

LEAD

BIDMC Case Study

I. The Case for Transformation

In late 2006, after a few years spent turning around its financial performance in the wake of a complicated merger, Beth Israel Deaconess Medical Center (BIDMC) was ready to focus more squarely on quality improvement. The next three years ushered in a period of bold initiatives and culture change that were made possible by the co-existence of a few key conditions.

1. CEO Paul Levy's leadership style and focus

As a non-medical CEO, Mr. Levy brings a different perspective to the administration of BIDMC. He is always challenging the status quo and asking, even in areas where performance is strong, could it be better. This approach applies to both the employee and patient experience. Constantly challenging everyone around him to be their best, Levy is a strong proponent of transparency and open communication, believing that these principles foster accountability and improvement.

Intent on creating the context and support for transformation, Levy enables others to drive it. In late 2006, having decided that BIDMC needed to focus on becoming the best possible high quality, low cost health care provider, he decided he needed a medical leader with similar commitment to change. Levy found that person in Dr. Mark Zeidel, who had joined BIDMC as Chairman of the Department of Medicine the previous year.

2. Cohesion and commitment among senior administrators and physician leaders

Even before the arrival of Dr. Zeidel, the level of cohesion among the clinical Chiefs as well as between the Chiefs and the senior administrators was unusually high. It is a part of the BIDMC culture that the Chiefs are actively engaged in doing, not simply deciding. Leadership, both clinical and administrative, understands that active, personal involvement is necessary to drive improvement. This attitude permeates all areas. Several, in fact, are headed by Chiefs who are national leaders in quality improvement in their fields. (See Appendix 1)

A structure of joint leadership and cooperation between the clinical side and the administrative side flows down throughout the organization, creating shared decision-making and ownership of operational issues. Physician leadership is actively involved at the Board level. Physicians and senior executives work side by side on the Clinical Operations Committee. Nurse Directors and Physician Directors collaborate at Quality Improvement Directors meetings. And at the local level, unit leaders and dedicated physician leaders work together as well.

3. A shared sense that transparency fosters accountability

In April 2007, Levy suggested to the Chiefs that he post data on infections resulting from the insertion of a central venous line at BIDMC on his personal blog. This was not to show how low the rate was, but rather to admit publicly that, while lower than the national average, the rate was still unacceptable. This approach meshed with Dr. Zeidel's view, confirmed by the Chiefs and the Medical Executive Committee, that any harm to patients is unacceptable.

The reaction from BIDMC staff progressed rapidly from alarm to acceptance to pride in success to

accountability for not doing better. And this was the very result that leadership was seeking.

4. An opportunity and a readiness to accept innovation

Early in 2007, BIDMC was given the opportunity to join several other hospitals in a unique program sponsored by Blue Cross Blue Shield of Massachusetts. Titled LEAD, the program created a new paradigm for partnership between providers and payers in the setting of audacious goals for improvement in quality, education of hospital leaders about the imperative to improve quality and safety, and the creation of more innovative measures of success. BIDMC readily accepted this opportunity, and while the medical center may have already been moving towards transformation, the LEAD program served as a catalyst given that it forced the institution to clarify its goals and its timeline in a community of learning.

II. Key Developments

With the stage thus set by early 2007, BIDMC launched several initiatives that have resulted in significant transformation in several areas. Three of the more bold programs are described in greater detail in the tailed in the **Stories** section below.

1. Raising the quality bar

BIDMC has embarked on a quest for quality that seeks to encompass the entire organization. As a framework for this quest, in 2007 the Board of Directors set two audacious goals for 2012 (see detailed story below):

- ◆ To be among the top 2% of hospitals in the country, based on overall willingness of patients to recommend the hospital to friends or family;
- ◆ To eliminate all preventable harm.

BIDMC has made a very public commitment to these goals. They drive the everyday work of all clinical, administrative and support service employees. Progress toward these goals is posted regularly on both internal and external transparency sites. (Public site: www.bidmc.org/QualityandSafety.aspx)

Goals of this magnitude require a supporting structure, and at BIDMC, this structure is provided, in part, by the Silverman Institute for Health Care Quality and Safety. Founded in 2007, by Mrs. Lois Silverman and her late husband Norman, the Silverman Institute is the coordinating hub for the wide array of BIDMC quality and safety initiatives. The mission of the Institute is to promote excellence in patient care by promoting innovation, education, and research in quality and safety. At the March 2009 Silverman Symposium celebrating BIDMC's on-going efforts to improve quality and safety throughout the medical center every day, over 100 Project Teams participated in the poster session, highlighting projects in the areas of effectiveness, efficiency, employee safety, patient centeredness, patient safety and timeliness.

The Institute draws upon the quality and patient safety resources within BIDMC's Department of Health Care Quality. Additional support is provided by gifts from donors as well as grants. A private foundation, for example, has provided BIDMC with three years of funding to pursue the goal of eliminating preventable harm, in collaboration with the Institute for Healthcare Improvement.

