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Transforming Care At The Bedside Lessons from Phase II

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Introduction

Transforming Care at the Bedside (TCAB) is a joint effort between the Robert Wood Johnson Foundation (RWJF) and the Institute for Healthcare Improvement (IHI). Its goals, as stated by RWJF and IHI are to

- Improve the quality and safety of patient care on medical and surgical units
- Increase the vitality and retention of nurses
- Engage and improve the patient's and family members' experience of care
- Improve the effectiveness of the entire care team

The TCAB initiative started in 2003 with TCAB Phase I which involved three pilot hospitals. In June 2004, TCAB Phase II was launched with ten additional hospitals. Phase II was a two-year project which used a quality improvement collaborative format to facilitate the development, testing, and spreading of effective strategies and processes that transform the care experience of patients in hospital medical/surgical units as well as the experience of health care professionals who care for them.

TCAB unit efforts are built around improvement in four domains:

- Care Team Vitality
- Safety and Reliability
- Patient-Centeredness
- Increased Value

The key strategy to accomplish TCAB goals is to engage and empower front line unit staff and managers. TCAB puts them at the center of efforts to identify the areas for change and potential strategies, test them, and decide whether they should be maintained. TCAB unit staff and managers are provided support for this work within the hospital and externally via a quality collaborative. This has led to a wide range of changes being tested, sustained, and spread in participating hospitals and has also led to a change in the culture on the participating units and the hospitals as a whole.

There has been widespread interest in TCAB and other hospitals and hospital systems have expressed interest in pursuing TCAB or TCAB-like programs. The Robert Wood Johnson Foundation recently made a grant to the American Organization of Nurse Executives (AONE) for it to conduct a TCAB collaborative in Phase III of the initiative. In addition, 10 hospitals from the original TCAB learning community are continuing their work into Phase III, and the Institute for Healthcare Improvement has begun a collaborative on transforming medical-surgical care as part of its Impact Community.

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In this paper, the UCLA/RAND team that is evaluating TCAB for the Robert Wood Johnson Foundation discuss key lessons from Phase II and the implications for hospitals, hospital systems and other organizations that wish to conduct or sponsor initiatives like Transforming Care at the Bedside. It draws upon the UCLA/RAND evaluation team's work tracking the TCAB hospitals and their progress throughout the two-year intervention using the following data sources: (1) responses to baseline and follow-up questionnaires regarding structural elements of the TCAB hospitals and units, (2) observation of all of the Learning and Innovation meetings as well as other TCAB phone calls and meetings, (3) monitoring of the IHI extranet to review sites' measurement data and their descriptions of tests of change, (4) telephone and in-person interviews with hospital staff involved in TCAB. We present this discussion in the following sections:

- A. An Overview of TCAB and Activities Undertaken
- B. Doing the Work of TCAB
 - 1. TCAB at the hospital level
 - 2. The Role of Hospital Quality Improvement/Performance Improvement Departments
 - 3. TCAB at the unit level
 - a. TCAB Unit Selection and Orientation
 - b. Formation of TCAB Unit Teams
 - c. Selection of Ideas to be Tested
 - d. Conducting Tests of Change
 - e. Building Staff Commitment and Expertise
 - 4. Measurement of Impact
 - 5. Spreading TCAB beyond the Initial Unit
- C. Considerations for Sponsors

The core work of TCAB has been at the unit level, but support from and the environment created by senior hospital leadership has been critical to unit performance. Because of this, we discuss hospital level issues, including the role of quality improvement/performance improvement departments, before discussing unit experience. Measurement and spread from the initial units have emerged as critical issues in TCAB and are discussed separately.

In each section, we report what hospitals did and assess the impact of their efforts and alternative approaches to conducting the work. Each section ends with a brief discussion of implications for organizing and implementing TCAB-like programs.

A. AN OVERVIEW OF TCAB AND ACTIVITIES UNDERTAKEN

As noted above, in Phase II of TCAB, thirteen hospitals participated in a quality improvement collaborative to facilitate the development, testing, and spreading of effective strategies and processes on medical-surgical units. As part of this collaborative, all hospitals designated one or two initial TCAB units and organized TCAB teams, with almost all organizing a unit-based team and most a hospital-level leadership team. The teams identified areas for change, developed and tested strategies for improvement, and implemented changes that were judged effective. Hospital were encouraged to test quickly on a small scale, initially one nurse,

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one patient, one shift and to modify the intervention on the basis of the early tests. The stated goal was rapid testing and implementation of positive changes. For many hospitals in the intervention which had done prior quality improvement work, this style was different from the slower more deliberate prototyping that the hospitals had used. As part of this work, hospitals were also expected to implement and report a set of core outcome measures. Over the course of the two years, several participating hospitals spread either proven innovations or TCAB unit processes or both to other units.

The work was directed to improvement in four domains, defined as described below:

- Safety and Reliability - Care for moderately sick patients who are hospitalized is safe, reliable, effective and equitable.
- Patient-Centeredness - Truly patient-centered care on medical/surgical units honors the whole person and family, respects individual values and choices, and ensures continuity of care. Patients will say, “They give me exactly the help I want (and need) exactly when I want (and need) it.
- Increased Value - All care processes are free of waste and promote continuous flow.
- Care Team Vitality - Within a joyful and supportive environment that nurtures professional formation and career development, effective care teams continually strive for excellence.

The measures hospitals were expected to implement related to each of these domains (e.g., falls and adverse events related to safety and reliability, patient satisfaction to patient-centeredness, nurse time at the bedside and in activities identified as high value work to increased value, and turnover and responses to a staff survey to care team vitality).

While many innovations addressed multiple domains, our evaluation team classified the innovations tested by the primary domain to which each applied. Approximately 40% of the innovations tested were in the area of patient-centeredness, and over one-quarter in increasing value. The remaining innovations were split between care team vitality and safety and reliability, with most of the safety and reliability work focused on falls.

While there were a wide range of changes being tested, sustained, and spread in participating hospitals, participants repeatedly emphasized in our interviews that the change in unit culture and engagement of front line staff in improvement activities were central to their TCAB experience. They also noted that there was *no single innovation that made a difference. Rather, it was the process of TCAB, that made a difference.* Further, creating this change has involved not just change at the unit level but complementary changes in the culture and style of quality improvement/performance improvement and leadership at the hospital level. Thus, the hospitals emphasize both the impact of the changes tested and implemented on unit process and the shifts in unit cultures that encourage staff to be active participants in systems improvement.

