



# FIRST

Do No Harm

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

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## A Standardized Risk-Stratified Venous Thromboembolism Prophylaxis Protocol and Mobilization Program

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Postoperative venous thromboembolism (VTE) events, which include deep venous thromboses (DVT) and pulmonary emboli (PE), are a leading cause of morbidity and mortality in the United States. We were concerned that National Surgical Quality Improvement Program (NSQIP) data revealed that our medical center was a high outlier for postoperative VTE complications in General Surgery and Vascular Surgery in 2009. Recognizing an opportunity for improvement, we aimed to implement and determine the efficacy of a standardized VTE prevention program.

We convened a multidisciplinary VTE working group, charged with creating a simple, standardized suite of prevention guidelines. The consensus was to include early and frequent patient mobilization, standardized risk assessment, individualized risk-based prophylaxis, and electronic automation as key components of the program.

We created specific mobilization instructions and included them in order sets used for all General Surgery and Vascular Surgery patients. The nursing orders require that each patient be out of bed at least three times daily, beginning on the day of the operation. As part of our effort, we educated patients and their families about the importance of mobilization by creating brochures, videos, and posters translated into multiple languages.

We combined the postoperative mobilization efforts with a mandatory standardized VTE risk assessment and prophylaxis system based upon the Caprini score.<sup>i</sup> The protocol recognizes that numerous factors confer different degrees of hazards and assigns relative values to those attributes to derive an estimate of VTE likelihood. A numerical score places patients into one of five risk categories.

To ensure utilization of the risk assessment tool, we developed a scoring system that is integrated within the inpatient electronic medical record. The program utilizes a check-box format, so that each risk factor is explicitly listed and may be selected with a simple click. The risk score is automatically calculated based upon the chosen factors. Our electronic order system is customized to require that a Caprini score be determined for every patient at the time of operation and/or admission, via General Surgery and Vascular Surgery standardized order sets. If no Caprini score is calculated by the surgery team, the orders cannot be completed.

The Caprini score dictates the nature and duration of mechanical and pharmacologic VTE prophylaxis, possibly including an extended course of low molecular weight heparin on an outpatient basis. For example, patients whose Caprini scores place them in the highest risk category are advised to receive as long as a 30-day course of chemoprophylaxis, which typically requires outpatient treatment. Electronic reminders about appropriate VTE prophylaxis are automatically generated before and after operations, and again upon discharge.

With implementation of these prevention efforts, the incidence of VTEs dramatically declined. The DVTs decreased by a remarkable 84%, while PEs fell by 55% by the year 2012.<sup>ii</sup> Furthermore, the risk-adjusted (observed/expected ratio or odds ratio) likelihood of a post-operative VTE among General Surgery patients decreased from 3.02 in 2009 to 0.71 in 2013, reflecting a steady decrease from the 10<sup>th</sup> decile to the 1<sup>st</sup> decile. (Figure 1, page 2)

We believe that standardization has been a critical element in reducing the likelihood of a postoperative VTE. This includes standardization of both postoperative mobilization guidelines and mandatory VTE risk assessment and risk-based prophylaxis. Automation of reminders for prophylaxis, even extending beyond discharge, has decreased the likeli-

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hood of human error and improved oversight. Risk-based prophylaxis for VTE provides a distinct benefit to individual patients, and electronic reminders ensure that best-practice guidelines are followed to the greatest extent possible. We are encouraged by the success in reducing these devastating events among our patients, and we are optimistic that postoperative complications may be diminished by adherence to risk-stratified and standardized practices.

<sup>i</sup> Bahl V, Hu HM, Henke PK, et al. A validation study of a retrospective venous thromboembolism risk scoring method. *Ann Surg* 2010;251:344-350.

<sup>ii</sup> Cassidy MR, Rosenkranz P, McAneny D. Reducing postoperative venous thromboembolism complications with a standardized prophylaxis protocol and mobilization program. *J Am Coll Surg* 2014;218:1095-1104.