The Silverman Institute is overseen by the Senior Vice President for Health Care Quality at

BIDMC, who serves as a member of the senior hospital leadership team, reporting to the Chief Executive Officer. BIDMC uses a “matrix” model for implementing quality improvement efforts: the Silverman institute plays a facilitative role and provides a central resource for expertise, but implementation only occurs through partnership with local stakeholders. Every academic and clinical administrative department has identified a leader for quality and safety efforts.

2. Participation and engagement

Against the backdrop of these goals, BIDMC has seen tremendous engagement of all stakeholders toward improving quality, safety and satisfaction for patients and employees.

i. Board of Directors

The BIDMC Board of Directors has always been very engaged in the medical center, and have had high expectations for the organization. Encouraging members of the board to focus on quality improvement was an easy task. Beginning with a shadowing exercise in which Board members followed employees and observed their work, the Board has become immersed in quality and safety, and has taken steps to gain a deeper and more direct understanding of issues. Board members, for example, now visit the site of adverse events before discussing them. A follow-up to a Board retreat in 2007 resulted in discussion and agreement among Board Chairs and senior leaders to focus on patient satisfaction and safety. Thus two audacious goals were born. At their meetings, Board members often hear from peers from other institutions about models of governance and board oversight of quality and safety. Once a month, a front-line employee, known internally as the “caller out of the month,” attends the Board meeting to present an issue that he or she called out as a candidate for improvement.

ii. Physician engagement

In the same timeframe, BIDMC has seen broad physician engagement that is well integrated with the rest of organization. Following the leadership model in which physicians and administrators collaborate at all levels, physicians are now more likely to be part of interdisciplinary teams and decision-making. Physicians have been actively involved in a number of initiatives, including reducing infections such as ventilator-associated pneumonia and central line infections, widespread administration of the influenza vaccine, and the creation of a new Patient Advisory Committee. Beginning in February 2008, with the launch of BIDMC SPIRIT (see story below) physicians have spent time observing front-line staff in areas other than their own and working collaboratively across departments to find the root cause of problems and put in place sustainable solutions.

iii. Employee engagement

BIDMC SPIRIT, launched in 2008 to engage all employees in problem-solving, has resulted in the active participation of thousands of employees in improving quality and safety, from unit-specific processes to institution-wide improvement efforts. These efforts are widely documented in the SPIRIT electronic log, which contains close to 1,100 entries, as well as through a series of stories and videos available both internally and to the public. BIDMC leadership has sent a strong and consistent message to staff in all departments to call out opportunities for improvement and to be actively involved in solving them.

In addition to using SPIRIT as a forum for participation, employees have been engaged in open dialogue with each other and senior executives, in such varied forums as town-hall type meetings, on-line suggestion and discussion boards (most recently regarding suggestions for cost-cutting measures

at BIDMC), and CEO Paul Levy's blog.

This employee engagement finds a corollary in the 2009 results of an employee satisfaction survey (on a Likert scale of 1 to 5):

I can report errors or near-errors without fear of punishment – 4.07 (up from 3.97 in 2007)

My work unit provides high-quality care and service – 4.46 (up from 4.34 in 2007)

BIDMC cares about quality improvement – 4.32 (up from 4.15 in 2007)

The person I report to cares about quality improvement – 4.22 (up from 4.14 in 2007)

(See Appendix 2.)

3. Unprecedented transparency

The levels of participation and engagement outlined above are in part due to Levy's emphasis on openness and transparency. The central tenet of Levy's approach recognizes that improvement can only happen when all employees share information about an adverse event, work collaboratively to bring about a solution, and being open about progress or lack of progress. This ideal of openness has trickled down through the institution. Open communication takes place through very direct and informational emails from leadership to all employees; the SPIRIT electronic log; an internal transparency site with regularly updated metrics on quality and safety at BIDMC; an external transparency site with similar data; and the CEO's blog. Such transparency has led to significant media coverage of events and initiatives at BIDMC, often initiated by BIDMC itself.

4. Emphasis on innovation, learning and standardization

Engagement and transparency taking place together lead to an emphasis on innovation and learning. Innovation at BIDMC acknowledges that ideas for sustainable solutions come from all employees, not just leadership. While learning through shared resources—videos, story write-ups, talks and discussions—that document challenges and their solutions enable employees, units and departments to benefit from each other's experiences and, whenever possible, apply them to other areas.

This informal way of spreading knowledge has been supported by specific training programs across BIDMC. A full day orientation associated with BIDMC SPIRIT introduced 600 managers, directors, and physician leaders to techniques relating to how to observe work and look for inefficiencies or waste; how to engage in real time problem solving; and how to conduct root cause analyses. The training was conducted under the premise that solving a problem can and should be used as a "teachable moment," an opportunity to deepen understanding about the underlying causes of problems and address them in a way that makes it unlikely for them to happen again. This approach is now serving as the foundation for a more in-depth, comprehensive training program in process excellence for executives and a select group of internal "facilitators." (See Sustaining the Change.)