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The thirteen hospitals worked in a quality collaborative, identified as the “TCAB Learning and Innovation Community.” While the work of TCAB happened at the hospitals themselves, IHI facilitated this work by communicating the vision for TCAB, developing a taxonomy for change, promoting strategies for front line staff engagement, developing a measurement strategy, providing training and consultation to the hospitals, and providing mechanisms for the exchange of ideas and problem solving between hospitals.

The part of the intervention that was most highly valued across TCAB participants (i.e., staff nurses, managers and hospital leadership) were the Learning and Innovation Community meetings. These meetings were held approximately every three to four months during the intervention and were hosted by one of the TCAB hospitals who would offer a tour of their facility and TCAB unit(s). These meetings were designed and led by the IHI team and included didactic sessions where tools were described as well as hands-on learning sessions where participants worked within their group to plan TCAB activities. In the first meetings, the vision of what TCAB might accomplish and how it could be implemented were discussed with participants. Among the topics discussed were the conceptual framework of TCAB (e.g., domains of changes), how to organize for TCAB, and tools to use for identifying areas for change (e.g., brainstorming, value stream mapping). In addition to the learning, these meetings served the very important role of providing participants an opportunity to exchange ideas and also served to inspire them to go back to their hospital and try things in their facility. Several interviewees said that they did not understand TCAB until they attended a Learning and Innovation meeting.

IHI staff emphasized the role of “design targets” for each domain as a source of motivation and focus for the hospitals. These design targets are specific measurable goals related to each domain, such as seventy percent of nurses’ time spent at the bedside. The assessment of the evaluation team is that in the early stages of TCAB there was substantial energy to make improvements in specific domains, and the units were not focused on the design targets per se. For a significant number of participating hospitals, there was a reduction in energy and focus midway through Phase II. But, the collaborative meetings, the expectation that hospitals would present their progress to one another and the pressure to move the design target measures contributed to renewing the commitment to TCAB for most of these hospitals.

IHI also facilitated interaction of the hospitals in the learning community through an extranet where each hospital posted their measurement data and information about the changes they were testing. Posting to this website was consistent during the first year of the intervention but dropped off in the second year. While a few participants mentioned looking at the extranet site, this was viewed as a less valuable part of the intervention.

The Evaluation team observed substantial variation across hospitals. Units focused on different areas, organized differently and many had what they considered to be very fruitful experiences in TCAB. There was no one “right way” to conduct TCAB. However, in the hospitals that were the most active in testing changes, participants reported a core shift in thinking as well as improvements in nurse vitality. One example of this shift in thinking was exemplified in the statement, “TCAB is not just another project, it is the way we do things.” As

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noted above, this was reflected in work both to test and implement changes in care and unit processes and to create unit cultures and work environments in which nurses and other unit staff were encouraged and expected to engage in change efforts.

Implications. Based on this last observation, we conclude hospitals engaged in TCAB or TCAB-like programs should assess their success along both these dimensions. Both the specific innovations and the change in unit's culture should be assessed.

One of the goals for TCAB should be to have unit staff take ownership of their processes of care, with nurses and other unit staff shifting from just creating work-arounds when experiencing a failed process to building a commitment to fixing their systems. Accomplishing this shift requires building commitment, skills and unit processes and structures to support this work. Nurse managers and front line supervisors need to encourage and allow the front line staff to do this. Hospital leadership and hospital quality improvement/process improvement departments must also be committed to this change. When projects extend beyond the work that can be done just on units (e.g., creation of liberalized diets, rapid response teams, speeding the start of physical therapy), the commitment and participation of these departments also has to be obtained. The specifics of implementing these changes are discussed in the next section.

B. DOING THE WORK OF TCAB

1. TCAB at the hospital level

TCAB has involved engaging medical-surgical units and the hospital as a whole in its activities. While the goal is for TCAB spread throughout the hospital, participating hospitals initially chose one or two units to start, "TCAB units." The expectation was that the process would be piloted on these units and as these units identified valuable innovations, the innovations would be spread to other hospitals. The initial group of hospitals differed in their expectation of whether the innovation process itself would be spread, with some initially identifying this as their goal and others expecting that they would have a small number of innovation units, and only spread best practices. Most of the hospitals with the latter view have reconsidered it, and now believe that spreading the TCAB culture of process improvement is important. Even as they have come to this realization, they also recognize that it increases the complexity of managing the TCAB process, reconciling differences in process across units and finding appropriate loci for testing and implementing innovations that are multi-unit or hospital-wide.

Leadership involvement and support has been crucial in TCAB. When absent, TCAB has not taken root in the hospital as a whole. IHI has noted this as a general issue in quality improvement (see, for example, *7 Leadership Leverage Points for Organization-Level Improvement in Health Care, IHI Innovation Series 2005*) It has pressed for leadership involvement throughout Phase II. These efforts were viewed as critical for two reasons: first, to maintain pressure on units to perform and assure support for their efforts, and second, to assure that initiatives that require interaction between the units and other departments – dietary, housekeeping, material management, pharmacy, etc. – received support outside the unit.

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We observed that visible support of TCAB through Chief Nursing Officer (CNO) and other leaders' interaction with staff at meetings or on the unit served to build the confidence and trust of front line staff and bolster TCAB efforts. In hospitals in which unit managers and staff were most active, these interactions had two dimensions. The unit was charged with looking at its processes and making improvement and an expectation established that the unit would engage in this work, and be held accountable for it. At the same time, the hospital leadership also loosened the power structure, with units given authority to act.

One of the ways many of the hospitals sought to balance the need for accountability and unit autonomy was to create formal leadership teams which involved the CNO and other leaders, such as the head of quality improvement or the Chief Operating Officer (COO). Other hospitals made reporting on TCAB activities and review of progress a standing agenda item on hospital leadership, quality council and/or nursing council meetings.

Several of the TCAB hospitals made additional resources (seed money) available to support the work of TCAB on the units. In most cases these were modest, although one hospital made a major commitment to a unit through its internal foundation and several others accelerated or modified physical plant renovations on the TCAB unit. Substantial funds did not appear critical to beginning or sustaining TCAB.

Most hospitals reported employing incentives or other techniques to build staff "buy-in" and participation in TCAB changes. While administered at the unit level, implementing these often required modest levels of additional resources or other support from hospital leadership.

Leadership commitment was also needed to facilitate changes that involve the unit but also other departments such as pharmacy, dietary, or housekeeping. By and large, the design and testing of these innovations was done collaboratively by staff of the units and departments involved, with leadership assuring buy-in but not supervising the projects.

