FIRST

Do No Harm

In this Issue:
The Four Habit Series

Beth Israel Deaconess Medical Center and Winchester Hospital - Eliminating Preventable Harm

Quality and Patient Safety Division, Massachusetts Board of Registration in Medicine

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SPECIAL SERIES

SHARING THE FOUR HABITS OF HIGH VALUE HEALTH CARE ORGANIZATIONS

An article in the December 2011 publication of the New England Journal of Medicine highlighted the four habits of high-value health care organizations, which include: specification and planning; infrastructure design; measurement and oversight and self-study. Bohmer, Richard M.J. "The Four Habits of High-Value Health Care Organizations." *New England Journal of Medicine* 365, no. 22 (December 1, 2011): 2045-2047. *Organizations that have developed these habits seek to learn from their own care and outcomes, looking for better ways to treat their patients. The author notes - experience suggests that these habits may be portable. In this light, the Quality and Patient Safety Division (QPSD) asked health care facilities to submit articles demonstrating their experience with the habits of a high-value organization. In the second publication of this series, the QPSD is pleased to share the following article submitted by Beth Israel Deaconess Medical Center and Winchester Hospital.*

Preventing Patient Harm: A Tale of Two Hospitals

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Introduction
In 2007, the Board of Directors of Beth Israel Deaconess Medical Center (BIDMC) set the audacious goal of eliminating preventable patient harm by January 1, 2012. Shortly thereafter, Winchester Hospital adopted a similar goal. This journey has been transformative for our organizations, with lessons that have broad applicability for other health care institutions. This boldly stated goal and the subsequent work required all four of the habits of high- value health care organizations, namely:

Specification and Planning;
Infrastructure Design;
Measurement and Oversight; and
Self study.

This paper will describe the *specification* of definitions, the *planning* and *infrastructure design* for the detection sources and the process for review, the *measurements and oversight* for the classification and reporting of harm and preventability, as well as the internal and external communications related to this ongoing work. Several examples of how we used the habit of ongoing *self-study* to implement change efforts related to reducing harm will be reviewed, along with successes and challenges encountered in the process. Finally, the next steps in this continuing quest to eliminate preventable patient harm will be described.

Definitions of Harm and Preventability
The charge to eliminate preventable harm required our institutions to formally define "harm" and "preventable," which until then had been inexact terms. We began with a literature review of potential definitions of harm, and adopted a modified form of the Institute for Healthcare Improvement (IHI) harm definition, adding specification relating to the severity of injury based on the National Coordinating Council for Medication Error Reporting and Prevention (NCC-MERP) scale. The final definition of harm is:
> *any unintended physical injury resulting from or contributed to by medical care (including the absence of indicated medical treatment), that requires or prolongs hospitalization, and/or results in permanent disability or death*.

The definition of preventability was more challenging; at the time that this initiative began there were few established definitions of preventability. Also, discussion within our organizations revealed a clear sentiment that determining "preventability"

should be leveraged to encourage improvement, as opposed to justifying maintenance of the status quo. Thus, the definition of preventability that we adopted has two criteria:

(1) an injury resulted from a failure to provide care to the existing institutional standard; OR (2) a reasonable adaptation to the existing standard can be expected to decrease the risk of future injury by the same mechanism.

An event meeting either criterion is classified as preventable. The implication is that the preventability of harm is assessed based on the aspirations of the organization, as opposed to the current standard of care delivery.

Our subsequent approach to harm reduction then followed a set pattern:

    Establish, through analysis, which events in a category of harm are preventable;
    Prioritize harm prevention initiatives based on greatest opportunity for prevention;
    Establish: *What is the expectation for every patient every time?* Codify this and make it tractable;
    Evaluate events against established expectation, and if expectation was not met-consider the event preventable;
    Address the root cause of preventable cases; and
    Refine institutional standard through quality improvement.