Both orientation and training programs borrow heavily from the Lean manufacturing techniques and the Continuous Improvement approach, and emphasize standardization. BIDMC's internal Lean team has worked with external consultants to tailor Lean methods to the BIDMC context, and is deployed regularly to areas of the organization intent on streamlining and improving processes. BIDMC's commitment to standardizing processes wherever possible is evidenced in practices put in place in the past few years, such as:

- ◆ The prevention of ventilator-associated pneumonia (VAP) through the use of a set of interventions known as the VAP "bundle;"
- ◆ The Triggers program, a standardized set of criteria which improves lines of communication to ensure the most vulnerable patients get the care they need quickly;

- ◆ A standardized central venous line insertion and care kit;
- ◆ A detailed “Time Out” protocol to take place prior to surgical interventions.

5. In summary: A balanced approach to improvement

Through participation, engagement, transparency, innovation, standardization and education, BIDMC has made great strides in its quest for quality in an approach that is at once:

Proactive, such as in the decision to bring the rate of central line infections to zero despite it already being below the national average;

Responsive, such as in the response to specific, unexpected events (see the Wrong Side Surgery story below);

On a micro scale, by seeking to make small changes to eliminate waste and work arounds;

On a macro scale, by developing and promoting institution-wide system changes;

Ground up, by engaging all employees;

Top down, by setting out leadership- and governance-driven overarching goals;

And that balances short term demands with long term perspectives.

The stories of specific initiatives and events at BIDMC between 2007 and 2009 illustrate elements of this approach in greater detail.

III. Stories

1. BIDMC’s “Audacious Goals”

i. The context

When Chief of Medicine Dr. Mark Zeidel lobbied for the adoption, in early 2007, of zero central line infections as a goal, he challenged the existing framework within which BIDMC, and other medical centers, measured harm, and pushed leadership and governance toward “theoretical limit” thinking. So what if the rate of infections, at 3 per 1,000 patient days in the ICU in December 2006, was lower than the national average? The fact that any patient was being harmed in this way was unacceptable. Speaking of harm in terms of raw numbers of patients, rather than percentages, reduces the risk of complacency and serves as a constant reminder of the immediacy of the issue.

A few months later, in October 2007, the Patient Care Quality and Assessment Committee and the Boards of Directors for BIDMC and BID-Needham met in an educational and planning retreat focused on quality and safety to decide on their priorities for both hospitals. The retreat included employee shadowing, panel discussions with three patients with a range of experiences, didactic sessions on the role of governance in quality and safety, and breakout sessions on institutional goal-setting and how to present quality and safety at Board meetings. At a follow-up to the retreat, discussion among Board Chairs, PCAC Chairs and senior leaders yielded the following, unanimous conclusions:

BIDMC should focus on patient satisfaction and safety;
 BIDMC’s goals should be highly ambitious, and specific.

ii. The goals

In January, 2008, BIDMC publicly set forth the following two goals:

Patient Satisfaction: BIDMC will be among the top 2% of hospitals in the country by January 2012, based on overall willingness of patients to recommend the hospital to friends or family. Our institution will create a consistently excellent patient experience. We will measure ourselves based on national benchmarks, and place ourselves in the top 2% of hospitals in the country in terms of patient satisfaction.

Harm elimination: BIDMC will eliminate all preventable harm by January 1, 2012. We will accomplish this by continually monitoring all preventable and non-preventable occurrences of harm, and continuously improving our systems to allow the greatest opportunity to reduce harm.

The adoption of the latter goal begged the question: what is “preventable?” In Board discussions prior to the announcement of the goals, the initial proposal was for the elimination of all harm to patients. However, some Board members pointed out that not all harm is preventable. This discussion inevitably led to some debate on what constitutes “preventable” harm, a conversation that is ongoing in the field, and which itself continues to enrich discussions about patient safety.

The BIDMC initiative to eliminate all types of preventable harm is unique, and has required that the organization develop its own methodology for assessing “harm” and whether that harm was “preventable.” This methodology is distinct and separate from the BIDMC peer review process, which may apply different criteria. For any specific case, it may be impossible to establish with certainty what specific actions could have prevented harm. BIDMC’s philosophy, therefore, is to use a theoretical approach that focuses on the opportunity to prevent future harm, as opposed to determining the cause of a past event.

BIDMC uses the following definition of harm:

Unintended physical injury in association with medical care (including the absence of indicated medical treatment) that requires or prolongs hospitalization and/or results in permanent disability or death.

BIDMC has defined several subcategories of harm, and evaluates events in relation to established criteria for each category to decide whether they qualify as “preventable.”

Overall, BIDMC classifies an injury as preventable *if it allows for the identification of reasonable improvements in care that would help decrease the likelihood of similar events occurring in the future.*

iii. Central line infections: actions, reactions and progress

The effort to eliminate infections acquired from central venous lines was already under way at the time the Board announced these goals, but this initiative, encompassed within the more general harm elimination goal, serves as an illustration of what is taking place every day at BIDMC.

With a clear goal of zero infections, many departments and people worked together to achieve success. The effort involved unprecedented multidisciplinary collaboration between Operations, Health Care Quality, Venous Access, the Pharmacy, Information Systems, Patient Care Services, Media Services, surgeons, medical doctors, anesthesiologists, nurses and residents. Together, they completely redesigned the system by which central lines are inserted, cared for and monitored. Every healthcare-associated bloodstream infection that occurs now goes under analysis and review by department leadership, by the attending physician of record and primary nurse, and by the Central

Line Working Group to determine causes and corrective measures.