Implications. Given the importance of leadership commitment, we believe it important for hospitals to critically assess their willingness to support TCAB processes and front line staff involvement in change. We would encourage the leadership team in hospitals to consider the following questions before beginning to do TCAB:

- Is the hospital prepared to shift substantial responsibility for identifying, testing and implementing improvement to front line staff, and to cede the control associated with this shift?
- Is the hospital prepared to provide resources for activities such as training, data support, innovation trials, staff coverage time, and change implementation?
- How will this relate to other active hospital change efforts? (e.g. Lean, Six Sigma)
- What does the leadership expect this effort to accomplish for the hospital? How will this be assessed?

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- How will the hospital establish strategies for spread from initial TCAB units to other units and non-unit hospital activities?

2. The Role of Hospital Quality Improvement/Performance Improvement Departments

TCAB hospitals varied how they organized their quality improvement/performance improvement activities at the hospital level. Some had quality assurance departments that engaged in a narrow range of activities related to measurement and compliance with licensure and accreditation requirements. Most, however, had quality improvement or performance improvement departments or units (QI) whose work went beyond these functions to conducting quality improvement or performance improvement projects.

Most of the TCAB units had a member of the hospital quality improvement or quality assurance unit on their TCAB team. However, the level of involvement of this member varied. On ten of the seventeen units in Phase II, TCAB activities were led by the nursing unit, with the role of the QI department ranging from minimal to active participation. In units with minimal involvement of the QI department, this ranged from no involvement at all (this was rare) to support from QI primarily in the area of collection of measurement data. Units with strong QI involvement were characterized by having one member of the QI department assigned (either formally or informally) to the TCAB unit. In these instances, this person took a lead in collecting measures and was a regular participant in TCAB team meetings.

In one hospital, we judged the leadership of the TCAB unit activities to be equally and jointly the responsibility of the unit manager and a staff member from the quality improvement department assigned to this task.

In four of the TCAB hospitals, with six units, staff from the quality improvement/performance improvement department rather than unit staff led the TCAB effort. None of these hospitals reported increases in unit vitality on the TCAB unit in the first year of TCAB. In the second year, three of these hospitals decreased their QI staff involvement, and two of the four units in these hospitals reported increases in vitality in the second year of Phase II. The units in the hospital that maintained QI leadership of TCAB reported no gain in vitality in the second year.

We are still analyzing the impact of QI involvement on the types of innovations pursued, but with one exception, a hospital that reduced QI involvement in year 2, the units in hospitals with QI leadership were among the units with the lowest number of innovations tested.

Implications. Based upon both the experience with testing innovations and changes in vitality, we would discourage hospitals from organizing TCAB with the quality improvement/process improvement staff as the lead. We have observed productive relationships between unit staff and process improvement staff, with the process improvement staff bringing significant expertise in measurement and design, but care must be taken that the QI staff not take ownership of the TCAB processes away from the units.

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3. TCAB at the unit level

We discuss TCAB as it has been implemented at the unit level with respect to four activities:

- a. TCAB Unit Selection and Orientation
- b. Formation of TCAB Unit Teams
- c. Selection of Ideas to be Tested
- d. Conducting Tests of Change
- e. Building Staff Commitment and Expertise

a. TCAB Unit Selection and Orientation

The bulk of the work of TCAB happens at the nursing unit level. Most of the Phase II hospitals designated one unit as the “TCAB unit” although, in four cases, hospitals identified two units as their initial TCAB units. We observed that units in the same hospital or system could be dramatically different with respect to their participation in, and reported results from, TCAB. Thus, success appeared to depend not on the hospital or hospital leadership per se. Rather, specific features of the unit, its manager, and staff appear to be the strongest predictors of the ability of a unit to derive benefit from TCAB.

The units that we observed moving most aggressively in TCAB were those that were stable or viewed as strong units prior to TCAB or which had a strong, experienced nurse manager with excellent rapport with their staff. Hospitals that selected their initial TCAB unit because it had problems they hoped to address were less successful initially.

Unit managers played a pivotal role in the unit’s TCAB activities. As the unit leader, the nurse manager was often, by default, the primary coordinator of TCAB activities. Among the roles they played were articulating and reinforcing the goals and purpose of TCAB to staff, conveying enthusiasm and energy for TCAB, and guiding staff in choosing and designing tests of change, and organizing TCAB activities and meetings.

There were some units with less experienced nurse managers in the initial group of hospitals. The experience of these units was mixed. A few had ongoing problems. For some, however, we observed substantial professional growth of the manager in response to the demands of TCAB. For the less experienced managers, effective mentoring and backstopping by their immediate superiors (generally nursing administrators with responsibility for multiple units), CNOs or project-oriented performance improvement staff was critical.

A management style which appeared to promote TCAB was one where managers were able to cede authority to their staff so that the staff were able to develop new skills, a greater sense of autonomy, and a new way of thinking. On units in which staff were most engaged, TCAB was viewed as a unit program, not the manager’s, and ownership of TCAB was shared.

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The need to exercise this type of leadership was mentioned as a particular area of professional growth by some unit managers in our interviews. It was something they had not realized they would need to do when they became involved in TCAB. One CNO, in a presentation on TCAB, conceptualized these issues as reflecting two sides of organizational change. The hard side of change is about processes, measurements, tools, structures, and procedures. The soft side of change is about buy-in, commitment, attitude, creativity, overcoming resistance to change and self-leadership. The hard side is about management. The soft side is about leadership.

The TCAB unit managers cultivated leadership in a variety of ways. In most units, the managers relied on volunteers stepping forward from the unit staff, who they then engaged in the work. In one hospital, the manager was more aggressive, creating “resource nurse” roles in which nurses were made responsible for innovations and measures in a specific area (e.g., pressure ulcers), and imposing an expectation that researching the subject and becoming the unit expert was part of the job. In doing this, there was a real potential for pushback against the manager, pushback that did not occur because of the esteem with which she was held.

The characteristics of the staff also influenced initial TCAB performance. Staff tenure was a consideration. Some units noted that senior staff nurses were more resistant to change. Others noted that new graduates were often overwhelmed developing their clinical skills and not able to work on innovating.

Unit staff must be trained in TCAB processes and their commitment sought. Only a small portion of the unit staff attended the Learning and Innovation Collaborative meetings. These staff, carefully selected, came back from the early meetings with a sense of what TCAB was supposed to accomplish and how it was supposed to work. It then fell to them and the unit leadership to communicate this to the rest of the staff. This worked well in a few sites, but in most hospitals when we interviewed staff at the end of the first year, there was substantial uncertainty about what TCAB was. As a result, we observed staff in most units falling into three categories – a small to middle size group that was enthusiastic about TCAB and active in testing changes, another group that was passively supportive, doing what was asked of them, and a third group that felt that the TCAB work was not part of their job and were generally unsupportive and sometimes hostile. Unit managers and others in unit TCAB leadership cultivated the first group and tried to expand it and isolate and reduce the influence of the latter group.

