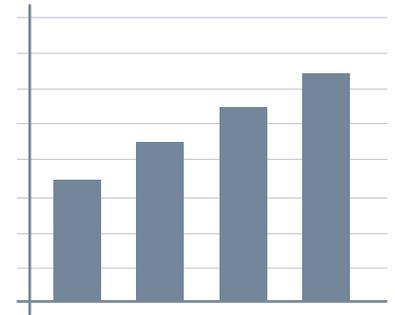


Innovation Series 2004



Transforming Care at the Bedside

We have developed IHI's Innovation Series white papers to further our mission of improving the quality and value of health care. The ideas and findings in these white papers represent innovative work by organizations affiliated with IHI. Our white papers are designed to share with readers the problems IHI is working to address; the ideas, changes, and methods we are developing and testing to help organizations make breakthrough improvements; and early results where they exist.

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The staffs of the Transforming Care at the Bedside hospitals

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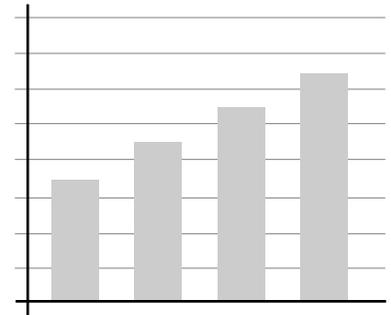
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Innovation Series 2004



Transforming Care at the Bedside

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Executive Summary

The Institute for Healthcare Improvement (IHI), in partnership with The Robert Wood Johnson Foundation (RWJF), has launched a comprehensive effort to improve care on hospital medical/surgical units.

Through an initiative called *Transforming Care at the Bedside* (TCAB), IHI and RWJF have created a framework for change on medical/surgical units built around improvements in four main categories:

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

In 13 pilot hospitals, change ideas within each category are being tested, refined, and implemented, many with very promising early results. Examples include the use of Rapid Response Teams to “rescue” patients before a crisis occurs; specific communication models that support consistent and clear communication among caregivers; professional support programs such as preceptorships and educational opportunities; liberalized diet plans and meal schedules for patients; and redesigned workspace that enhances efficiency and reduces waste.

Many changes cannot be strictly categorized, but produce positive change in one or more categories. IHI and RWJF believe that it is only by working in all four categories simultaneously that care teams can produce truly transforming results.

Transforming Care at the Bedside requires a commitment to changing the status quo. In this paper, IHI and RWJF offer hospitals a number of ideas to test, adapt, and implement as appropriate.

Introduction

The Institute of Medicine's (IOM) call to action in 2001 to improve health care¹ has generated important and successful efforts to improve care in hospitals and clinical office settings. Many of the hospital-based efforts have centered on improving care in emergency departments, operating rooms, and intensive care units.

While these efforts are essential to reducing harm and improving outcomes, systematic changes must also be introduced on hospital medical/surgical units, where so much of the nation's inpatient care is delivered. Research indicates that patient safety on these floors can be improved: between 35 and 40 percent of unexpected hospital deaths occur on medical/surgical units.²

As the most highly trained professionals regularly at patients' bedsides, registered nurses (RNs) play a central role in ensuring the quality of hospital care. The IOM documented this role in its 2004 report, *Keeping Patients Safe: Transforming the Work Environment for Nurses*. In that report, the IOM links nurses' skill at monitoring patients' health and symptoms to improved clinical outcomes, and suggests that their vigilance is an important defense against errors.³ However, nurse turnover is typically highest on medical/surgical units, which compromises quality and increases cost.

To respond to the urgent need for change on the nation's medical/surgical units, the Institute for Healthcare Improvement (IHI), in partnership with The Robert Wood Johnson Foundation (RWJF), has launched an ambitious, expansive initiative to redesign medical/surgical care. This effort draws on IHI's experience mobilizing teams of frontline workers to make significant changes in care processes, as well as its expertise in health system redesign. Through this work, IHI is developing models of care at the bedside on medical and surgical units that will result in improved quality of patient care and service, more effective care teams, improved staff satisfaction and retention, and greater efficiency.

Through this effort, *Transforming Care at the Bedside* (TCAB), IHI and RWJF intend not simply to fine-tune the status quo, but rather to transform the elements that affect care on medical/surgical units: care delivery processes, nursing care models, physical environments, organizational cultures and norms, and care team collaboration and performance.

Getting Started

In launching TCAB, IHI and RWJF recruited three innovative hospitals to serve as prototypes for what would eventually become a larger effort. These three sites—Seton Northwest Hospital in Austin, TX, part of the Ascension Health System; UPMC Shadyside, part of the University of Pittsburgh Medical Center (UPMC) in Pittsburgh, PA; and Kaiser Foundation Hospital in Roseville, CA, part of Kaiser Permanente—developed and rapidly tested ideas to determine the viability of a process for transforming care on medical/surgical units.

On the strength of promising results, an expanded pilot phase was launched in June, 2004, with 13 sites, varied both in terms of geography and demography. Those sites are:

- Brigham & Women's Hospital, Boston, MA
- Bronson Healthcare Group, Kalamazoo, MI
- Cedars-Sinai Medical Center, Los Angeles, CA
- Children's Memorial Hospital, Chicago, IL
- James A. Haley VA Hospital, Tampa, FL
- Kaiser Foundation Hospital-Roseville, Sacramento, CA
- North Shore-Long Island Jewish Health System, Great Neck, NY
- Northwestern Memorial Hospital, Chicago, IL
- Prairie Lakes Hospital, Prairie Lakes Healthcare System, Watertown, SD
- Seton Northwest Hospital, Ascension Health System, Austin TX
- ThedaCare (Appleton Medical Center and ThedaClark), Appleton, WI
- University of Pittsburgh Medical Center-Shadyside, Pittsburgh, PA
- University of Texas MD Anderson Cancer Center, Houston, TX

The goal of this multi-phase, multi-year effort is to develop, test, and spread 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. The project seeks to highlight and strengthen the link between the quality of care patients receive and the work environment in which their caregivers function.