The new system emphasizes standardization at all stages:

- Clear guidelines regarding competency for insertion;
- Standardized protocol and documentation;
- A practice change to the pharmacy ordering system;
- An insertion check-list and standardized insertion kits;
- Standardized reporting of rates both internally and externally.

The new system has had dramatic effects. During the first four months of FY 09, a period covering about 7,000 patient days, there was only one central line infection in BIDMC's intensive care units. In early 2006, the hospital's rate of such infections was about 2 per thousand patient days. At that old rate, there would have been 14 infections during the same four-month period.

(See Appendix 3 for more data on harm elimination. Note that it is BIDMC's policy, in most areas, to report numbers rather than rates, both to keep a human face to each case, and because actual counts are more relevant when working toward an absolute goal of zero.)

iv. Patient satisfaction: a more elusive goal

While progress has been steady and significant toward the goal of eliminating patient harm, at least in some categories, achieving greater patient satisfaction has been a more challenging endeavor. This is not, however, for lack of effort. Initiatives launched in the past few years include:

A new communication campaign entitled "Be Informed." This program asks that all caregivers (nurses, hospital staff and physicians) ensure that each patient understands who is caring for them and involves each patient in their plan of care. Additionally, Nurse Managers on all inpatient units have begun daily patient rounds, allowing them to meet patients and families and ensure their care needs are being met.

- ◆ A "Patient Pathways" series, which provides patients with an educational resource detailing what s/he can expect to experience before, during and after surgery. Physicians typically review the pathway with the patient during a pre-operative appointment to help prepare the patient and answer questions that s/he may have.
- ◆ A Patient Advisory Council through which to identify key improvement areas and prioritize specific projects to enhance the patient and family ICU experience.
- ◆ A Patient Liaison Project in the Emergency Department to enhance and improve communication between the patient and the medical providers.
- ◆ A multi-dimensional new program by Housekeeping Services involving more frequent rounding by supervisors, additional training, increased quality assurance checks and new equipment.

(See Appendix 4.)

v. Transparency and reporting

Reporting on progress, both to employees and to the public, is key to holding BIDMC accountable to its goals. After receiving very positive feedback from his posting of central line infection data on his blog in April 2007, BIDMC CEO Paul Levy announced two months later that BIDMC

would be putting itself “under a microscope.” A web site, available to the public, called “The Facts at BIDMC,” provides a wealth of quality and safety data, including:

- ◆ Quarterly updates on central line infection rates and other preventable harm events (such as ventilator-associated pneumonia);
- ◆ Snapshots of how BIDMC rates on certain process metrics
- ◆ Information on how well BIDMC is doing on reducing preventable harm to patients.

Data presented are chosen according to a set of criteria: the data must provide valid measures; there must exist sources of comparison; they must have discriminatory value for patients; and they must result from reliable data collection methods.

The decision to be so transparent with these data has prompted some lively debate, both within BIDMC and in the medical community at large. Many have asked why BIDMC would choose to voluntarily and publicly report the occurrence of harm. The concern is that such openness will simply make the organization “look bad.” The fact is, however, that the best opportunity for actually eliminating harm comes from accountability and shared learning. BIDMC has even taken a further step, reporting not only rates of infections and other harm, but actual numbers. Rates, as noted before, can lead to complacency, whereas knowing how many real people were either endangered or saved from needless harm reminds staff—medical and administrative alike—as well as patients and families of the human face of the issue.

To complement the “Facts” web site, BIDMC launched, in April 2009, an internal transparency site aligned with the Annual Operating Plan and the two audacious goals. The site provides an up to date compilation of data and stories, with links to more detail, relating to:

- ◆ Patient safety and care, including numbers of incidents of harm, safety lessons, updates on safety initiatives and progress toward meeting quality improvement standards in specific clinical areas;
- ◆ Employee safety, including numbers of employee safety incidents, updates on safety improvement efforts, and employee survey results;
- ◆ Process improvement efforts, including specific initiatives and stories and testimonials from employees actively involved in improving the environment of work and care.

2. SPIRIT

i. The context

With ambitious goals in place, BIDMC was set to make significant strides in quality and safety. However, the Board and senior leadership recognized that individual projects alone, even if great in number and scope, would not be enough to reach those goals. The effort to reach them would need to be fully ingrained in the fabric of the organization and in the work of all employees.

Around the same time, over the course of a number of sessions, senior executives, physician leaders and members of governance spent time observing the work of front line clinical staff. The overwhelming impression was that while BIDMC employees are incredibly compassionate, hard working and dedicated to their jobs, they are constantly encountering problems that prohibit them from performing at their best. The conclusion was that if the institution could improve its ability to identify and fix these problems, it could dramatically improve multiple aspects of care, including those pertaining to quality, safety and satisfaction goals.