Implications. With respect to selection of units, because initial success was more likely if a strong unit was chosen, we would discourage hospitals from choosing units because they had problems they hoped TCAB could correct. TCAB will introduce major change onto a unit. It will not solve the problems of a poorly performing unit—it will accentuate them. Moreover, units experiencing additional uncertainty (or turmoil) due to factors such as bargaining unit conflicts, high use of temporary or agency nurses, or planned major changes for the unit (e.g., changes in the services provided on the unit) may find the additional pressure of TCAB overwhelming.

Unit manager engagement in TCAB was also critical, and the selection of initial units should be from those whose managers are enthusiastic about having the initiative on their floor.

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The experiences of the Phase II hospitals underscore the need to orient unit managers and develop skills in process improvement management among this level of leadership. Selection of managers with this orientation, and either with these skills initially or hospital support to develop them for early TCAB units is important. As hospitals consider spread, they will also need to address how to build this orientation and skill set in their other unit managers.

Hospitals need to anticipate that significant efforts will be needed to orient and engage staff in TCAB. In our interviews, we identified five explicit or implicit questions unit staff had about TCAB that needed to be addressed. These were:

- What is this initiative, what is it supposed to accomplish and how is it supposed to work?
- What's in it for our patients? What's in it for us?
- You are saying that the staff will have more responsibility for making changes, but also more control and more voice in how the work gets done. Can we trust this?
- We haven't got the time to do our work now, where are we going to find time to do this additional work?
- We haven't been trained to do this work and don't know how to do it. What help are you going to give us?

We observed a range of credible answers to each of these questions among the TCAB hospitals. For example, the question of what's in it for our patients and what's in it for the staff can be addressed by describing some of the innovations that have been implemented and spread in the TCAB hospitals – innovations such as improved end of shift reporting that provides more information to staff coming on and reduces delays in departing, or reduced charting or decentralized supplies that allow more direct time in patient care. Some answers to each of these questions are summarized in **Appendix A**.

Beyond having the answers, the TCAB II experience suggests the need for effective approaches to communicating these answers and orienting and training staff. IHI is developing materials to provide training in specific skills or implementation of specific innovations, several of the TCAB hospitals have prepared videos and PowerPoint presentations describing their TCAB work, and the RWJF has put a slide show on their website presenting the TCAB experience at Seton Northwest Hospital. A broader range of orientation materials, including videos and other non-traditional written materials, are needed.

b. Formation of TCAB Unit Teams

All but one of the TCAB hospitals in Phase II formed TCAB teams at the unit level. The role of these teams was to plan and test innovations and to encourage their colleagues to participate in testing changes. Across the hospitals, these teams varied considerably with respect to their membership and meetings. We observed two common approaches to creating teams. One was to select a specific group of unit staff for the TCAB team. The second was to schedule a team meeting, typically weekly or biweekly, often at lunchtime, and to encourage every staff

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member who could come to the meeting and participate. In the latter case, provision was made to have staff from the evening or night shift participate in meetings, as well.

Composition of the teams varied across hospitals. Nearly all included staff nurses and nursing assistants. Other members of the TCAB team included social work, dietary, and pharmacy, although their membership was often on an ad hoc basis (i.e., if a test of change was planned that involved their department). Current or former patients or their families were also included on many TCAB teams. Some units reported no physician involvement in TCAB team activities (i.e., team meetings, testing changes). While this was noted as a weakness by the participants it did not appear to hinder their early progress in terms of numbers of changes tested nor the success of innovations. Further, none of the hospitals reported physician resistance to TCAB.

By the end of Phase II, we saw that many TCAB units had attempted to include (or had included) one or more current or former patients on their TCAB team. Sites that included patients on TCAB teams felt that this facilitated the goal of patient-centered care. The inclusion of patients on TCAB teams was highlighted at the January 2006 Learning and Innovation meeting where a patient team member presented the patient's perspective on TCAB. In Phase III, among the ten phase II hospitals continuing, all are being charged by IHI and the RWJF to recruit a patient to the unit team.

Team meetings have been essential to sustaining TCAB. Units where meetings became irregular conducted fewer tests of change. In addition to holding weekly or biweekly meeting of an hour or more, some units have found that a daily huddle of 10-15 minutes among staff involved in current tests where they would discuss that day's plan for testing changes was beneficial. One unit manager, in a presentation on TCAB, noted the evolution of meetings over time, as the first meetings on her unit served to introduce TCAB in greater detail. They provided opportunities to review ground rules, establish group decision making processes and orient staff to PDSA cycles. Subsequent meetings were typically divided between "innovation" and "spread" activities and always ended with action plans being developed for the following week.

Implications. Unit level teams have been central to TCAB at all but one of the original hospitals. Team meetings should be frequent and regular, and augmented as necessary with short supplementary meetings around specific change initiative. Efforts should be made to include non-nursing unit staff and night and evening shift staff. Active participation by social work, pharmacy, dietary, housekeeping, physical and other therapy staff, and physicians who work regularly on the unit should also be encouraged. Hospitals should also seek to involve current or former patients in the TCAB team.

c. Selection of Ideas to be Tested

Over 400 innovations were tested by the TCAB units during Phase II. The ideas tested came from a wide range of sources including: an initial brainstorming session, suggestions by staff, and other hospitals. Learning and Innovation Collaborative meetings, road trips and site visits offered formal processes such as IHI presentations (on topics such as structured communication, effective transitions home, and rapid response teams) and unit storyboards as

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well as informal discussions as sources of ideas. Requests for ideas were also made on the TCAB list serve.

Many innovations tested were adopted with minimal modification from other hospitals, and the TCAB hospitals have eagerly shared their ideas and experiences with other facilities. While part of the processes of “owning” improvement is that unit staff review and often modify innovations found successful elsewhere, we did not observe a “Not Invented Here” syndrome in which the ideas of others are rejected out of hand. Rather, “stealing shamelessly,” complemented by “share generously,” was the norm among participating hospitals.