Detection

The specific charge to assess occurrence of harm required both organizations to create a system for identifying harm events that was as unified and as complete as possible. Sources for detection of events include the use of voluntary on-line patient safety reporting systems, departmental mortality and morbidity case reviews, infection control surveillance data, pharmacy data, and routine review of administrative data such as mortality reports and unplanned returns to the operating room. Additionally at BIDMC, since 2008, we have used the IHI Global Trigger tool to provide information about "blind spots" in our ability to detect harm events. Over time, the broad and sustained communication of this institutional goal and the ongoing communication about progress toward the goal resulted in increased direct reporting of events by phone call and e-mails to the patient safety units of each hospital.

Review and Classification

At BIDMC, all reports from the detection systems mentioned above are reviewed by a designated expert (physician, infection control practitioner, or nurse patient safety coordinator) to assess whether "harm" occurred as defined above. If determined there was harm, a root cause analysis is performed by the designated expert, in collaboration with a patient safety coordinator from the department of Health Care Quality.

Harm severity is assigned using the NCC-MERP scale. For the purposes of the BIDMC goal, we are focused on events that result in "F, G, H or I" levels of harm. For each harm event, the assessment and determination of preventability is based on either the written definition of the standard of care (i.e. Ventilator Pneumonia Prevention Bundle or Fall Prevention Policy) or an existing known accepted standard within the area of practice (i.e. intraoperative management of general surgery patient or diagnostic decisions in emergency medicine). For events due to a unique set of circumstances, a decision about preventability (i.e. whether standard of care was met, or could be reasonably adapted) is based on consensus following interdisciplinary review by a committee comprised of physicians, nurses, and patient safety experts. If a new standard is implemented after an event review, the new standard then becomes the one against which future harm events are evaluated. For example, as a result of a fall with serious injury, BIDMC implemented a program of hourly rounding by nursing staff. The determination of preventability for subsequent falls with injury, now includes an assessment and determination of whether or not the new standard hourly rounding was consistently done prior to that patient's fall.

Internal to BIDMC, all of the harm events are presented for review at a twice monthly meeting called the Quality Improvement Directors' meeting. This meeting includes each of the departmental physician Quality Improvement Directors, the nurse Patient Safety Coordinators, the pharmacy Medication Safety Specialist and the Associate Chief Nurses. The meeting is co-chaired by the Sr. Vice President of Health Care Quality and Safety and the Director of Patient Safety. Following review at this meeting, all harm events are also presented for review at a weekly meeting that includes the Department Chairs, Chief Nursing Officer, Chief Operating Officer, Chief Executive Officer, and the President of the Medical Staff. Finally, the harm events are presented for review to the Quality and Safety Subcommittee of the medical center's board of directors.

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Winchester Hospital follows a similar system for reviewing harm events identified through its internal reporting systems. Sources of information on harm events include the hospital's occurrence reporting system; daily screening of indicators such as returns to the OR, mortality, complications and transfers; and infection surveillance. When a potential harm event is identified, the Patient Safety Specialist from the Quality and Patient Safety Department and/or a subject expert is asked to do a preliminary review of the case to determine if the patient was harmed. If it was determined that harm occurred, or could have occurred as a result of a system or process failure, a root cause analysis is conducted. Representatives from nursing, pharmacy, infection prevention, surgery, medicine or others may be involved in the initial review as well as in the subsequent root cause analysis.

At Winchester Hospital, after the initial review and root cause analysis, a determination is made as to whether the case caused serious harm and whether the case was preventable. These determinations of these "Selected Preventable Harm" events typically occur in weekly huddles that include clinical staff, the Chief Nursing Officer, Chief Medical Officer, Director of Quality and Patient Safety, Risk Manager, Peer Review Specialist, Director of Medical Affairs and Manager of Quality. Similar to BIDMC, Winchester uses the NCC-MERP scale to determine the severity of harm.

Tracking and Reporting Aggregate Results

At BIDMC, for purposes of ongoing tracking of performance, the categorized harm counts are shared in a "Preventable Harm Dashboard." (*Figure 1*) In addition to sharing this dashboard at the meetings described above, it is shared on our internal intranet portal and on the external BIDMC web site. Additionally on our internet portal, a daily counter of "days since last serious harm event" is displayed to share the serious harm events more broadly with medical center employees, and in a more timely and transparent manner. For these harm events, there is a description of what happened, what was understood about how it happened and when applicable, what is being done in the future to prevent the harm event from happening again.