Front-line staff at these hospitals have created, tested and measured hundreds of new ideas for improving bedside care—many adapted from other industries. Using tools and methodologies adapted from the “Deep Dive” pioneered by IDEO,⁴ a leading design and innovation company, key staff at TCAB hospitals learned techniques for observation, performed targeted brainstorming and envisioned a future-state. Using these methods, the teams generated new ideas based on the dimensions of quality defined by the Institute of Medicine: *safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity*, plus the added dimension of vitality, which refers to the vibrancy and satisfaction of the workforce.

Using the Model for Improvement⁵, which builds knowledge sequentially based on the degree of belief that changes will result in improvement, front-line teams tested many of these new ideas.

This paper describes early results and promising tests of change carried out in the pilot organizations and other organizations affiliated with IHI, and challenges other hospitals to consider, test, and implement strategies that can begin to truly transform care at the bedside.

A Framework for Transforming Bedside Care

Guided by the IOM aims for care and the goals that RWJF established for this project, IHI created a framework for TCAB built around four main themes:

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

These categories serve as a framework for organizing and focusing this work, but they are not mutually exclusive. Working in one area can produce positive change in another. IHI believes that only by working in all four categories simultaneously will care teams produce truly transforming results that move care closer to TCAB’s broader targets:

Proposed Measures for TCAB

TCAB measures are a work in progress, subject to change as they are tested and revised by the teams in the pilot sites. The current working measures are:

- *Adverse events*
- *Unanticipated deaths*
- *Patient falls*
- *Unplanned returns to the ICU*
- *Pressure ulcer prevalence*
- *Hospital-acquired pneumonia prevalence*
- *Care team satisfaction*
- *Voluntary turnover*
- *Patient and family satisfaction*
- *Percentage of time spent in direct patient care*
- *Percentage of time spent in documentation*
- *Percentage of time spent in value-added work*
- *Costs per DRG (for top 3 diagnoses)*

- No unanticipated deaths
- No needless pain and suffering
- Clinicians, staff and students will say: “I contribute to an effective care team within a supportive environment that nurtures my professional career/growth and continually strives for excellence.”
- Patients will say: “They give me exactly the help I want (and need) exactly when I want (and need) it.”
- Unnecessary documentation is eliminated, reducing total documentation by 50 percent.
- Clinicians spend 70 percent of their time in direct patient care.

The examples of change strategies presented in this paper fall into each of the four TCAB categories (although many changes have an effect on all four areas of transformation). Some are from TCAB pilot sites; others are from IHI’s work with other organizations in related areas. All the examples are meant to serve as models and important resources for TCAB hospitals and for others wishing to transform care on medical/surgical units.

Safety and Reliability

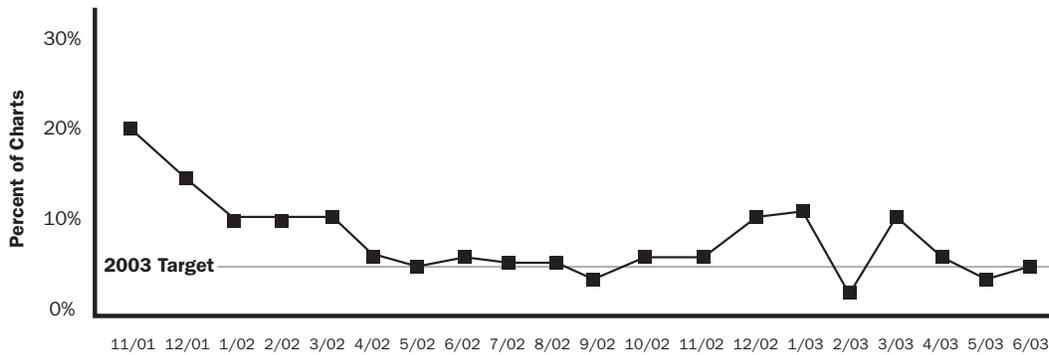
The TCAB goal for safety and reliability is:

Care for patients who are hospitalized is safe, reliable, effective and equitable.

A number of known and tested best practices have been demonstrated to improve reliability and help prevent system failures in medical/surgical units. The safety literature suggests that the majority of errors—between 70 and 90 percent—occur as a result of system failures, not staff incompetence.⁶ Examples of such practices include medication system redesign, end-of-life best practices, and the use of Rapid Response Teams to “rescue” patients whose medical conditions are deteriorating before they reach a medical crisis point.

Medication system redesign can lead to dramatic improvements. Examples from organizations working with IHI abound, including that of the Iowa Health System (IHS). Working in a strong culture of safety and non-punitive error reporting, IHS reduced adverse drug events (ADEs) across its entire system of ten hospitals by 15 percentage points (a 65 percent reduction) in a six-month period (Figure 1). Changes implemented include improved reconciliation of patient medications at admission, transfer and discharge, plus use of Failure Modes and Effects Analysis (FMEA) on medication dispensing systems. (FMEA is a method for evaluating the structures of systems to reveal failures in the systems and identify opportunities for improvement.)