We found that innovations varied in the extent to which they were adoptable by other hospitals, and could be grouped into three broad categories:

- General and readily adapted solutions to problems common across units/hospitals, e.g., white boards, end of shift reports, morning huddles
- Highly customized solutions that require substantial adaptation for a new hospital or unit, e.g., liberalized menus, falls programs, reductions in documentation, speeding admission, improving discharge planning, multi-disciplinary rounding
- Hospital-specific solutions to distinctive hospital circumstances, e.g. construction, growth

We found that one of the factors building initial enthusiasm for TCAB on the unit, and for building front line staff confidence that they would have voice and control was that a significant portion of the initial ideas tested come from the unit. Unit-driven ideas come from two sources. First, the TCAB hospitals made use of structured brainstorming methods that can be shared with an adapted for use by others. Hospitals were taught to do brainstorming techniques, based on IDEO’s ® “Deep Dive” (*of which a video specific to TCAB Phase I is available*) at the Learning and Innovation Meeting. Hospitals used a smaller scale version of this called a “snorkel”. Most hospitals succeeded in conducting their snorkel so that all staff on the unit (e.g., nursing assistants, unit clerks, and physicians, and non-unit personnel who regularly worked on the unit from dietary, housekeeping, pharmacy, social work, physical therapy and others), not just nurses, and all shifts, were able to participate. TCAB units reported that they generated 100 to 200 new ideas during their initial snorkel. A description of the snorkel done at Seton Northwest is available in an article by Viney et. al.¹

The second source of unit-based ideas were those put forward by staff during weekly team meetings or informally suggested to the unit manager and other unit staff leading TCAB.

Beyond participating in generating ideas, front line nurses often participated in the decisions of what was to be tested. Some units used voting mechanisms to let the staff decide which ideas should be translated into tests of change. The evaluation team noted that units

¹ Viney M, Batcheller J, Houston S, Belcik K. Transforming care at the bedside: designing new care systems in an age of complexity. *Journal of Nursing Care Quality* 2006;21:143-50.

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where someone other than the staff nurses decided on the tests of change appeared to have lower nurse engagement. Often the unit manager was the key person making decisions on what to test, and when done so in a manner which was perceived as non-authoritarian and inclusive, this also appeared to work. One of the concerns that appeared to motivate some hospitals to take decision-making on tests away from the unit was concern that the nurses and unit staff would opt for costly or impractical activities. In general, this did not happen.

Many sites prioritized innovations according to their cost and ease (i.e., they initially chose the least costly in terms of difficulty and expense). This strategy proved successful and is described in the Viney article. Respondents at a number of sites told us that they conducted the early tests of change by examining those things that appeared to be easy and to have a high impact. These “quick wins” made life easier for staff, and helped to help build staff engagement. Some examples of quick wins include:

- White boards in patient rooms for goal setting
- Peace and quiet time
- Noise reduction activities
- Medication reconciliation
- Standard order sets
- Employee recognition activities (e.g., such as wall of fame, safety star program, caring tree)

Implications. Since one of the factors building initial enthusiasm for and staff confidence in TCAB as an activity was that a significant portion of the initial ideas tested come from unit staff, this should be given high priority. Units beginning TCAB should engage in a structured process to generate initial ideas, and provide vehicles for staff to suggest new ideas or areas for improvement on an ongoing basis.

In addition to generating and giving priority to ideas from the unit, it also proved important to identify ideas that other hospitals had tried for problems flagged on the unit that can be adapted by the hospital (e.g., falls prevention programs, documentation reductions, end of shift change reports), and to introduce issues and ideas that might not have been considered or identified on the unit (e.g., structured communication, drug reconciliation). The ideas and innovations already tested in Phase II represent one source of ideas and strategies. Because innovations tested at other hospitals were viewed a potential source of ideas for testing, the TCAB initiative should also develop provisions for posting and sharing ideas among participating hospitals.

d. Conducting Tests of Change

The hospitals in TCAB Phases I and II used a standard quality improvement testing strategy, PDSA cycles, to test innovations. PDSA cycles are a quality improvement technique that consists of four repeated steps to achieve continuous improvement and learning:

- PLAN:** Plan ahead for change. Analyze and predict the results.
DO: Execute the plan, taking small steps in controlled circumstances.

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STUDY: Assess the results.
ACT: Take action to standardize or improve the process.

Formal training in the conduct of PDSA cycles was provided to hospitals during the Learning and Innovation Meetings. This was new material to most of the staff nurses and nurse managers in the Phase II hospitals. Hospitals were encouraged to start with very small tests of change (one nurse, one shift, one patient) and to expand as the change was refined.

The concept of testing was generally adopted by the TCAB units. The formal process of conducting PDSA cycles call for identification of measures to assess whether there has been an improvement in the planning stage, collecting appropriate data to implement the measure in the do stage, and reviewing the measures in the study stage to assess whether there has been improvement. We observed that in many hospitals in phase II, for some innovations, particularly in the patient centeredness domain where unequivocal metrics did not exist, there was a tendency to adapt or modify based on perceptions of impact rather than formal measures, and that refinement of innovations through further testing was not consistently done.

Implications. Standard methods exist for testing, evaluating and modifying ideas for improvement. We believe there are opportunities to encourage rigor in the testing processes used in TCAB-like activities. To accomplish this, however, unit staff will need to be trained in these methods, including effective design and use of measurement in testing.

e. Building Staff Commitment and Expertise

In addition to involving staff in the idea generation process and, in some sites, the choice of changes to test, most hospitals reported employing additional incentives or techniques to build staff “buy-in” and participation in TCAB changes. These were generally administered at the unit level, although some were hospital-wide programs or required hospital-level resources. Many sites provided food (e.g., breakfast or ice cream) at presentations or brainstorming sessions or to celebrate small successes. Some hospitals developed incentives related to specific tests of change. For example, the Safety Star program gave a Starbucks coupon to staff for identifying and reporting a safety hazard. Another set up a schedule of staff celebrations (ice cream, pizza) for their fall prevention program as goals for days between falls were achieved. Some counted TCAB participation towards staff evaluations.

Other elements that appeared to strengthen staff commitment to work on TCAB activities included: identifying tangible benefit to nurses of the changes made (e.g. decentralizing supplies led to measurable increases in nurses’ time with patients, restructured end of shift reporting at one hospital led to reduced overtime and missed parking shuttle connections); giving nurses choices in what tests of change to work on and making sure nurses’ ideas are actually implemented; unit managers addressing the challenge of resistance via candid one-on-one conversations, not just discussion at team meeting; posting of TCAB goals and results at the unit station, staff lounge and in public spaces.

It is important to note that the work of TCAB was initially time consuming. Most, but not all, TCAB hospitals made some accommodation for this, although the approach taken varied.