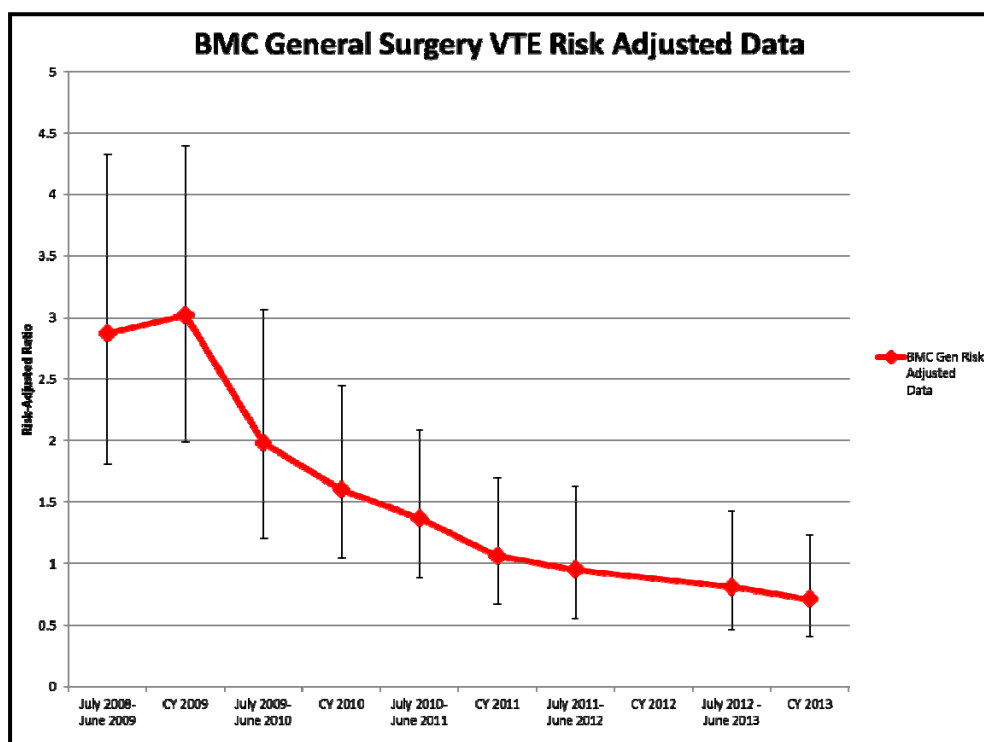


Figure 1

In 2012 and 2013, QPSD received 16 Safety and Quality Review reports describing patient complications associated with VTE. Opportunities for improvement identified from review of these cases included: the need for standardization of anticoagulation management and increased involvement by the Pharmacy service; improved discharge process with engagement of patients in understanding discharge instructions for anticoagulation medications and importance of mobilization; and recognition of the need for medical and nursing staff education and training on current research and “best practice” for VTE prevention.

Related QPSD resource: QPSD Advisory on VTE Risk Assessment and Prevention at <http://mass.gov/eohhs/docs/borim/physicians/pca-notifications/vte-risk-assessment.pdf>.





## Team Improvement and Patient Safety Conferences

### A program designed to reduce readmissions and change culture.

A team of physicians at Hebrew Senior Life, including Dr. Randi Berkowitz and Dr. Robert Schreiber, the previous CMO, (a member of the Board of Medicine's Quality and Patient Safety Committee), developed a program designed to decrease unplanned, avoidable acute hospital transfers. "Team Improvement and Patient Safety" (TIPS) conferences are convened within one to two weeks of an avoidable patient transfer or other unexpected adverse event. Team members include the involved direct care providers, patient and family, quality specialists, and other participants, when indicated, (e.g., pharmacist, EKG technician, providers from outside the institution). Attendees develop action plans and the "lessons learned" from the conferences are disseminated widely to staff both within and outside the organization (ie. the families and patients, specialists involved in the care and other stakeholders needing to know, such as care managers.)