One example in particular illustrates the value of going to observe the work of front line staff. A shadowing exercise revealed the extent of the inefficiency in the process of collecting, cleaning, storing and re-distributing medication dispensing pumps. A single Materials Handler, having developed, out of necessity, his own system for trying to ensure that nurses always had medication pump when necessary, spent so much time tracing a complicated route throughout the floors of several units that he had to replace his shoes, their soles worn, every three months. This one employee's odyssey led to an institution-wide initiative that has fully analyzed the actual problem of medication pump availability, and put in place an entirely new, and much better, system.

ii. The birth of SPIRIT

Thus BIDMC launched SPIRIT in February, 2008 to combine the powerful opportunity inherent in observing front line work with the desire to encourage widespread problem solving. Standing for "Solutions Promoting Integrity, Respect, Improvement and Teamwork" (the winning employee-created acronym out of dozens of entries), the program's key goals are:

- 1) To identify barriers to care and implement system-wide solutions as close to real time as possible;
- 2) To empower every single person to call out problems, participate in solutions, and be appreciated for his/her contribution.

While SPIRIT was envisioned to be responsive to all types of problems, it was launched with a specific theme: the problem of "hunting and fetching" and other "work-arounds." Over time, the initiative has expanded to encompass the overall themes of quality and safety, and to align closely with the institution's Annual Operating Plan and quality improvement goals.

iii. Initial implementation

In the program's first six months, over 600 managers, directors, and physician leaders received training, supplemented with reference materials, in how to observe work and look for inefficiencies or waste; how to engage in real time problem solving; and how to conduct root cause analyses. The training program was at first run by a consultant group (Value Capture, LLC) and gradually internalized by a cadre of BIDMC trainers. Frequent and direct communication from leadership, in particular from the CEO has encouraged employees at all levels to call out opportunities for improvement and be involved in analysis and problem-solving. Hospital wide communications encourage managers to involve the people who do the work in the search for a solution, but also to push problems up the "help chain" to their own supervisors in the event that they cannot solve them locally. The CEO, COO, Sr. VP for Health Care Quality and others lead by example, frequently following up in person on call-outs.

Building on the notion that transparency helps drive improvement, and in order to capitalize on the possibility of spreading solutions across departments and processes, SPIRIT has since its inception included an electronic "log," visible to all employees and monitored, on a rotating weekly schedule, by senior leaders. In its initial rollout, the SPIRIT program placed an emphasis on employees calling out opportunities for improvement directly to their managers, and then together entering the details into the log. Problem-solving efforts and action plans, along with the solution, were to be documented in the log as well. To date, the log carries more than 1,050 entries. Anecdotal evidence, however, points very strongly to an equal, if not larger number of additional call-outs that do not appear in the log simply because they are considered by employees as part of their everyday, problem-solving

work.

iv. First year results

The first year of the SPIRIT initiative has resulted in the resolution of hundreds of work-arounds. More than that, however, it has empowered front-line staff and provided for many an eye-opening experience and a deeper understanding of what it means to get to the root cause of a problem. (See Appendix 5 for examples.) Certain units or departments in which a manager or supervisor was especially inspired by the SPIRIT training and/or by the experience of solving a problem now challenge accepted inefficiencies or wastes and pro-actively setting out to improve processes in their, and their colleagues' work. The initiative has led to the launch of several major, system-wide improvement initiatives, some of which stemmed from repeated call-outs around a single topic. Many of these are documented in the form of stories disseminated throughout the organization and videos posted for public viewing. SPIRIT has provided the forum, channels and environment for front line staff to influence the choice of priority projects, a process that Marsha Maurer, Vice President of Patient Care termed the "democratization of decision-making" at BIDMC.

Along with the desired effects of engagement, participation and problem-solving, the first year of the SPIRIT initiative did reveal some challenges. Nine months into the program, over a dozen senior executives met for a "mid-course evaluation" to discuss how to address the following:

- ◆ The electronic log presented certain limitations. The balance between providing enough guidance on how to use it effectively yet making the interface simple enough to encourage widespread use was difficult to achieve. In addition, a small but nonetheless significant number of employees used it as a complaint board rather than a place to post constructive suggestions regarding opportunities for improvement. Others used the threat of a posting as a way to spur their managers to address their concerns. And many chose not to use the log at all, or used it only partially, viewing the documentation of their problem-solving efforts as a drain on their busy schedules, if not an entirely futile exercise.
- ◆ There was some confusion among employees as to what constituted a "SPIRIT problem." SPIRIT was widely viewed among employees as a program, distinct from other programs
- ◆ or initiatives, rather than an overall "way" of approaching opportunities. As a result, some employees felt unsure as to what to call out, what was important enough to warrant attention, etc.
- ◆ Some managers felt unprepared for the amount and depth of analysis and real time problem-solving that seemed to be expected of them. For many, the full-day SPIRIT orientation program opened their eyes to the scope and potential of the SPIRIT approach, but left them feeling overwhelmed rather than empowered. They felt they lacked the necessary tools and training. How could they address SPIRIT issues *and* do their jobs? How should they prioritize?

v. Changes in the second year

Greater integration with the organization's focus on quality and safety: The tremendous potential for improvement demonstrated via the SPIRIT initiative has led to a specific focus on quality and safety. This focus on a specific set of issues or a "theme" is meant to remove the question of what constitutes a "SPIRIT issue." The thematic focus also aligns the initiative with the organization-wide, CEO-led quest for quality as well as the Medical Center's Annual Operating Plan goals, creating a unified program. A joint, internal, SPIRIT/Transparency Web site highlights all improvement efforts directed toward quality and safety (both for patients and employees) at BIDMC.