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We found that units were better able to work on TCAB when they had a staff member released from patient care duties for at least one shift a week. Other hospitals rotated this function among staff, which also appeared to benefit them. Some hospitals also paid staff overtime to attend meetings on their days off. Others augmented the work of staff nurses and other unit staff with quality improvement staff and nurse educators. We suspect that one of the reasons so many initial TCAB projects were in the efficiency domain was because hospitals and units sought to reduce nurse effort in low value activities and free up time that could be used in high value activities. These were defined primarily as more time in direct patient care, but organizations that have worked on performance improvement often find that over time the efficiency savings create time and space for further staff work on process improvement activities, such as TCAB.

In addition to assuring adequate time to carry out performance improvement activities, there is an ongoing need to build staff skills and expertise in this work. One CNO, in a presentation on TCAB, noted that nurse leaders involved in TCAB have emphasized the importance of developing QI knowledge and skills such as running meetings, project management, measurement and computer skills, particularly the ability to use software that enables graphing as important skills in conducting TCAB. These nurse leaders also said it was essential that TCAB leadership required comfort with risk taking, resilience, drive and personal perseverance, reflective practice, diversity competence, systems thinking, patient-centeredness, the ability to engage other disciplines, comfort with ambiguity, self awareness and development, effective partnering, integrity and courage, and that leaders bring zeal to work everyday,

We observed several strategies for accomplishing staff skill building and expertise. They included: use of nurse educators to provide training, augmenting unit teams with performance improvement staff and learning by example, formal training activities as part of general performance improvement activities such as Lean. One hospital system with a formal training institute made individual and group courses in quality improvement and management available to unit managers and staff. Meetings of unit staff with hospital level teams also provided opportunities for senior staff to train unit staff.

Implications. Staff commitment to TCAB-like activities can be strengthened by early quick wins, clear identification of benefits from successful efforts, programs to celebrate success, clear engagement with staff ideas, and at least initially freeing up of staff time or providing other staff resources for project work. These should be augmented with formal and informal training in process improvement. To provide training, there are opportunities to develop programmed training modules and self-paced instructional materials or to adapt these from other settings.

4. Measurement of Impact

Unit and hospital engagement in measurement has been viewed as essential by IHI and the RWJF but has met with mixed support from the hospitals. Measurement is intended to serve four purposes in an activity such as TCAB.

One purpose is motivation. Measurement activities have helped provide impetus for staff to make or sustain change. Low Press Ganey patient satisfaction scores, high fall rates, etc., have encouraged staff to work toward improvement. In hospitals pursuing fall prevention

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programs, posting of the days since a fall at the nurses' station has encouraged both refinement of fall prevention programs and staff to aggressively carry out the program that has been put in place. The role of the design targets in motivating continued work was noted earlier.

Measurement has also been used to identify and diagnose problems or flag areas to target for improvement, either directly or by identifying cases for root cause analysis. For example, examining the time of falls disclosed to a number of units that change of shift was an especially dangerous time and led them to implement rounding of patient rooms prior to the change of shift to address patient needs, to discourage unassisted getting out of bed. Low scores on the staff questionnaire related to communication encouraged examination of communication problems on the unit.

Measurement has also been used to assess whether innovations are in fact improving unit performance. Increases in days between falls, lower numbers of codes, a larger proportion of RN time spent at the bedside, higher patient satisfaction or willingness to recommend a unit may all serve as signals that interventions have led to improvements.

Finally, measurement has been used to assess the impact of the initiative for hospital and system leadership and to external reviewers. This is one of the major motivations for measurement in Phase II and III for the RWJF.

While measurement was intended and has been used to serve these purposes, the evaluation team has observed several challenges to its effective use. First and most critically, effective measurement and its application requires some expertise in collecting, interpreting and applying data. In most of the TCAB hospitals, unit staff have not been oriented toward measurement and have not been trained in its use. Sessions at the Learning and Innovation Collaborative meetings have attempted to address this deficiency, but modules need to be developed for orienting and training staff not attending such meetings.

Second, measurement takes time and effort. Some measures used in TCAB, such as staff turnover have been generated outside the unit, and at many TCAB hospitals, the quality improvement staffs have assisted the units in collecting measures. But there has been resistance to collecting other measures because of the staff time or cost required.

Third, different measures are needed for different purposes. A number of the TCAB measures have been judged valuable for motivation or internal or external accountability and evaluation but have not been judged useful for either diagnosis or conducting improvement efforts. Some, like turnover or general patient satisfaction, don't provide sufficient information for root cause analysis or in the short run, are influenced by other factors. One TCAB unit saw its Press Ganey scores increase significantly when construction on the new garage was completed. These limitations mean that other measures specific to the innovations being tested need to be developed, and these may or may not be sustained. Unit staffs have been less willing to collect data that they view as principally for external assessment, and also had limited ability to plan and sustain innovation-specific data collection.

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The evaluation team has completed a separate report on the measurement experience in Phase II that provides additional information on the challenges of measurement in TCAB.

Implications. Effective measurement is viewed as critical in performance improvement and internal and external evaluation of TCAB. The experience in Phase II has been mixed. There is a need for training and orienting unit staff in measurement, so that measurement becomes part of how units do their work and data collection and interpretation are part of unit processes. Building this capacity will require hospital level support for measurement.

5. Spreading TCAB beyond the Initial Unit

During Phase II, while spread was not a high priority activity, a number of hospitals and systems began dissemination of TCAB innovations and methods. Some innovations had such high perceived value, they were spread quickly as new standard practices. One example was improved change of shift reports, which were tested on the TCAB unit, and with minor modifications adopted by all units at one TCAB hospital. Processes were slower to be disseminated, although one TCAB hospital after the first year of Phase II decided to roll out the full TCAB process to all medical-surgical units and provided orientation for unit managers and staff, and had each unit conduct its own snorkel. More typical was the identification of one or a few units in the TCAB hospital for the next wave of implementation and, in systems, the extension of the program to additional hospitals through the development of an initial TCAB unit.

The evaluation team has conducted a study of spread activities by three systems to other hospitals outside the initial TCAB hospital and is reviewing the preliminary data collected on spread, and will present the lessons and implications in a subsequent report.

C. CONSIDERATIONS FOR SPONSORS

While the work of TCAB is conducted by the hospitals and their participating units, external resources supported this work in critical ways. The RWJF and IHI have provided a resource intensive approach to TCAB, necessary to test the initial idea and learn from the experience. This resource intensive model is being pursued with ten of the original hospitals and a somewhat less intensive approach run by IHI is being carried out through the Impact Community collaborative on transforming medical-surgical care.