Figure 1. Iowa Health System: Percent of Sampled Charts with ADEs (Targets: 2002=10%, 2003=4%)



Through unit briefings and Patient Safety Leadership WalkRounds™ focused on medication safety, hundreds of ideas were identified and implemented to improve the culture of safety. In WalkRounds™, senior executives regularly visit patient care areas to talk with front-line staff and help remove barriers to improvement. Unit briefings or safety huddles bring work unit staff together briefly each day to rapidly identify and improve unsafe conditions.

Rapid Response Teams (RRTs)—a concept that originated in Australia⁷—are also proving to be effective models of care that reduce medical crises and are associated with reductions in mortality.^{8,9} Rapid Response Teams are small groups of providers who are particularly experienced at assessing patients’ symptoms and anticipating the trajectory of their medical condition. Typically, RRTs include a critical care-trained nurse, a respiratory therapist, and/or an intensivist physician.

These teams are continuously and readily available to all providers in the hospital—especially to medical/surgical nurses—who want a second opinion about a patient. Instead of waiting for a patient to suffer a cardiopulmonary arrest, nurses and other bedside providers can summon the RRT at the first sign of potential decline, to prevent further deterioration or an arrest. In the Australian study, use of the RRT at Melbourne’s Austin and Repatriation Medical Centre resulted in a 65 percent reduction in cardiac arrests, a 57 percent decrease in deaths from cardiac arrests, and an 88 percent decrease in inpatient days following cardiac arrests.¹⁰

Simple ways to improve reliability of care are also available. For example, at Kaiser Roseville, one of the TCAB hospitals, nurses’ aides carry in their pockets a small card with drawings of the human body. If they find reddened areas on patients during, say, a bed-bath, they circle that area on the card. The nurse validates the observation and flags it in the doctor’s progress notes, creating a simple but potentially powerful way to prevent pressure sores, a leading cause of delayed discharge.

In addition, some best-practices from various specialized care units such as ICUs can be adapted to general medical/ surgical units, such as strategies to prevent patient falls, prevent nosocomial infections, perform risk assessment and mitigation, as well as innovative models of staffing including hospitalist/physician models and redesigned nurse staffing models. TCAB pilot sites are currently testing the most effective models for transfer of these practices to medical/surgical units.

Regardless of the change(s) being implemented, to be effective, they must be made in a non-punitive culture of safety and continuous learning. The importance of a pervasive culture of safety—in which everyone feels encouraged to report errors or problems, learn from them, and work toward solutions—cannot be overstated, and is a key focus of the IOM report on enhancing safety in hospitals.¹¹ This is an essential foundation for reducing adverse events, medical errors, and harm to patients, and it must be both mandated and supported by the very top levels of the organization.

Care Team Vitality

The TCAB goal for vitality is:

Within a joyful and supportive environment that nurtures professional formation and career development, effective care teams continually strive for excellence.

Staff shortages and high turnover are often associated with registered nurses, but also affect other professions such as imaging technicians, pharmacists, and lab technicians.¹² As the largest occupational group in health care,¹³ registered nurses have been the focus of sustained attention in recent years due to an ongoing national nursing shortage, an aging RN workforce, and concern about attracting the next generation of nursing professionals.

In addition to shortages, hospitals also struggle with high turnover. Both shortages and high turnover place additional stress and strain on staff who remain, eroding continuity of care and creating unwanted expense. Institutions that put strategies in place to enhance staff effectiveness and vitality demonstrate increased nurse, patient, and physician satisfaction, reduced turnover, and better outcomes.¹⁴ In addition, with the cost of nurse turnover estimated at between \$50,000 and \$65,000 per position depending on specialty,¹⁵ a sound business strategy includes an emphasis on retaining good nurses.

At Seton Northwest Hospital, a TCAB hospital, a strategy that entrusts and empowers nurses to manage their own capacity for patient care is a “win” for both nurses and patients. Based on innovative work first developed at Luther Midelfort-Mayo Health System in Eau Claire, WI, Seton Northwest nurses developed a traffic-light system to declare their availability for additional patient care. At four check-in times during each shift, front-line nurses indicate on a centrally located whiteboard their capacity to care for new admissions. This declaration is not based on available *beds*,

but rather on available *care*. A green magnet shows they are able to take on new patients; yellow means they are nearing their capacity; and red means they cannot safely accept another patient.

Not only does this respect nurses' professional judgment, but nurses at Seton Northwest report that knowing which of their colleagues are working at full capacity at any given time enhances teamwork. A nursing capacity-traffic light system can be implemented at an individual nurse level or at the unit level. Tracking data associated with this system can also help detect units that are chronically under- or over-burdened.

At North Shore Long Island Jewish Health System (NSLI-JHS) in Great Neck, NY, another TCAB hospital, heavy emphasis is placed on workforce support and development. A comprehensive preceptor program, on-site educational programs in collaboration with local colleges and professional organizations, and an in-house Center for Learning and Innovation promote professional growth and development.

Staff participation in decision-making is encouraged at NSLI-JHS through monthly Town Hall meetings between staff and senior leadership. The work environment is ergonomically designed to support an aging workforce, and for nurses, non-nursing tasks have been identified and are now being carried out by transport, pharmacy, or materials management staff. The annualized nurse vacancy rate at NSLIJHS is 7.06 percent, compared to a national average reported to be between 10 and 15 percent.¹⁶

At Hackensack University Medical Center (HUMC) in Hackensack, NJ, another hospital working with IHI and known for focusing on supporting its workforce, a special emphasis on nurse retention has resulted in a nurse vacancy rate that is essentially zero, and an annual turnover rate among nurses of about 6.7 percent. The financial implications of this effort are significant, since it is estimated to cost approximately 100 percent of one nurse's annual salary to fill a single vacated nursing position.¹⁷ At Hackensack, this translated into a \$26 million saving in 2002.