Winchester Hospital initially communicated performance through a harm dashboard that displayed trends graphically. However, in 2009, in an effort to raise awareness and improve communication about the Selected Preventable Harm events, a new format was developed to communicate and display harm events to the organization. In the new format,

PCAC SCORECARD

PREVENTABLE HARM

				FY11		FY12		
				Q3	Q4	Q1	Q2	Q3
Favorable Comparison								
Unfavorable Comparison								
	AIM	Target	CHANGE	Q3 11	Q4 11	Q1 12	Q2 12	Q3 12
MEDICAL MANAGEMENT RELATED								
Death Related to Medical Management	?	0		0	1	1	0	0
Disease Progression or End Organ Injury (reversible or permanent) Related to Medical Management	?	0		2	3	0	0	3
Cardiac and/or Respiratory Failure or Arrest Related to Medical Management	?	0		0	0	1	4	0
INFECTION RELATED								
Nosocomial Catheter Associated Bloodstream Infections	?	0		4	2	4	0	2
Nosocomial Surgical Site Infections (SSIs)	?	0		20	11	2	0	1
Nosocomial C. Difficile Infections	?	0		3	8	0	0	0
Ventilator Associated Pneumonia	?	0		2	0	0	3	3
Other Nosocomial Infection	?	0		5	0	1	7	1
CARE RELATED								
Falls Resulting in Injury	?	0		0	1	0	0	1
Soft Tissue Injuries (Includes Pressure Sores)	?	0		0	0	0	0	0
Medication Related Adverse Events	?	0		0	1	0	0	2
Procedure Related Harm/Complication (Non Infectious)-Surgical Services	?	0		4	0	1	0	2
Procedure Related Harm/Complication (Non Infectious)-Non-Surgical Services	?	0		0	0	3	0	1
Obstetrical Harm/Complication (Non Infectious)	?	0		0	0	0	0	0
Neonatal Harm/Complication (Non Infectious)	?	0		0	0	0	0	0
Other	?	0		0	1	0	0	0
TOTAL	?	0		40	28	13	14	16

Figure 1

(Continued from page 3)

the display is simplified and the total number of each of the selected harm events is presented. (*Figure 2*) The preventable harm display is reviewed at management meetings and displayed in public areas of the hospital. In some forums the harm events are personalized, which has resulted in increased staff engagement and focus on improvement.

Winchester Hospital's efforts have resulted in not only a reduction in preventable harm events but a in a reduction in total harm events in the selected areas of harm. (*Figure 3*) Significant improvements were seen in occurrence of falls with injury and ventilator associated pneumonia.