We anticipate that there will be other organizations interested in supporting TCAB-like activities for groups of hospitals, but will have to conduct the work with fewer resources. Indeed, the RWJF has made a grant to AONE for such a program. The previous section presented a perspective on what the TCAB work looks like at the hospital level, and highlights factors that appear to facilitate this work or make it harder. A sponsor of such activities needs to take those lessons into account, and must also consider what support is critical and how it can be provided.

The face-to-face meetings were universally identified by participating hospitals as being of high value. They serve two purposes: providing a forum for effective orientation and training

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to TCAB, and building the hospitals into a shared-learning community. Orientation and training activities addressed in these meetings included instruction in:

- Developing an understanding of the goals and methods for TCAB.
- Providing a safe forum for the initial creation of hospital teams and non-hierarchical interactions of team members drawn from the front line staff, unit managers and their supervisors and the C-Suite.
- Creating a broad vision of a new unit culture of improvement, and building specific skills in achieving this vision. Unit managers received some orientation to facilitating brainstorming sessions and running team meetings. TCAB unit staff attending also learned about PDSA cycles and the process of running tests of change. More limited training and orientation was provided in measurement, data collection and reporting, and use of data in testing and modifying innovations. There was some discussion of issues for hospital leadership, unit managers and unit staff present at meetings in orienting front line staff not attending the meetings and obtaining their engagement with TCAB.
- Orienting hospital leadership outside of nursing to TCAB.
- Providing information and training on specific innovations.
- Providing training and advice on spread.

The creation of a community has also been a powerful motivator for change and a source of ideas and support. One of the sources of learning and energy among the Phase II TCAB hospitals has been the use of storyboarding at Learning & Innovation Community meetings. This is an exercise in which teams post paper presentations of their TCAB work and then members from the various hospitals walk around, read the boards and speak to one another, sharing their TCAB story, getting ideas, and building relationships.

A second source of learning and energy has been the establishment of peer-to-peer relationships among unit managers and front line staff through moderated conversations, cross-hospital exercises and informal time, and to have the value of the work they are doing validated by their peers and other hospitals.

Implications. Face to face meetings have been valuable and we would encourage any sponsor of a TCAB-like program to provide some meetings like this. But we recognize that in a less resource intense environment, there are likely to be fewer such meetings. And, as we noted in the discussion of the orientation and training of front line staff, there is a need to develop training materials and methods that reach staff who don't attend such meetings. Also, with fewer resources available from the sponsoring organization, there will be a need for more intra-hospital consultation and problem solving. Given these considerations, we would encourage a sponsor to consider the following activities:

- Create written and audio-visual materials describing TCAB and TCAB processes and provide training that can be distributed to hospital and unit staff
- Create methods of collecting and disseminating hospital-created training materials
- Focus on unit-manager and front line staff training and engagement

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- Develop activities to orient and train quality improvement/performance improvement staff, and administrator-level and C-suite personnel to work with and support front line quality improvement activities
- Support the development of a virtual community of hospitals, including:
 - Expectations of postings of measurement
 - Virtual, web-based storyboarding and posting of short films and video presentations of TCAB work
 - Creation of communities of peers at the unit, department and leadership levels
 - A variety of platforms for distributing information on innovations being tried and lessons learned. These should include both mechanisms for pushing information to the hospitals, and effective methods for hospitals to pull information as they identify the need to know.

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Appendix A Addressing Staff Concerns about TCAB

In our interviews, we identified five explicit or implicit questions unit staff had about TCAB that needed to be addressed to encourage commitment and buy-in to TCAB. These were:

- What is this initiative, what is it supposed to accomplish and how is it supposed to work?
- What's in it for our patients? What's in it for us?
- You are saying that the staff will have more responsibility for making changes, but also more control and more voice in how the work gets done. Can we trust this?
- We haven't got the time to do our work now, where are we going to find time to do this additional work?
- We haven't been trained to do this work and don't know how to do it. What help are you going to give us?

We observed a range of credible answers to each of these questions among the TCAB hospitals. In this appendix, we describe some potential answers and materials to assist in addressing staff concerns.

1. What is this initiative, what is it supposed to accomplish and how is it supposed to work?

The goal of TCAB is to enable hospitals and their constituent units to make improvement in four domains:

- Care Team Vitality
- Safety and Reliability
- Patient-Centeredness
- Increased Value

with particular focus on making concrete improvements in the work and practice environment for nurses and other staff so as to encourage nurses to remain in medical-surgical nursing and make this area of nursing more attractive to new nurses and those considering nursing as a career. The core strategy to accomplish these goals is to engage and empower front line unit staff and managers and put them at the center of efforts to identify the areas for change and potential strategies, test them, and decide whether they should be maintained, and to provide support to them for this work within the hospital and externally via a quality collaborative.

For nurses without direct experience in quality improvement or who feel limited ownership of their practice, this general description may not be sufficiently concrete. There are several sources of information on TCAB that can augment this summary description and provide more specific and detailed descriptions of what TCAB is and how it is supposed to work. In addition to this lessons paper, we would encourage hospitals to make available to staff the following materials:

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- The Robert Wood Johnson Foundation brochure on TCAB, although this is geared more toward hospital leadership than front line staff. It is available at: <http://www.rwjf.org/files/publications/other/TCABBrochure041007.pdf>
- The Institute for Healthcare Improvement web site, specifically its description of TCAB at <http://www.ihl.org/IHI/Topics/MedicalSurgicalCare/MedicalSurgicalCareGeneral/ImprovementStories/TransformingCareattheBedsideinitiativePrototypephase.htm> and the IHI white paper on TCAB, Rutherford P, Lee B, Greiner A. Transforming Care at the Bedside, IHI Innovation Series white paper. Boston: Institute for Healthcare Improvement; 2004. available for download at: <http://www.ihl.org/IHI/Results/WhitePapers/TransformingCareattheBedsideWhitePaper.htm> or at <http://www.rwjf.org/files/publications/other/IHITCABpaper%5b1%5d.pdf> and the IHI Transforming Care at the Bedside storyboard, available at: <http://www.ihl.org/NR/rdonlyres/F81270CD-B8BC-47D5-B2A6-BDA550096AA9/4252/TCABStoryboardFall2006FINAL.pdf>
- For a more visually oriented overview of TCAB, RWJF has produced a windows media video describing TCAB available at: <http://freeland.edgeboss.net/wmedia/freeland/rwjf/wmedia/rwjf062507.wvx> and a macromedia flash audio and slide show highlighting one TCAB hospital, Seton Northwest, available at: <http://www.rwjf.org/newsroom/profiledetail.jsp?type=1&featureID=1703&iaid=137&gsa=1>
- The article by Viney and colleagues cited above (Viney M, Batcheller J, Houston S, Belcik K. Transforming care at the bedside: designing new care systems in an age of complexity. *Journal of Nursing Care Quality* 2006;21:143-50) provides a participating hospital's perspective, and is available for download from: http://www.nursingcenter.com/library/JournalArticle.asp?Article_ID=634104