Effective Communication

Effective, consistent communication is a key component of reliability and safety. TCAB pilot sites have tested and implemented two enhanced communication strategies that help staff organize information and communicate effectively:

Crew Resource Management (CRM): *Pioneered in aviation, CRM is a strategy for communicating in highly dynamic situations, emphasizing team-centered rather than hierarchical decision-making. CRM teaches and relies on effective teamwork, and specific teamwork behaviors, skills, and habits, and includes the expectation that any and all members of the team are responsible for identifying, communicating, and fixing problems that arise.*

SBAR: *In order to communicate about patients' conditions in an organized and systematic way, staff uses a common framework (SBAR) to describe the Situation ("The patient's respiratory rate has dropped"), Background ("She has a history of heart failure"), Assessment ("I think she is deteriorating"), and Recommendation ("I think the respiratory therapist should come see her now.").*

These strategies serve to focus and improve communication and enhance the care team's sense of teamwork and competency. ^{18,19,20,21,22,23,24,25}

Patient-Centeredness

The TCAB goal for patient-centeredness is:

Truly patient-centered care on medical and surgical units honors the whole person and family, respects individual values and choices, and ensures continuity of care.

Even the most compassionate caregivers acknowledge that care in most hospital units is not as “customer-friendly” as it could or should be. Systems and processes are often designed to meet the needs of providers more than patients.

Making care more patient-centered can be as simple as providing patients with complete, customized information about their care team and their hospital experience. For example, some TCAB sites have placed whiteboards in each patient’s room, on which they post names and often photographs of the patient’s care team.

In addition, care teams work with patients and their families to establish daily goals and patient preferences about their involvement in care decisions, and then write them on the board. These targets might include sitting in a chair, walking a certain distance, and eating a full meal, or even discussing with their care team the benefits and risks of various treatment options. Posting them in the room makes the goals clear to all—patient, family members and visitors, and the care team—and helps everyone feel more involved and engaged in the recovery process.

Hospital food is often the focus of patient dissatisfaction. UPMC Shadyside, a TCAB hospital, surveyed patients to describe a “perfect patient experience” and many responses focused on improving the food service. UPMC Shadyside staff recognized that, in many cases, the value of meeting patients’ food preferences might outweigh whatever small health-related benefits could be gained from a restricted diet during their hospital stay.

The nutrition staff responded by creating a liberalized diet program, loosening restrictions and extending kitchen hours. An evening snack, ranging from yogurt to fruit to brownies, is also offered to all patients.

Staff report that this approach improves patients’ nutrition and reduces food waste. In addition, tracking patients’ choices (e.g., a diabetic selects a bagel) provides useful opportunities for dietitians to educate patients during discharge planning.

Preliminary results from the UPMC Shadyside experiment indicate improvements in many areas:

- **Patient satisfaction:** A 42% relative increase (from 43% to 61%, an increase of 18 percentage points) in the proportion of patients who rated the service as exceeding or greatly exceeding their expectations.
 - **Patient intake:** A 42% relative increase (from 59% to 84%, an increase of 25 percentage points) in the proportion of patients who consumed 75% or more of the food on their trays.
-

- **Patient adherence:** A 10% relative increase (from 69% to 76%, an increase of 7 percentage points) in the number of patients selecting appropriately for their prescribed diet.
- **Education interventions:** An increase from 0% to 22% in the proportion of patients receiving diet instruction, thanks to a new screening process in which patients’ menu selections are monitored.

Enhancing patient-centeredness can also involve improving the discharge process, both in terms of the information provided to patients and families and the discharge process itself. Patients at some sites receive a written summary at discharge, an understandable narrative that reviews what happened to them while they were hospitalized: the tests they had, the results of the tests and what they mean, the medications they were given, the follow-up care or lifestyle changes that are recommended, and what it all means in terms of their overall health.

Scheduling patients for discharge is also proving to be an effective means of improving the patient-care experience in the hospital. Selecting a specific time to discharge patients—making a discharge appointment—enables patients and families to plan ahead, and requires staff to synchronize other activities, such as final lab work, a physician visit, patient instruction, and medication reconciliation. Aside from its potential value in reducing “hand-off” errors and increasing adherence to treatment regimens, scheduling discharges proves to be a patient-pleaser at hospitals that have tried it, such as the Mayo Clinic, and increases staff satisfaction with the process as well (Figures 2 and 3).

It also helps the admissions staff plan the flow of patients into and out of medical/surgical units more effectively.

Figure 2. Patient Satisfaction with Discharge Appointments: How Well Did We Help You Plan for Discharge?