Implementation of this program at Hebrew Senior Life resulted in system-wide improvements, improved scores on the AHRQ patient safety culture surveys, and has likely contributed to a decrease in acute hospital admissions.<sup>i</sup>

Dr. Schreiber believes the TIPS approach could work as easily in other health care facility settings as it does in SNFs. The key to its success is support by the institution's senior leadership and a culture of accountability that is not focused on blame. With the ever increasing need for collaboration across the continuum of care, programs such as TIPS can contribute to better partnerships between acute care hospitals, rehabilitation and long term acute care facilities, SNFs, and outpatient providers.

If you have questions about the TIPS program, please contact Dr. Berkowitz at [rberkowitz@commonwealthcare.org](mailto:rberkowitz@commonwealthcare.org) or Dr. Schreiber at: [rschreiber@hsl.harvard.edu](mailto:rschreiber@hsl.harvard.edu).

<sup>i</sup> Berkowitz RE, Schreiber, R, Paasche-Orlow, MK. Team Improvement and Patient Safety Conferences: Culture Change and Slowing the Door Between Skilled Nursing Facility and the Hospital. J Nurs Care Qual. 2012 Jul-Sep;27(3): 258-65.

### Patient and Family Engagement – "Follow the Roadmap"

QPSD recommends the following resource as a guide to engaging your patients and families.

Are you implementing any of the strategies recommended in this comprehensive document? How about the simple actions? Let us know if you would like to share your strategies and action plans for patient and family engagement in a future QPSD newsletter.

#### A ROADMAP FOR PATIENT + FAMILY ENGAGEMENT IN HEALTHCARE <sup>i</sup>

Practical strategies for advancing engagement in healthcare—starting today.

The roadmap is a call to action for anyone interested in advancing work related to patient and family engagement. It includes:

- A vision for patient and family engagement in healthcare.
- 8 change strategies to drive action towards increased patient and family engagement.
- 5 simple actions that different stakeholder groups can begin today.

The roadmap unifies actions for patient and family engagement in healthcare, building on decades of evidence, knowledge, and experience. It highlights opportunities to improve our healthcare system by creating meaningful partnerships with patients and families. It is a catalyst, intended to spark ideas and action from individuals and organizations interested in advancing the work of patient and family engagement.

<sup>i</sup> Carman KL, Dardess P, Maurer ME, Workman T, Ganachari D, Pathak-Sen E. *A Roadmap for Patient and Family Engagement in Healthcare Practice and Research*. (Prepared by the American Institutes for Research under a grant from the Gordon and Betty Moore Foundation, Dominick Frosch, Project Officer and Fellow; Susan Baade, Program Officer.) Gordon and Betty Moore Foundation: Palo Alto, CA; September 2014. [www.patientfamilyengagement.org](http://www.patientfamilyengagement.org).



## Creating Change in Healthcare through the Patient's Story Anna Jaques Hospital CME Program

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Sandra Levin, RN, BSN, MBA, Director of Quality, Patient Safety Officer

A patient that wanted to discuss a delay in the diagnosis of her illness approached Anna Jaques Hospital. She had presented to our hospital with an unusual illness for a women in her thirties, dissection of her coronary artery. The physicians in the emergency department did not make the diagnosis, but decided that she needed admission to the hospital. Because of worsening in her symptoms she was transferred to a tertiary facility where the diagnosis was made and she underwent emergent treatment. The patient expressed a desire to raise awareness about this diagnosis.

At this point our Director of Quality and Patient Safety and the Chief Medical Officer discussed the possibility of using the patient's experience to engage the medical community in a CME to enhance the recognition of this disease process. The patient agreed that this would be a way to utilize her experience to increase the likelihood of quicker recognition of this emergent event for future patients.

The CME was designed to start with the patient recalling the experience of her presentation to the emergency room, hospitalization, transfer and subsequent treatment. She eloquently expressed her physical and emotional reaction, as well as her subsequent physical limitations. The medical community was given a unique opportunity to experience the care from the patient's perspective. This introduction was followed by a CME presentation by the cardiologist that cared for the patient at the tertiary facility.

