical Conversations] seemed like an additional timely responsibility, and not always a part of my workflow, when sitting in the emergency department admitting patients. But, I found that the often 60 second conversations decreased the number of pages I would get for the same patient—actually saving me time.”—Physician

“I don’t need to have direct communications for every order written. In fact, it would be inefficient for me and the doctors. On the other hand, being engaged in a Critical Conversation provides an opportunity for me to prioritize not only my tasks for the patient in need, but also in context of the other patients I’m caring for.”—Bedside Nurse

“Late in the afternoon, there will often be several admissions coming to our unit simultaneously. Prioritizing what orders need to be processed or faxed is a typically blind task based on the way charts get organized—rather than someone telling me this is a priority.”—Unit Clerk

“There are so many times when I’m trying to determine what the care plans are for a new admission, and simply having a quick conversation allows me to feel part of the team, and, more importantly, allows me to reinforce education and support for the patients and their family members.”—Bedside Nurse

“Discharge always seems chaotic with everyone racing to fill out forms and meet their own tasks and requirements. Invariably, you get called to fix, change, or add new information to the discharge process that would have been easily averted by actually having a brief conversation with the bedside nurse or case manager. Every time I have [a Critical Conversation], I realize its importance for patient care.”—Physician

conversation “owner.” That is, we found communication was most effective when the individual initiating the *Critical Conversation* directed others who needed to be involved. At admission, the physician writing the admission orders is best suited to make this determination; at a minimum, he or she should engage the bedside nurse but, as in the case example presented, the physician may also need to engage other services in particularly complex situations (eg,

respiratory therapy, pharmacy). At time of discharge, there should be a physician–nurse *Critical Conversation*; however, the “owner” of the discharge process may determine that other conversations should occur, and this may be inclusive of or driven by a case manager or social worker. Because local culture and practices may drive specific ownership, it’s key to outline a protocol for how this should occur. For instance, at admission, we asked the admitting physicians to take responsibility in contacting the bedside nurse. In other venues, this may work more effectively if the bedside nurse pages the physician once the orders are received and reviewed.

## Conclusions

We introduced *Critical Conversations* as an innovative tool and policy that promotes communication and teamwork in a structured format and at a consistent time. Developing formal systems that decrease communication failures in “high-risk” circumstances remains a focus in patient safety, evidenced by guidelines for TOs in procedural settings, handoffs in patient care (eg, sign-out between providers),<sup>14,15</sup> and transitions into and from the hospital setting.<sup>16</sup> Furthermore, there is growing evidence that such structured times for communication and teamwork, such as with briefings, can improve efficiency and reduce delays in care.<sup>17,18</sup> However, handoffs, which address provider transitions, and daily multidisciplinary rounds, which bring providers together regularly, are provider-centered rather than patient-centered. *Critical Conversations* focus on times when patients require direct communication about their care plans to ensure safe and high quality outcomes.

Implementation of *Critical Conversations* provides an opportunity to codify a professional standard for patient-centered communication at times when it should be expected. *Critical Conversations* also help build a “system” that supports a positive safety culture and encourages teamwork and direct communication. This is particularly true at a time when rapid adoption of information technology may have the unintended and opposite effect. For instance, as our hospital moved toward an entirely electronic health record, providers were increasingly relocating from patient care units into remote offices, corner hideaways, or designated computer rooms to complete orders and documentation. Although this may reduce many related errors in these processes and potentially improve communication via shared access to an electronic record, it does allow for less direct communication—a circumstance that traditionally occurs (even informally) when providers share the same clinical work areas. This situation is aggravated where the nurses are unit-based and other providers (eg, physicians, therapists, case managers) are service-based.

Integrating *Critical Conversations* into practice comes with expected challenges, most notably around workflow (eg, adds a step, although may save steps down the line) and the expectations concomitant with any change in standard of care (possible enforcement or auditing of their occurrence). Certain

cultural barriers may also play a significant role, such as the presence of hierarchies that can hinder open communication and the related ability to “speak up” with concerns, as related in the TO literature. Where these cultural barriers highlight historical descriptions of the doctor–nurse relationship and its effect on patient care,<sup>19–21</sup> *Critical Conversations* provide an opportunity to improve such interdisciplinary relationships by providing a shared tool for direct communication.

In summary, we described an innovative communication tool that promotes direct communication at critical junctures during a hospitalization. With the growing complexity of hospital care and greater interdependence between teams that deliver this care, *Critical Conversations* provide an opportunity to further address the known communication failures that contribute to medical errors.