Selected Preventable Harm Events
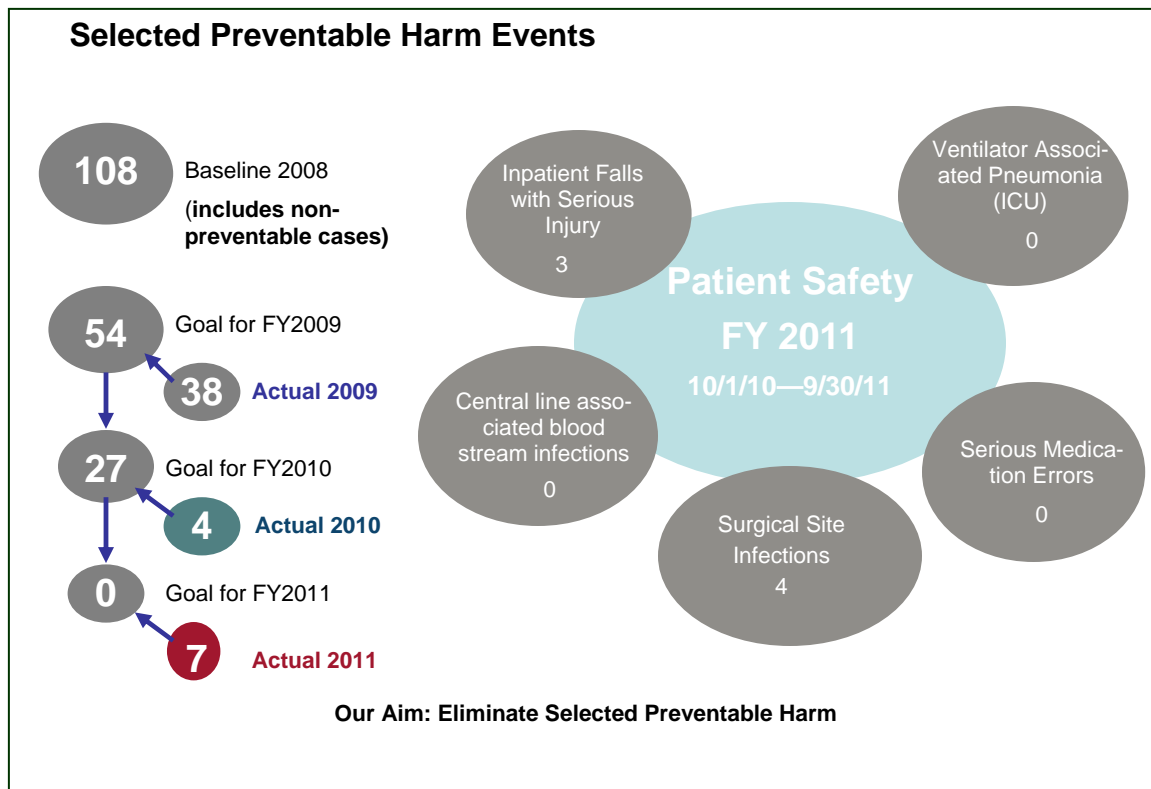
108 Baseline 2008 **(includes non-preventable cases)**

54 Goal for FY2009
38 **Actual 2009**

27 Goal for FY2010
4 **Actual 2010**

0 Goal for FY2011
7 **Actual 2011**

Our Aim: Eliminate Selected Preventable Harm

Inpatient Falls with Serious Injury
3

Ventilator Associated Pneumonia (ICU)
0

Patient Safety FY 2011
10/1/10—9/30/11

Central line associated blood stream infections
0

Serious Medication Errors
0

Surgical Site Infections
4

Figure 2

Total Selected Harm Events – Winchester Hospital
(Includes preventable and non-preventable harm events)

Harm	FY2008	FY2009	FY2010	FY2011
Falls/Injury	36	34	2	5
VAP	6	5	0	1
CLABSI	0	0	0	1
SSI	26	15	21	24
Serious Med Errors	40	15	2	0
Total	108	69	25	31

Figure 3

At BIDMC, all types of harm are reported together, so that analysis and prioritization is based on a full picture of harm. The focus on and quantification of preventable harm has provided a clear road map for BIDMC and has facilitated a new dialogue in the medical center by requiring all areas to consider preventability of harm. More specifically it has helped to expose the need to develop standardized reliable processes of care in a more disciplined manner. An additional look at overall harm was achieved with the use of the IHI Global Trigger tool. A baseline assessment of patients seen at BIDMC in 2006 demonstrated that 22.5% of our patients experienced a harm event. We have seen an overall decrease in this percentage concomitant with our work to decrease preventable harm, such that harm events in 2008 = 16.9%; 2009 = 14.2%, 2010 = 11.5% and 2011 = 13.3%. The Global Trigger tool use has allowed us to identify vulnerabilities that would not be reported in a voluntary reporting system.

Examples of Change Efforts

Ventilator Associated Pneumonia
At BIDMC the IHI Ventilator Bundle was implemented across the intensive care unit (ICU) population. For each case of ventilator associated pneumonia (VAP) the evaluation includes whether we provided 100 % of the bundle components 100 % of the time. A failure to meet 100% for ALL of the components results in a determination that the VAP case was preventable. We have experienced an overall reduction in VAP of 95% and have now begun an early mobility program for ventilated ICU patients.