The medical professionals that attended this presentation remarked on how powerful the patient's remarks were to them. They felt that it was an introduction that was engaging and helped them place the significance of their daily work in the lives of their patients. The government of Western Australia Department of Health, Health Reform Implementation Task Force, developed a toolkit for utilizing patient stories in healthcare improvement. The task force states that the use of patient stories can be used to identify or verify problems in the health system.

"These insights are an important component in understanding how we can improve different aspects of service delivery and care in our hospitals and in our community-based health care programs." [http://www.health.wa.gov.au/hrit/docs/A\\_toolkit\\_for\\_collecting\\_and\\_using\\_patient\\_stories.pdf](http://www.health.wa.gov.au/hrit/docs/A_toolkit_for_collecting_and_using_patient_stories.pdf)

The 1000 Lives Campaign for patient safety in Wales has also published on the use of patient stories in patient safety. They state that the stories can be utilized in four ways - for learning, to improve care, for education on importance of the patients experience being equal to the treatment plan, to inspire health care professionals in their work and/or to change mindset or draw attention to flaws in the system. <http://www.1000livesplus.wales.nhs.uk/sitesplus/documents/1011/T4I%20%286%29%20Learning%20to%20use%20Patient%20stories%20%28Feb%202011%29%20Web.pdf>

The CME at Anna Jaques Hospital that utilized this patient's story as an introduction provided all four of these ways of creating change in our healthcare system.

### Initiatives to Improve Communication

Patient complaints related to communication issues are a frequent concern at most hospitals. Initiatives recently implemented at a Rehabilitation Hospital to improve communication include: (1) unit-specific brochures with physician names/specialties and pictures; (2) a "What to Expect" addition to the admission packet; (3) a poster in all patient rooms explaining communication and patient centered care; (4) periodic review of call light response times and referral of the results to the Patient Satisfaction Committee for review and recommendations; and (5) Patient and Family Advisory Council's participation in a review of the hospital's discharge process. The hospital also periodically surveys the medical staff to assess their satisfaction with the quality of information they receive during hand-offs.





## SAFETY AND QUALITY REVIEW CORNER

### The Event

#### Projectile in MRI Room

An outpatient was scheduled for an MRI. A CRNA was present to administer/monitor sedation as the patient was claustrophobic. Prior to the start of the procedure, the patient was in the hall outside the MRI room with 2 MRI technicians. The CRNA entered the MRI room with the Anesthesia Service's MRI approved monitor and began to set up the monitor for the procedure. The 2 MRI technicians were with the patient outside the MRI room and were not positioned to observe the door to the MRI room. The CRNA exited the MRI room, picked up the MRI approved pulse oximeter monitor and re-entered the MRI room. The CRNA began to set up the pulse oximeter monitor in the MRI room; as he moved closer to the scanner the battery pack on the pulse oximeter monitor flew through the air into the MRI scanner. No one was in its path and no injuries resulted. The patient was not in the room at the time.

### Internal Review Findings

The CRNA had completed the mandatory MRI safety training for the current year. The CRNA read and initialed the MRI screening sheet, which includes MRI prohibited items. The MRI technician (verbally) assessed the CRNA for any prohibited items prior to the CRNA entering the MRI room (standard procedure for any ancillary staff member). The CRNA brought anesthesia's approved monitor into the room and began setting up; the monitor had the yellow, cautionary sticker attached that warns to keep the device at least 5 feet from the MRI scanner. The CRNA noted that its battery was not completely charged, and left the room to get the MRI department's pulse oximeter monitor, an older model, that was outside the room. That pulse oximeter monitor also had the yellow cautionary sticker, but because it was an older model the battery pack had a separate cautionary yellow sticker warning that the pack needed to remain at least 10 feet from the MRI scanner. The CRNA did not note the separate sticker and was unaware that there was a different safe distance. The MRI technicians did not see the CRNA retrieve the older model pulse oximeter monitor.