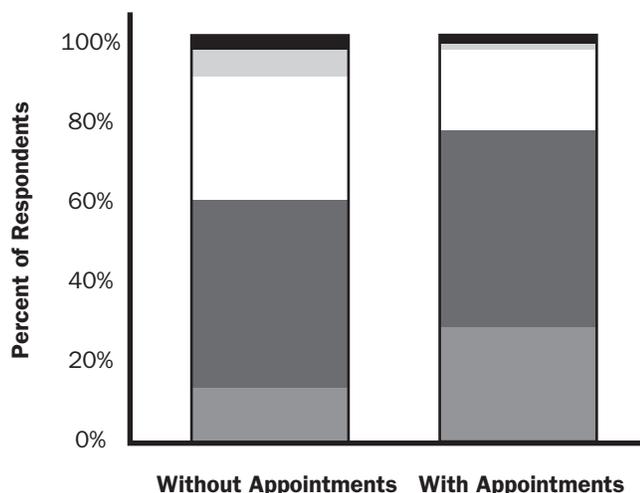
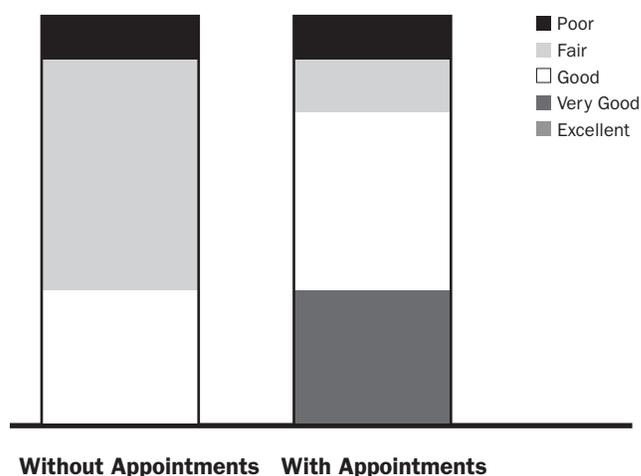


Figure 3. Staff Satisfaction with Discharge Appointments: How Efficient Was the Discharge Process?



Acuity-Adaptable Beds

According to the Center for Health Design, a research and advocacy group located in Concord, CA, mounting evidence shows that typical hospital designs contribute to stress and danger, and that improved physical space can contribute to a safer, more healing environment for patients, better clinical outcomes, and a better and more satisfying workplace for providers.³⁶

A recent review of the literature showed, for example, more than 120 studies linking infection to the built environment in the hospital.³⁷ Studies also link environmental factors, such as lighting, distractions, and interruptions, with errors in prescribing or dispensing medications.³⁸

Redesigning hospital environments is key not only to improving patient experiences and safety, but to improving staff retention as well. Noise, chaos, inconvenience, and reduced opportunities for direct patient care contribute to high nurse turnover. According to one observer, “We don’t have a nursing shortage; we have a shortage of nurses willing to work in hospitals.”³⁹

Acuity-adaptable beds are a promising example of redesign that improves care and patient satisfaction, as well as caregiver satisfaction, and reduces waste, addressing all four TCAB categories. Built and tested at the Methodist campus of Clarian Health, in Indianapolis, IN, acuity-adaptable units are designed to reduce dramatically the need to transfer patients by creating patient rooms that can accommodate low-risk and high-acuity patients.

Research shows that, to receive the care that matches their level of acuity, patients often move three to six times during a typical hospital stay.⁴⁰ Each transfer is an opportunity for missed or delayed treatment, miscommunication that can lead to errors or omissions of care, patient falls, or other problems that are not only bad for patients, but that consume additional staff time and resources.

In acuity-adaptable rooms, all equipment and supplies required for the medical needs of critical care patients are easily accessible. Headwalls can transform so that clinicians can administer advanced care. Computer technology is located directly on the patient’s bed, so staff can record body weight and other vital data without disturbing the patients. Necessary supplies are in each patient’s room, reducing “travel time” (excess motion) for nurses to and from a central supply location. Mini nursing stations are located outside each room, with access to charting and computers.

In addition, rooms are designed to promote healing through improved lighting, colors, air quality, room temperature, and privacy. Family areas are incorporated into each room, with a refrigerator, Internet access, and a chair-bed.

Use of acuity-adaptable rooms at Clarian Health resulted in a 90 percent reduction in patient transfers, saving hours of non-value-added time and labor (Figure 4), and a 70 percent reduction in medication errors (Figure 5).⁴¹ Patient satisfaction also increased, as did nurse retention.⁴²

Figure 4. Clarian Health: Reduction in transport of patients between units achieved with acuity-adaptable rooms for patients.