The site, along with other communications from leadership, presents progress toward specific goals, as well as lessons learned and stories of improvement.

Greater integration with other methods of identifying problems: BIDMC uses several methods of identifying problems, including patient and staff incident reporting systems and an adverse event management system. A few months after the launch of SPIRIT, the Department of Health Care Quality noted that these other systems would benefit greatly from the approach taken with problems called out through SPIRIT—from the scrutiny and focus on reporting to the emphasis on root cause analysis and spread of solutions. BIDMC is now working to better integrate these systems, and standardize the approach to problem solving across problem categories.

Development and deployment of “experts”: In order to build on the momentum of SPIRIT and to increase the capacity for problem solving and improvement initiatives throughout the institution, BIDMC has committed to providing more in-depth training in continuous improvement to executives and select groups of “facilitators” who will help disseminate these concepts throughout the organization. Run by the Greater Boston Manufacturing Partnership with materials customized for BIDMC, the first 8-week session for executives and 10-week session for facilitators began in April, 2009.

An emphasis on recognition: Since the Fall of 2008, the BIDMC Board of Directors recognizes a “caller out of the month” at its meetings. The nominee, who is recognized for having stepped forward and called out an important problem, attends the Board meeting and briefly presents the call-out he/she made. The first “caller out of the month,” Gloria Martinez, a transporter, began with the following statement: “Thank you. I am here representing all my co-workers who believe that the way we take care of patients is how we’d like to take care of our families.” She went on to describe a problem: with the delivery of specimens from the GI department to the pathology lab. In the first forty five seconds that she spoke, she captured the entire value system of BIDMC. Since then, the Board hears from one employee per month in a similar fashion.

All the above measures and efforts are geared toward creating and standardizing an approach that can become the way process improvement takes place at BIDMC. The hope is for all employees to understand that they have two jobs: one is their everyday work; the other is helping improve the system to make their everyday work better.

3. A Wrong Side Surgery

i. The call-out that did not take place

One critique of the early rollout of SPIRIT was that there was no prioritization scheme for problems as they arose. The response was that one never knows what seemingly small problem might be indicative of a larger process failure, and therefore problems should be tackled as they arise. Nowhere is this better illustrated than in the case of the gentian violet markers and the wrong side surgery.

Consider the following call-out which did not take place but which, had it been brought to a manager’s attention and followed-up on, might have avoided a wrong-side surgery: “The gentian violet markers used to mark a patient having a procedure are not always in the right place. I have to spend time hunting and fetching for the right marker.”

If such a call-out were subjected to a prioritization scheme, it might well find itself down the list, after call-outs with a more obvious and immediate connection to possible patient or employee harm. However, the inability to find the proper type of marker played a role in a significant adverse event.

Many other circumstances combined to bring about the event, but had a call-out regarding the markers happened, it might well have prevented this mistake from occurring at all.

ii. The adverse event

In July 2008, a procedure was performed on the wrong leg of a patient, even though the correct leg had been properly marked. The patient, who has since recovered from the non life-threatening injury, noticed the error after the procedure was completed.

How did this happen? The site was marked, although not with indelible gentian violet marker. Because it was not uncommon to have difficulty finding indelible markers, and therefore to use markers whose ink could easily wash away, no one noticed that the wrong side, i.e. the unmarked one, was being prepared. The lack of a mark did not raise a flag. In addition the surgeon was distracted with how best to approach the case, and was mentally reviewing the steps of the procedure. A nurse had left the OR to fetch something, and assumed, on return, that a Time Out—the last minute check when the team confirms the patient, the procedure and the side—had taken place, when in fact it had not.

iii. The immediate response

In the words of CEO Paul Levy: “The strength of an organization is measured not by counting the number of successes, but by its response to failure.”

Immediately after the procedure, the surgeon notified the CEO and the Chief of Service. The surgeon and others offered a full apology to the patient, explaining the nature of the error, which was followed by an apology by the CEO. The same day, several Chiefs, the patient safety division, the Health Care Quality department and all staff present at the time of the procedure met to review and analyze what had happened, while the event was still fresh in their memories.

When all the service Chiefs met to review the case, they unanimously agreed that the case was serious enough to warrant an email to all employees at BIDMC. Three days after the event, the CEO and the Senior Vice President of Health Care Quality issued that email, outlining in a blame-free manner the event, the steps taken in the investigation, the plans for corrective action, and some of the lessons to be learned. The same email was provided to the Boston Globe, which carried the story, and two days later, the CEO posted the text of the email, and some of his additional thoughts, on his blog. (runningahospital.blogspot.com)

The Massachusetts Department of Public Health conducted a full investigation of the event. The investigator concluded that BIDMC acted appropriately in reporting the event, discussing the error with the patient, and apologizing, and that BIDMC had initiated a corrective action plan that places ultimate responsibility for calling a “Time Out” prior to surgery directly on the surgeon who will make the first incision. But the message that was repeatedly emphasized and illustrated in the open communication from BIDMC leadership, both clinical and administrative, was that the responsibility for ensuring that all safety protocols are being followed is one that is shared by all employees.