2. What's in it for our patients? What's in it for us?

The short answer to this question is the opportunity to improve care for patients, improve the work environment for staff, increase time spent in more valuable and valued activities during the work day, and grow professionally. There are many examples of this from TCAB hospitals including:

- Improving care for patients. Examples include:
 - Reduced falls through more effective, staff-tested fall reduction programs
 - Implementing formal opportunities for structured conversations between patients and nurses on patient goals and concerns.
 - Expanded multidisciplinary rounding
 - Implementation of rapid response teams
 - Changing meal ordering for patients to allow greater choice and delivery of meals when the patient will be on the floor, and making provision for access to snacks or prepared meals for late admissions

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- Improved work environment for staff and increased time spent in more valuable activities. One participant in TCAB in a presentation said “You will love your job- AGAIN.” She also said this had been the best thing for her hospital ever. Examples of changes that have improved work environment and increased time for more valuable activities have included:
 - Improved end of shift reporting that reduced overtime and staff arriving late for parking lot shuttles and at childcare
 - Decentralization of supplies to or near patient rooms and improved stocking systems that reduced excessive walking and “hunting and gathering”
 - Reductions in unnecessary documentation
 - Systems for alerting unit managers and other staff of high workloads, and within-shift real-time reallocation of work to assure better balance among staff
 - Training in structured communication with physicians and others that has improved relationships across disciplines on the unit, enhanced the respect provided nurses, and improved patient care
- Opportunities for professional growth. One of the core concepts of TCAB is for front line staff to take ownership of their care systems and move from the “workaround culture” that exists at many hospitals, where dysfunctional and broken systems are not fixed but coped with, to “improvement cultures,” in which there is a commitment by staff and the hospital to fixing broken systems. While some staff have resisted this change, many of those who embraced it have found a sense of renewed professional and job satisfaction. This is evident in the macromedia flash audio and slide show cited above and in a more extensive discussion of nurses’ experience at Seton Northwest in an article on the RWJF website at <http://www.rwjf.org/newsroom/profiledetail.jsp?type=1&featureID=1323&iaid=137&gsa=1>. Several nurses are quoted in the article on how TCAB has transformed them. One nurse is described as having “made presentations about TCAB to physician groups and other hospitals in the Seton system, encouraging them to adopt the initiative. ‘I’ve never done speaking engagements before. What I have to say about TCAB is so important to me, so I want to make sure everybody hears about it. I want everyone in nursing to know about this,’ she says.” Other nurses have spoken at the IHI National Forum on Quality Improvement in Healthcare and the convention of Sigma Theta Tau, the nursing honor society, and have met with their members of Congress to talk about the project.

3. You are saying that the staff will have more responsibility for making changes, but also more control and more voice in how the work gets done. Can we trust this?

Addressing this question requires early demonstration of commitment to front line staff leadership of TCAB. This can be done through:

- Initial unit meetings at which staff are oriented toward TCAB. These meetings can explicitly address the questions we raise here and discuss in what ways TCAB represents continuity with established norms at the institution and in what ways it represents a

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break. To the extent it is a break, hospital and nursing leadership should discuss how the change will be implemented and reinforced.

- Active staff participation in identification of ideas to be tested via a deep dive or snorkel, other brainstorming, and individual recommendations.
- Involvement of unit staff in the initial decisions of what to test first.
- Creation of strong, functioning unit TCAB teams and processes, and clear differentiation of their role vis a vis the hospital leadership TCAB teams.

Experience and observation of other organizations suggest that trust in this area, once broken, will be hard to reestablish.

4. We haven't got the time to do our work now, where are we going to find time to do this additional work?

Organizations that make performance and process improvement part of the standard work of front line staff often find that over time the issue of creating time and space for the work recedes as wasted time and effort is streamlined out and the work becomes integrated into the routine of the organization. Initially, however, this can be an issue and has been for the TCAB units. Hospitals beginning TCAB have used several strategies to make time available or reduce the burden on staff. Among these have been:

- Using some overtime to allow staff to conduct tests or attend meetings off-shift.
- Releasing one or a few staff for a half-shift or shift per week to conduct TCAB activities, filling in for them in patient care with other staff.
- Assigning nurse educators and/or performance improvement staff to support TCAB activities through data collection and measurement, follow-up in setting up tests, etc. This work is in support of the unit staff efforts, not a replacement for it.
- Hiring additional staff on the unit or in other units to support TCAB. This was rare and typically involved only a portion of the new staff member's work assignment.

5. We haven't been trained to do this work and don't know how to do it. What help are you going to give us?

In the discussion above, we have emphasized the need to orient and train staff in performance improvement. Among the methods and approaches we have observed are:

- Assigning staff from performance improvement/quality improvement departments to work with staff on TCAB projects. Care must be taken that the performance improvement staff do not preempt the work of the unit staff. We have observed a number of effective partnerships between unit managers and staff and hospital quality improvement staff.
- Tasking the nurse educators assigned to the TCAB unit to provide training to staff in measurement and performance improvement methods.
- Some hospitals and health systems have formal training academies or departments, and in a number of cases, the training organization within the system developed or provided individual training materials on topics in performance improvement. In other cases,

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handbooks have been prepared for nursing and other staff on measurement and performance improvement.

- In one hospital, the unit manager required nurses on the unit to serve as resource nurses on specific topics, such as falls or skin integrity. This required the nurses to research the issue and methods to address the concern, to educate other nurses and staff on the topic, and to serve as lead on projects related to the area in which they had developed expertise.

We would encourage the development of handbooks, videos and other materials on performance improvement methods that can be made available to staff. One example is the video illustrating the process of a deep dive, available on the Robert Wood Johnson Foundation website at: <http://www.rwjf.org/programareas/features/webcastdetail.jsp?id=10138&type=3&pid=1135> . Also on the web are basic reference materials on performance improvement, such as those prepared by the Department of Industrial Engineering at Clemson University and available at <http://deming.eng.clemson.edu> or those available through the American Society for Quality at <http://www.asq.org/learn-about-quality/index.html> . Hospitals or sponsors can identify additional existing resources and make these available to staff with suggested syllabuses for developing necessary skills.