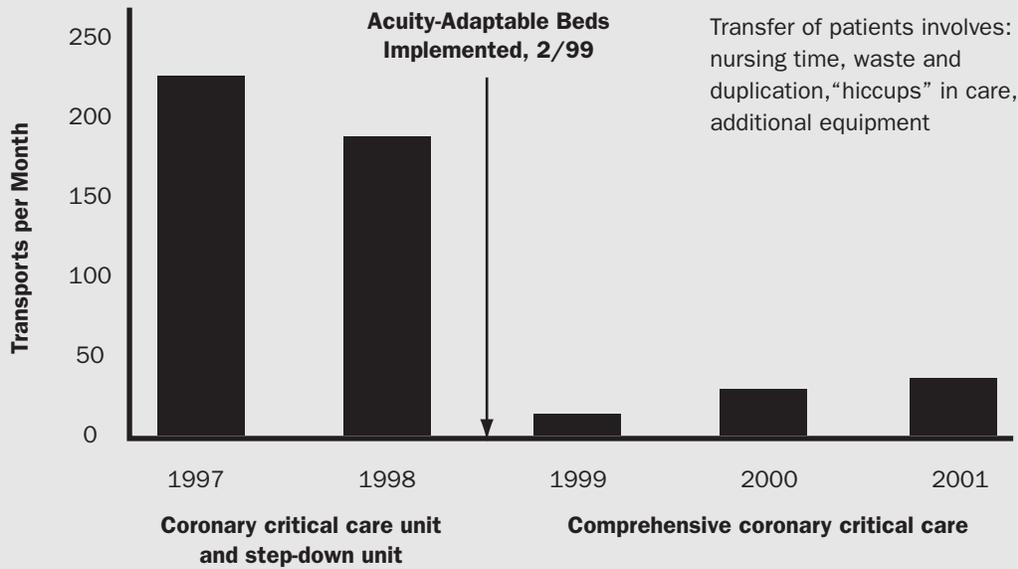
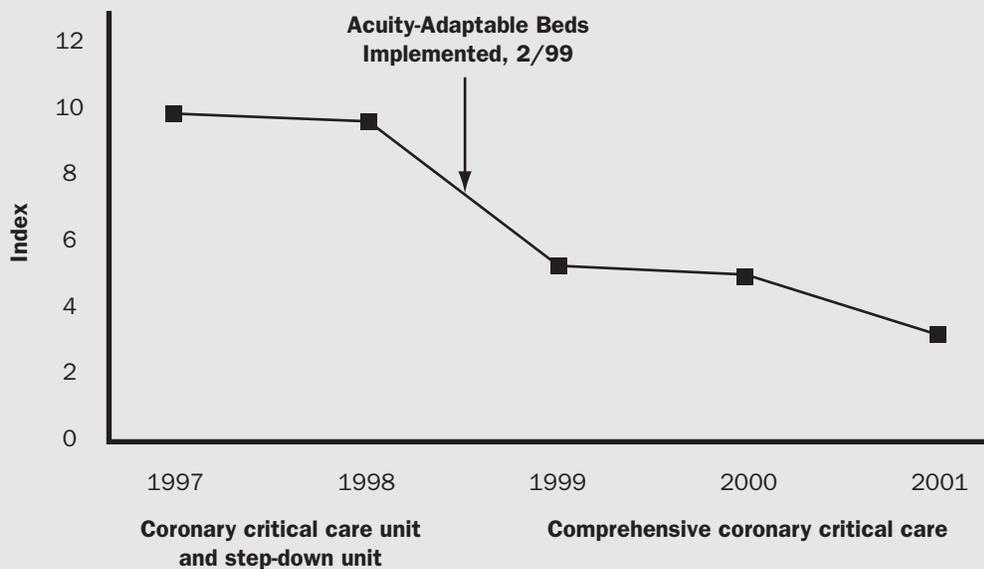


Figure 5. Clarian Health: Reduction in annual index for medication errors (errors/patient days)



Increasing Value

The TCAB goal in this category is:

All care processes are free of waste and promote continuous flow.

Increasing value requires greater efficiency, not as an end in itself, but so that caregivers can provide more care. Increasing available nurse hours by 30 minutes per patient day is associated with a decrease of 4.5% in urinary tract infection, 4.2% in pneumonia, 2.6% in thrombosis, and 1.8% in pulmonary compromise.²⁶

Research indicates that nurses currently spend less than half their time delivering direct patient care.^{27,28,29} Time and motion studies conducted by Hendrich et al. show that the majority of nurses' time is spent walking between the patient rooms, the nursing unit core, or in the nursing station.³⁰ In *Keeping Patients Safe*, the IOM states that estimates from work sampling studies and surveys of nurses within individual hospitals demonstrate that the amount of time spent in patient care documentation ranges from 13 to 28 percent.^{31,32,33}

Wasted time, energy, and material are pervasive in health care. Health care organizations can learn and adapt valuable lessons from “lean” organizations such as Toyota, which is steeped in a culture that continuously encourages employees to identify value and non-value-added activities from the customer's perspective.

A key feature of such lean systems is that they focus on eliminating waste, or muda, which is defined as activities that absorb resources but create no value.

James Womack, President and Founder of the Lean Enterprise Institute, cites two types of muda as defined by Taiichi Ohno of Toyota:³⁴

“**Type One Muda**”: Steps that create no value, but are unavoidable in the current system

“**Type Two Muda**”: Additional steps that add no value and are immediately avoidable

The IOM's *Keeping Patients Safe* lists seven categories of waste as they apply to the hospital environment:

- Poor utilization of resources
- Excess motion
- Unnecessary waiting
- Transportation
- Process inefficiency
- Excess inventory
- Defects/Quality Control
- Mistakes that require rectification³⁵

Eliminating waste on medical/surgical units can mean anything from redesigning work processes to redesigning physical space. Learning to think more systematically about care processes, as well as more creatively, are key steps in changing the system.

IHI's Challenge to Hospitals

Truly transforming care at the bedside in medical/surgical units—increasing safety and reliability, care team vitality, patient-centeredness, and value—is as big a job as it is important. Efforts to change the status quo can take many forms, some of which are relatively easy to begin. IHI and RWJF urge hospitals to get started by trying the following ideas in small steps, then spreading successful models as appropriate.

Create a Rapid Response Team

Choose two to three providers experienced in critical care and form a Rapid Response Team (RRT). Typically, RRTs include an ICU nurse, a respiratory therapist, and/or an intensivist. Make the team available on a specific medical/surgical unit and/or a specific shift, and educate providers on the unit—mainly floor nurses—about the team.

Encourage nurses to view the team as a source of professional support and an improved care model for patients. Empower nurses to call the RRT at the first sign of concern, whether because of a measurable change in a vital sign, or simply a “gut feeling” that the patient’s health may be deteriorating.

A typical “trigger list” to guide nurses on use of the RRT includes specific thresholds concerning the following:

- Acute change in heart rate
- Acute change in oxygen saturation
- Acute change in systolic blood pressure
- Acute change in level of consciousness
- Acute change in respiratory rate
- Staff member is worried about the patient

Experience shows that, by working in collaboration with RRTs, medical/surgical nurses improve in their ability to interpret symptoms and begin interventions to prevent further decline. When the RRT members are not on a call, they typically remain on a medical/surgical unit to help in a crisis, follow up on patients transferred out of the ICU, or follow up with family members as needed.