iv. Corrective action

While employees and the public were being notified of the event and the immediate response, a

multi-disciplinary group put together a rigorous and sustainable corrective action plan that involved the redesign of clinical procedures, buy-in from hundreds of relevant staff people, and an audit system that monitors the effectiveness of the new approach and leaves open the possibility for ongoing improvement. A Culture of Safety Operational Task Force was established in August 2008, one month after the wrong side surgery, and charged with the following mission:

To implement and embed the Culture of Safety at the point of care in Perioperative Services, with an emphasis on teamwork and enhanced communications.

Co-chaired by a nurse, a surgeon, and an anesthesiologist, and engaging almost two dozen other people from a variety of disciplines and positions in the hospital, this task force adopted the following principles of patient safety:

- ◆ Building in redundancies and cross checks
- ◆ Standardization
- ◆ Simplification
- ◆ Forcing functions
- ◆ Empowering the grassroots to lead change

One major result of this initiative was a more standardized Time Out process. Prior to this event, elements of the Time Out protocol were included in the Time Out by policy, but the sequencing was not standardized. A new checklist and script went into use in November 2008 for all surgical procedures at BIDMC. The script is mirrored in the Perioperative Information Monitoring System (PIMS) and documentation occurs in real-time. An engineering control was placed into the PIMS system which requires that Time Out documentation is completed before an incision can be made. No blades, needles, specula or bronchoscopes can be within reach of the surgeon until the full Time Out is completed. Training films were created by the task force and presented at the November Safety Grand Rounds (combined meeting of Surgeons, Anesthesiologists and Periop staff). These videos are also used in orienting staff.

Weekly audits of at least 25 cases were done by "secret shoppers" for compliance to scripted Time Out. Beginning April 1, 2009 audits were transitioned to a monthly schedule. To date, all audits show a 100% compliance rate. Interestingly, recorded data from the period prior to the wrong side surgery also showed perfect compliance; in fact, even in this adverse event, the record shows that the Time Out was done. However, at the time, there were no anonymous observers. Rather, recording the completion of the Time Out took place after the fact, and could easily fall prey to mindless box checking.

v. Learning beyond the event

The open dissemination of information regarding the event, corrective actions, lessons learned and issues debated created a shared learning opportunity. Employees at BIDMC have been kept apprised of the aftermath of the event and progress with corrective measures, and have had opportunities to share their thoughts and suggestions. Beyond the confines of BIDMC, the event, and its handling have fed ongoing discussions in the medical community on responsibility, blame, punishment and protocols. A professor at Dartmouth University has even developed a case study based on the event for teaching purposes.

IV. Sustaining the Change

As the above stories illustrate, BIDMC has made great strides in its quest for quality and for creating a culture of safety and responsibility. There remains, however, much work to be done, especially to provide staff with the training and support necessary to participate fully in process improvement, and to reach the audacious goals for 2012 in the areas of preventable harm and patient satisfaction. In addition to ongoing initiatives, two new programs in particular are in place to address these gaps.

1. Training in Process Excellence

It is not enough to encourage all employees to be actively involved in and take accountability for process and quality improvement and problem solving at BIDMC. Encouragement needs to be accompanied by training, support and resources without which staff becomes frustrated and overwhelmed by new responsibilities.

To this end, BIDMC has engaged the Greater Boston Manufacturing Partnership (GBMP) to run a training program in process excellence, with customized materials. The program is designed to build the trainees' base of process improvement capabilities, and prepare BIDMC for the dissemination of these capabilities throughout the organization. Integrated with the Lean techniques modeled on Toyota's process improvement approach, this training takes executives and several cadres of "facilitators" (selected from the pool of directors, supervisors and managers) through a multi-week program combining the following elements:

- ◆ Classroom work: 48 hours over eight weeks for executives, and 60 hours over ten weeks for medical and administrative directors. The classroom work uses GBMP learning material, supplemented with a curriculum more aligned with healthcare, and drawing from the extensive background of BIDMC's own Lean training expert.
- ◆ Tacit learning on the floor: Every week, each training group does a "Gemba walk", i.e. goes to observe work at the front lines. The site of the "Gemba walk" changes, depending on the goal of the session. Trainees must actively engage with the staffers they are observing to enhance learning. Some examples of activities include:
 - A scavenger hunt for visuals used in the workplace;
 - Understanding workflow patterns;
 - Focusing on leadership providing feedback in a truly engaged fashion.
- ◆ Homework: 2-4 hours per week, during which trainees are expected to "go to Gemba" in their own division with a specific question relating to that week's training session.

As the BIDMC Chief of Medicine points out, "that more attention is paid to the process of putting together a car than to the process of caring for a human being is a problem." The training program at BIDMC is designed to address, and correct, this problem.