Review determined that the MRI technician did not provide proper oversight of the CRNA and the equipment he brought to the room. The MRI technician acknowledged that she should not have left the CRNA alone. It was also agreed that a more formal training should be implemented for MRI Level II personnel to include those non-MRI staff most likely to be involved in this area (CT technicians, pediatric nurses, respiratory therapists and anesthesiology staff). The reviewers also evaluated the ongoing MRI staff education requirements and signage in the area, and recommended that education requirements should be more tightly defined and signage should be enhanced. All agreed on the need for a review of all MRI conditional equipment to ensure a higher level of safety.

### Action Plan

Safety requirements for the MRI zone were enhanced through improved signage and a divider that requires a MRI technician to authorize entry. Extended training of MRI Level II personnel now includes non-MRI staff (as noted above). This training is incorporated into orientation and includes annual competency testing. A list of trained staff is posted. All items brought into the MRI zone must be inspected, deemed MRI safe, and carried into the zone by an MRI technician. There is annual MRI technician/assistant technician review of policies and educational requirements.

*QPSD thanks the leadership team at Harrington Memorial Hospital for sharing their review of this event.*

### Here is one hospital's action plan to prevent medical device related pressure ulcers on the face and ears.

- ◆ Purchase of thinner, softer O<sub>2</sub> delivery devices.
- ◆ A documentation screen in the electronic medical record for patients on O<sub>2</sub> now prompts the nurse to check the skin around the nose and ears.
- ◆ RN skin teams are present on every unit. Members participate in quarterly skin team meetings where they review cases and interventions to ensure best practices have been followed.
- ◆ CME programs for Medical Staff and Nursing Leadership regarding the goals of O<sub>2</sub> therapy and guideline recommendations.
- ◆ Revisions to the skin care protocol, admission order set and nursing policies related to the staging of pressure ulcers, preventative and treatment measures, and documentation. An education plan was developed for nursing staff to support the policy changes.



**QPSD WELCOMES NEW MEMBERS TO THE BOARD'S QUALITY AND PATIENT SAFETY COMMITTEE**

The Quality and Patient Safety (QPS) Committee's work is focused on quality assurance and patient safety through:

- ◆ In-depth reviews of specific health care facilities – allowing members of the QPS Committee to provide feedback and direction to a health care facility presenting before the QPS Committee.
- ◆ Reviews of presentations of specific work health care facilities have done to improve patient safety and quality.
- ◆ Visiting health care facilities with QPS Division staff.
- ◆ Exploration of the QPS Division's data base and how to better utilize it to demonstrate areas of patient safety concern and areas of improvement.
- ◆ Continuous consideration of how the QPS Committee can improve its scope of work.
- ◆ Consideration of proposals for regulatory changes.

New Members:

Board Member, Dr. Robin Richman, serves as Chair of QPS Committee. Dr. Richman, an obstetrician/gynecologist, was appointed to the Board in 2013. She brings valuable experience to the QPS Committee, having served as Chief Medical Officer for Reliant Medical Group, Vice President of Quality and Patient Safety for Atrius Health, and in other leadership roles requiring extensive knowledge of quality measurement and credentialing. A link to Dr. Richman's bio is at <http://www.mass.gov/eohhs/gov/departments/borim/board-members.html>.

Shari Berman is a business professional and two-time cancer survivor. She is a former co-chair of the Dana Farber Adult Patient Family Advisory Council and continues to serve as a member. She effectively led an effort to restructure the Council and strengthen its role within the institution. She also serves on Dana Farber's high level quality committees and is a member of the Institute of Medicine's Patient and Family Advisory Leadership Consultative group. Ms. Berman has been a strong advocate for patients and families, focusing on survivorship and patient centered care. Ms. Berman will serve as the QPS Committee patient representative.

Melissa Sundberg, MD is currently a fellow in Patient Safety and Quality at Children's Hospital Boston. As background, Dr. Sundberg is a graduate of Wayne State University School of Medicine. She completed her Pediatric residency at Yale New Haven Hospital, recently completed an Emergency Medicine fellowship at CHB and is now a member of CHB's Emergency Medicine staff. Dr. Sundberg will serve in a Member at large position, which has been previously filled by a resident or fellow.