More information on Rapid Response Teams can be found at www.ihl.org/IHI/Topics/Improvement/MoveYourDot/ImprovementStories/BuildingRapidResponseTeams.htm

Create a Nursing Capacity/Traffic Light System

Give nurses on one unit the responsibility to determine and declare their capacity to care for additional patients through use of a white board, magnetic board, or similar centrally located mechanism. Track data and look for trends, such as the percentage of time nurses’ status is red, yellow, or green; flow of patients into and out of the unit; and satisfaction with the system among nurses both within and outside the unit, as well as among physicians and other providers.

Implement Multidisciplinary Rounds and Establish Daily Goals

If you're not already using them, consider organizing multidisciplinary rounds, in which care teams round on patients together at the bedside. Multidisciplinary rounds can decrease length of stay and improve compliance with core measures, as well as improve staff and patient satisfaction.⁴³ The make-up of these teams varies from hospital to hospital, but typically consists of all or many of the following: physician, nurse manager, staff nurses, pharmacists, social workers, nutritionists, case managers, pastoral services, and discharge planners.

Discussing patients' predicted discharge dates during multidisciplinary rounds helps ensure that all departments are planning together around the anticipated discharge date and time. Teams may also address potential issues around placement or transfer during rounds. Use rounds to set and discuss daily goals with patients. Post the goals in the room as a reminder to patients, family members, and providers. More information on multidisciplinary rounds can be found at www.ihl.org/IHI/Topics/Flow/PatientFlow/Changes/IndividualChanges/InstituteMultidisciplinaryRounds.htm.

Schedule Discharges

Test a process of scheduling discharges. Start with a patient whose discharge seems straightforward and reasonably predictable, and is not complicated by psychosocial, family support, or other issues. At least one day in advance, plan for and schedule the tasks that typically precede discharge, including examination and sign-off by appropriate providers, pharmacy consult if necessary, and patient education. Give the patient a discharge appointment a day in advance so that he or she can arrange for transportation at that time. Consider posting the patient's discharge appointment date and time on their door, perhaps using a magnetized sign or other reusable signage.

Orchestrating movement of patients at the local level is a good way to improve patient flow on a unit. Creating a system-wide centralized planning and scheduling function for discharges enables hospitals to improve system-wide flow of patients by synchronizing other movements to the discharge schedule, including internal transfers of patients, such as from an ICU to a patient care unit.

(More detailed information on system-wide flow is available in the IHI Innovation Series Paper, "Optimizing Patient Flow: Moving Patients Smoothly Through Acute Care Settings," available at www.ihl.org/IHI/Products/WhitePapers/OptimizingPatientFlowMovingPatientsSmoothlyThroughAcuteCareSettings.htm)

Conclusion

Planning and implementing improvement efforts around the four categories identified by IHI and RWJF in *Transforming Care at the Bedside*—reliability, vitality, patient-centeredness, and improving value—is a useful and effective strategy for meeting the aims defined by the Institute of Medicine: to make care safer, more effective, patient-centered, timely, efficient, and equitable, and to better support and sustain those who provide that care. Patients—and their caregivers in the nation's hospitals—should expect nothing less.

References

- ¹ Committee on Quality of Health Care in America, Institute of Medicine. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, D.C.: National Academies Press, 2001.
- ² Institute for Healthcare Improvement, unpublished research
- ³ Committee on the Work Environment for Nurses and Patient Safety, Board on Health Care Services, Institute of Medicine. *Keeping Patients Safe: Transforming the Work Environment of Nurses*. Washington, D.C.: National Academies Press, 2004.
- ⁴ Kelley T. *The Art of Innovation: Lessons in Creativity from IDEO, America's Leading Design Firm*. New York: Doubleday, 2001.
- ⁵ Langley GJ, Nolan KM, Nolan T, Norman CL, Provost LP. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance*. San Francisco: Jossey-Bass Publishers, 1996.
- ⁶ Reason J. *Managing the Risks of Organizational Accidents*. Burlington, VT: Ashgate Publishing Company, 1997. www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11130346
- ⁷ Rates of in-hospital arrests, deaths and intensive care admissions: The effect of a medical emergency team. *Med J Aust*. 2000;173(5):236-240.
- ⁸ Bellomo R, Goldsmith D, Uchino S, et al. A prospective before-and-after trial of a Medical Emergency Team. *Med J Aust*. 2003;179(6):283-7.
- ⁹ Buist MD, Moore GE, Bernard SA, Waxman BP, Anderson JN, Nguyen TV. Effects of a medical emergency team on reduction of incidence of and mortality from unexpected cardiac arrests in hospital: Preliminary Study.[Comment]. *BMJ*. 2002;324(7334):387-90.
- ¹⁰ Bellomo R, et al. op cit.
- ¹¹ Committee on the Work Environment for Nurses and Patient Safety, Board on Health Care Services, Institute of Medicine. *Keeping Patients Safe: Transforming the Work Environment of Nurses*. Washington, D.C.: National Academies Press, 2004.
- ¹² American Hospital Association Commission on Workforce for Hospitals and Health Systems. *In Our Hands: How Hospital Leaders Can Build a Thriving Workforce*. Chicago: American Hospital Association, 2002.
- ¹³ Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook*, 2004-05 Edition, Registered Nurses, on the Internet at www.bls.gov/oco/ocos083.htm (visited September 28, 2004).
- ¹⁴ American Nurses Association; <http://nursingworld.org/tan/sep0ct02/magnet.htm>