2. Innovation and research

BIDMC has received funding from both private foundations and governmental sources to pursue its ambitious quality agenda, including efforts to collaborate with the Institute for Healthcare Improvement. The goals for this initiative are to develop and implement a consistent internal mechanism to report and capture all episodes of harm, to enable evaluation and analysis of contributory factors, and to assess opportunities for prevention. Communication and learning are also key goals, and thus the initiative will include the creation of a mechanism for dissemination of information about harm events and the associated learning, structured in such a way that findings can be publicized to the clinical and academic communities.

BIDMC has engaged a panel of external experts to provide feedback and guidance, and to share learnings, throughout the three years. The panel's first site visit took place in March, 2009, during which panel members were exposed to the process and the people involved in the flow of case reporting and review, and helped assess the BIDMC systems for detection, reporting, analysis, response and corrective action planning around harm and near-harm events.

V. Appendices

- 1 BIDMC Selected Chiefs' Background in Quality Improvement
- 2 Employee Satisfaction Survey Results
- 3 Eliminating Preventable Harm
- 4 Patient Satisfaction Survey Results
- 5 SPIRIT Stories

Appendix 1: BIDMC Selected Chiefs' Background in Quality Improvement

Dr. Mark Zeidel, Chief of Medicine

In Pittsburgh and at BIDMC, Dr. Zeidel has advanced quality improvement in all areas of patient care. He has helped create a "culture of quality" in two leading academic departments of medicine. At BIDMC this has meant near elimination of central line infections and ventilator associated pneumonia, the implementation of a unique approach to responding to patients with physiologic instability (the triggers program), divisional dashboards to assure quality in every area of medicine, the development of novel and nationally recognized educational programs inequality improvement, and the nurturing of several faculty members towards academic careers in quality improvement. Working closely with hospital administration, Dr. Zeidel has also improved access to medical clinics, assuring through a unique mystery shopper program that every call for an appointment is answered by a human being who provides prompt, effective and compassionate service, and, most importantly, insuring that patients are offered appointments within 3 – 4 days of the call.

Dr. Jonathan Kruskal, Chief of Radiology

Dr. Kruskal developed an effective and innovative QA Mechanism for Radiologists which has been integrated into BIDMC's academic mission of clinical practice, research and teaching. As the Radiology QA Director, Dr. Kruskal developed an online QA Reporting System, established a Quality Management Team, and serves as Associate Editor for the Quality Assurance section of RadioGraphics, a forum to address QA issues worldwide. He has also established a month long QA elective for radiology residents.

Dr. DeWayne Pursley, Chief of Obstetrics and Gynecology

Dr. Pursley focuses on Quality Improvement in the NICU. Dr. Pursley has served on Obstetrics and Pediatric QA Committees at BIDMC since 1991, and in similar positions at Boston Children's Hospital before that. From 2000 to 2007, Dr. Pursley also served on the Perinatal Advisory

Committee (Division of Health Care Quality). He is a part of an expert panel on patient safety in obstetrics (Betsy Lehman Center for Patient Safety and Medical Error Reduction), reviewing the existing state of the art in obstetric quality and safety, making recommendations to improve patient care quality and safety, and identifying areas for further research and collaboration.

Appendix 2: Employee Satisfaction
(Subset of results from 2009 Survey)

Workforce Commitment Item	2009 Perf. Score	% Unf.	Diff. from Nat'l Acad HC Avg. 2008	Diff. from 2007
6. I would recommend BIDMC to family and friends who need care.	4.36	3%	+.21	+.09
17. I would recommend BIDMC as a good place to work.	4.20	4%	+.19	+.14
24. I would like to be working at BIDMC three years from now.	4.23	6%	+.09	+.22
41. I would stay at BIDMC if offered a similar job elsewhere for slightly higher pay.	3.67	17%	+.10	+.17
45. I am proud to tell people I work for BIDMC.	4.34	2%	+.06	+.04
55. Overall, I am a satisfied employee.	4.08	7%	+.18	+.18

Item	Domain	2009 Perf. Score	% Unf.	Diff from Nat'l Acad. HC Avg 2008	Diff from 2007
31. BIDMC treats employees with respect.	ORG	4.13	4%	+.36	+.22
8. BIDMC cares about the patients and families it serves.	ORG	4.42	1%	+.35	+.11
53. BIDMC cares about quality improvement.	ORG	4.32	2%	+.34	+.17
21. I have confidence in senior leadership.	ORG	4.02	6%	+.31	+.12
48. My work unit is adequately staffed.	ORG	3.62	21%	+.30	+.32

3. Beth Israel Deaconess Medical Center supports me in balancing my work life and personal life.	ORG	4.02	7%	+ .30	+ .17
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Appendix 3: Eliminating Preventable Harm

BIDMC Preventable Harm Dashboard

	2007	2008	Comments
Infections (Central line, VAP)	160	48	Reliable Comparison
Infection (Surgical Site)	(46)	46	Refined definition/improved capture. Assume same number in 2007 as found in 2008
Falls	7	9	Reliable Comparison
Skin Injury	1	4	Same definition/improved capture
Medication	6	8	Reliable Comparison
Other	(45)	45	Refined definition/improved capture. Assume same number in 2007 as found in 2008
Total	265	160	

Progress toward eliminating preventable harm at BIDMC