Winchester Hospital's experience in reducing VAP is similar to BIDMC, with a significant improvement resulting from implementation of the IHI Ventilator Bundle. Winchester Hospital's VAP rate declined from 8.6 (occurrences per 1000 device days) in 2008 to zero in 2010. The continued focus on VAPs, as one of the Selected Preventable Harm events, has contributed to maintenance of the improvement.

Surgical Site Infection
At BIDMC the prevention of deep or organ space surgical site infection (SSI) proved to be more of a challenge. A recent example would be our experience with SSI.

Our approach for deep and organ space SSIs was to consider all of these infections to be preventable until we implemented a consistent bundle of care across our surgical populations. Surgery, Anesthesia, Nursing and Infection Control/Hospital Epidemiology collaborated on a standard general surgical site infection prevention bundle that includes consistent antibiotic prophylaxis, timing of administration, hair removal, preoperative chlorhexidine cleansing and implementation of an alcohol based skin prep. For small bowel/colorectal procedures we use a standard approach toward normothermia, and for cardiac procedures a standard approach for glucose control. In cases of SSI, any case with less than 100% compliance with the standard bundle requirements, we consider to be preventable. As a result, we have seen our preventable SSI cases decrease from 79 in 2010 to 47 in 2011, and we have had a further decrease in 2012.

Rapid Response Process
In 2005, BIDMC implemented an "early detection" rapid response process on the general medical and surgical units, which included standardized criteria for initiating a response to decompensating patients. When a patient "triggers" a response by the physician (intern or resident) to the bedside , a senior nurse (Clinical Nurse Specialist, or Nursing Supervisor) and, when applicable, a respiratory therapist join the staff nurse caring for the patient to assess the patient and to determine the appropriate plan of care. This has become the standard of care for patients on the general medical-surgical units. In the event of a cardiac or respiratory arrest on the unit, the care of the patient is reviewed to determine if this harm event was preventable. We have achieved an 80% reduction ($p <.0001$) in the odds of unexpected death and we have extended the program so that patients/family members can activate a rapid response process.

Conclusion:

This approach has helped to develop a deep understanding of the potential sources of harm for our patients and to align resources within the organization to tackle the improvement processes necessary to further reduce preventable harm. Routinely discussing whether harm events are preventable has been an invaluable exercise as a form of

self- study. The framework forced us to determine what could be done better the next time to prevent a future occurrence of harm. The preventable harm cases, tracked over time, provide a roadmap for ongoing performance improvement activity within our organizations. This framework has helped to force prioritization of performance improvement initiatives aimed at eliminating future harm events. Prior to the implementation of this approach harm events could too often be viewed as "known complications" of the care delivered. It is no longer assumed that they are not preventable. The discussions in the various quality and safety committees have been vastly improved using this approach.

There is a growing appreciation of the need to standardize practice to achieve greater safety for patients. This framework will inform the efforts to identify areas where standardized practices can further reduce the occurrences of patient harm.

> "AS WE SEEK MODELS FOR ACHIEVING HIGH-VALUE HEALTH CARE, WE MUST LOOK PAST THE PARTICULARITIES OF LOCAL STRUCTURES AND TACTICS TO THE HABITS THEY REFLECT."
> Bohmer, Richard M.J. "The Four Habits of High-Value Health Care Organizations." *New England Journal of Medicine* 365, no. 22 (December 1, 2011): 2045-2047.

SHARE YOUR HABITS

The QPSD plans to continue this Series - to publish more organizations' stories about how they have developed or experienced one or all of the "four habits of high value health care organizations." The deadline for submission of an article for our next publication of this Series is August 30, 2013. Submissions should be sent to Tracy Gay, Director of the QPSD, at tracy.gay@state.ma.us. We look forward to receiving your articles and sharing your stories with other Massachusetts health care facilities.

CONTACT THE QPSD

To be added to the QPSD Newsletter and advisory mailing list, update hospital contact information, submit an article, request an SQR form, or obtain additional information, contact QPSD: Jennifer.Sadowski@state.ma.us or (781) 876-8296.

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