- ¹⁵ Kemski A. *Market Forces, Cost Assumptions, and Nurse Supply: Considerations in Determining Appropriate Nurse to Patient Ratios in General Acute Care Hospitals* R-37-01, SEIU Nurse Alliance, December 2002. as cited in *The Costs and Benefits of Safe Staffing Ratios*, Fact Sheet 2004, The Department for Professional Employees, AFL=CIO, www.dpeaflcio.org/policy/factsheets/fs_2004_staffratio.htm#notes, accessed November 27, 2004
- ¹⁶ American Organization of Nurse Executives. *Acute Care Hospital Survey of RN Vacancies and Turnover Rates in 2000*. January 2002.
- ¹⁷ Kosel KC, Olivo T. *The Business Case For Workforce Stability*. Voluntary Hospitals of America, April 2002.
- ¹⁸ Kosnik LK. The new paradigm of crew resource management: Just what is needed to re-engage the stalled collaborative movement? [Comment]. *Jt Comm J Qual Improv*. 2002 May; 28(5):235-241.
- ¹⁹ Sexton JB, Thomas EJ, Helmreich RL. Investigator: Helmreich RL. Error, stress, and teamwork in medicine and aviation: cross sectional surveys. *BMJ*. 2000 Mar, 320(7237):745-749. www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15555963
- ²⁰ The impact of aviation-based teamwork training on the attitudes of health-care professionals. *J Am Coll Surg*. 2004;199(6):843-848.
- ²¹ Risser DT, Rice MM, Salisbury ML, Simon R, Jay GD, Berns SD. The potential for improved teamwork to reduce medical errors in the emergency department. The medteams research consortium. [Comment]. [Review] [25 refs]. *Ann Emerg Med*. 1999 Sep;34(3):373-383. www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15465961
- ²² 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.
- ²³ Sutcliffe KM, Lewton E, Rosenthal MM. Communication failures: an insidious contributor to medical mishaps. *Acad Med*. 2004 Feb;79(2): 186-194. www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12546286
- ²⁴ Error reduction and performance improvement in the emergency department through formal teamwork training: evaluation results of the medteams project. *Health Serv Res*. 2002;37(6):1553-1581.
- ²⁵ Zwarenstein M, Reeves S. Working together but apart: barriers and routes to nurse-physician collaboration. [Comment]. *Jt Comm J Qual Improv*. 2002 May;28(5):242-7.
- ²⁶ Kovner C, Gergen PJ. Nurse staffing levels and adverse events following surgery in U.S. hospitals. *Image: Journal of Nursing Scholarship*. 1998;30(4):315-321.
- ²⁷ Hendrickson G, Doddato T, Kovner C. How do nurses use their time? *Journal of Nursing Administration*. 1990 Mar;20(3):31-37.

- ²⁸ Linden L, English K. Adjusting the cost-quality equation: utilizing work sampling and time study data to redesign clinical practice. *Journal of Nursing Care Quality*. 1994 Apr;8(3):34-42.
- ²⁹ Urden L, Roode J. Work sampling: a decision-making tool for determining resources and work redesign. *Journal of Nursing Administration*. 1997 Sep;27(9):34-41.
- ³⁰ Hendrich A, Lee N. A Time and Motion Study of Health Care Workers: Tribes of Hunters and Gatherers. Unpublished data cited in *Keeping Patients Safe*.
- ³¹ Korst LM, Eusebio-Angeja AC, Chamorro TM, Aydin CE, Gregory KD. Nursing documentation time during implementation of an electronic medical record. *Journal of Nursing Administration*. 2003 Jan;33(1):24-30.
- ³² Pabst M, Scherubel JC, Minnick AF. The impact of computerized documentation on nurses' use of time. *Computers in Nursing*. 1996 Jan-Feb; 14(1):25-30.
- ³³ Smeltzer CH, Hines PA, Beebe H, Keller B. Streamlining documentation: an opportunity to reduce costs and increase nurse clinicians' time with patients. *Journal of Nursing Care Quality*. 1996 Jul;10(4):66-77.
- ³⁴ Womack JP, Jones DT. *Lean Thinking, Banish Waste and Create Wealth in Your Corporation, Revised and Updated*. New York: Free Press, 2003.
- ³⁵ Committee on the Work Environment for Nurses and Patient Safety, Board on Health Care Services, Institute of Medicine. *Keeping Patients Safe: Transforming the Work Environment of Nurses*. Washington, D.C.: National Academies Press, 2004, I.
- ³⁶ Ulrich R, Quan X. Center for Health Systems and Design, College of Architecture, Texas A&M University, Zimring C, Joseph A, Choudhary R, *The Role of the Physical Environment in the Hospital of the 21st Century: A Once-in-a-Lifetime Opportunity*. College of Architecture, Georgia Institute of Technology, September 2004.
- ³⁷ Ibid, p. 6.
- ³⁸ Ibid, p. 12.
- ³⁹ McCarthy M. Healthy Design, *www.thelancet.com*, Vol 364, July 31, 2004.
- ⁴⁰ Hendrich AL, Fay J, Sorrells AK. Effects of acuity-adaptable rooms on flow of patients and delivery of care. *American Journal of Critical Care*. 2004 Jan;13(1):35-45.
- ⁴¹ Ibid.
- ⁴² Ibid.
- ⁴³ Institute for Healthcare Improvement, General Flow discussion group posting.

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