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## References

1. Arora V, Johnson J, Lovinger D, Humphrey HJ, Meltzer DO. Communication failures in patient sign-out and suggestions for improvement: a critical incident analysis. *Qual Saf Health Care*. 2005;14(6):401–407.
2. Sutcliffe KM, Lewton E, Rosenthal MM. Communication failures: an insidious contributor to medical mishaps. *Acad Med*. 2004;79(2):186–194.
3. Clancy CM, Tornberg DN. TeamSTEPPS: assuring optimal teamwork in clinical settings. *Am J Med Qual*. 2007;22(3):214–217.
4. Dunn EJ, Mills PD, Neily J, Crittenden MD, Carmack AL, Bagian JP. Medical team training: applying crew resource management in the Veterans Health Administration. *Jt Comm J Qual Patient Saf*. 2007;33(6):317–325.
5. Sehgal NL, Fox M, Vidyarthi AR, Sharpe BA, Gearhart S, Bookwalter T, Barker J, Alldredge BA, Blegen MA, Wachter RM. A multidisciplinary teamwork training program: the Triad for Optimal Patient Safety (TOPS) Experience. *J Gen Intern Med*. 2008;23(12):2053–2057.
6. Leonard M, Graham S, Bonacum D. The human factor: the critical importance of effective teamwork and communication in providing safe care. *Qual Saf Health Care*. 2004;13 Suppl-1:i85–90.
7. Haig KM, Sutton S, Whittington J. SBAR: a shared mental model for improving communication between clinicians. *Jt Comm J Qual Patient Saf*. 2006;32(3):167–175.
8. The Joint Commission Universal Protocol for Preventing Wrong Site, Wrong Procedure, Wrong Person Surgery. Available at: [http://www.jointcommission.org/NR/rdonlyres/E3C600EB-043B-4E86-B04E-CA4A89AD5433/0/universal\\_protocol.pdf](http://www.jointcommission.org/NR/rdonlyres/E3C600EB-043B-4E86-B04E-CA4A89AD5433/0/universal_protocol.pdf). Accessed January 24, 2010.
9. Greenwald JL, Denham CR, Jack BW. The hospital discharge: a review of a high risk care transition with highlights of a reengineered discharge process. *J Patient Saf*. 2007;3:97–106.
10. How do we communicate? Communication on Agile Software Projects. Available at: [www.agilemodeling.com/essays/communication.htm](http://www.agilemodeling.com/essays/communication.htm). Accessed January 24, 2010.

11. Kripalani S, Jackson AT, Schnipper JL, Coleman EA. Promoting effective transitions of care at hospital discharge: a review of key issues for hospitalists. *J Hosp Med.* 2007;2(5):314–323.
12. Kripalani S, LeFevre F, Phillips CO, Williams MV, Basaviah P, Baker DW. Deficits in communication and information transfer between hospital-based and primary care physicians: implications for patient safety and continuity of care. *JAMA.* 2007;297(8):831–841.
13. Sehgal NL. Engaging patients at hospital discharge. *J Hosp Med.* 2008;3(6):498–500.
14. Vidyarthi AR, Arora V, Schnipper JL, Wall SD, Wachter RM. Managing discontinuity in academic medical centers: strategies for a safe and effective resident sign-out. *J Hosp Med.* 2006;1(4):257–266.
15. Coleman EA, Berenson RA. Lost in transition: challenges and opportunities for improving the quality of transitional care. *Ann Intern Med.* 2004;141(7):533–536.
16. Halasyamani L, Kripalani S, Coleman E, et al. Transition of care for hospitalized elderly patients—development of a discharge checklist for hospitalists. *J Hosp Med.* 2006;1(6):354–360.
17. Nundy S, Mukherjee A, Sexton JB, et al. Impact of preoperative briefings on operating room delays. *Arch Surg.* 2008;143(11):1068–1072.
18. Makary MA, Holzmueller CG, Thompson D, et al. Operating room briefings: working on the same page. *Jt Comm J Qual Patient Saf.* 2006;32(6):351–355.
19. Greenfield LJ. Doctors and nurses: a troubled partnership. *Ann Surg.* 1999;230(3):279–288.
20. Baggs JG, Schmitt MH, Mushlin AI, et al. Association between nurse-physician collaboration and patient outcomes in three intensive care units. *Crit Care Med.* 1999;27(9):1991–1998.
21. Lingard L, Regehr G, Orser B, et al. Evaluation of a preoperative checklist and team briefing among surgeons, nurses, and anesthesiologists to reduce failures in communication. *Arch Surg.* 2008;143(1):12–17.