Quality and Patient Safety Committee

Robin Richman, MD, Chair (Board Member)  
 Susan Haas, MD, Vice-Chair (OB/GYN)  
 Nicholas Argy, MD, JD (Radiology)  
 Janet Barnes, JD (PCA Coordinator)  
 Shari Berman (Patient Representative)  
 James Bono, MD (Orthopedic Surgeon)  
 Kimberly Eisenstock, MD (Hospitalist)

Diane Hanley RN, MS (Board of Nursing Representative)  
 Mark Hershey, MD (Anesthesiologist)  
 Pardon Kenney, MD (Surgeon, Member at large)  
 Marc Rubin, MD (Surgeon)  
 Arthur Russo, MD, FACP (Chief Medical Officer)  
 Robert Schreiber, MD (Long Term Care Specialist)  
 Melissa Sundberg, MD (Fellow, Member at large)

**Here is how one hospital is assuring safe central line removal.**

- ◆ A comprehensive checklist for central line removal is required to be used by nursing and house staff when removing central lines. The checklist serves as the procedure note.
- ◆ Central line removal is a 2 person procedure.
- ◆ An enhanced central line removal segment is incorporated into didactic sessions for physicians, and a removal question is included on the written test.
- ◆ The Simulation Lab is used for the mandatory central line removal training.



## Examples of events described in Safety and Quality Review (SQR) Reports

Failed vacuum delivery	Patient with chronic kidney disease given IV contrast
Bowel perforation during vaginal hysterectomy	Air embolus during catheter insertion
Severe withdrawal on CIWA protocol	Death following paracentesis
Supratherapeutic INR with GI bleed	Colon perforation during colonoscopy
Postoperative sepsis	Monitored patient found unresponsive
Bowel infarction post AAA repair	Ototoxicity related to antibiotic therapy
Severe bleed post lung biopsy	Failed communication regarding patient code status
Aspiration during anesthesia induction	

### “TIP” for Safety and Quality Review (SQR) Reports:

For reported cases that underwent an internal review to determine whether a diagnosis of sepsis was timely and consistent with best practice, a health care facility’s SQR should include the facts to support its internal review findings and “lessons learned.” QPSD looks for the results and timing of: *Vital Signs* (temperature, pulse, respirations, oxygen saturation, skin assessment, mental status); *Labs* (CBC with differential, note bandemia if present, serum lactate, BUN/creatinine, glucose, blood cultures, diagnostic studies to r/o infection); *Fluid Resuscitation and results* (BP, urine output); *Timing and choice of antibiotics*; *Patient’s medical/surgical history and medications*. The SQR report should also include internal review findings related to use/activation of any tools (such as a checklists or algorithms) or triggers for sepsis protocols, bundles, standard order sets, and rapid response.

### “TIP” for Semi-Annual and Annual Reports :

Clearly defined facility-wide quality goals are critical in establishing priorities for improvement, motivating staff and ensuring resources are appropriately directed. Patient satisfaction is highest in those facilities that have clear goals at every level. Consistent with the recommendations of the Joint Commission, boards of organizations are particularly influential in setting the overall direction and demonstrating the commitment and organizational priority given to quality and safety. Semi-Annual and Annual reports that describe facility-wide goals and include information and data to demonstrate how these goals are being accomplished demonstrate to QPSD that a health care facility’s governing board is making quality care a priority. Please share this work in future Semi-Annual and Annual Reports.

The QPSD recently published the following Advisory related to “New Anticoagulants:” <http://mass.gov/eohhs/docs/borim/physicians/pca-notifications/advisory-20141009.pdf>. Serious patient complications associated with anticoagulation management (e.g., pulmonary embolus and hemorrhage) should undergo vigorous multidisciplinary review and are considered by QPSD to meet SQR reporting requirements (243 CMR 3.08.)

Reminder: Please make sure you are using the current SQR form and basis codes, available in the Hospital and ASC sections at the Board’s QPS link <http://mass.gov/eohhs/gov/departments/borim/quality-patient-safety/>.

### 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](mailto:Jennifer.Sadowski@state.ma.us) or (781) 876-8296.

Send mail to Massachusetts Board of Registration in Medicine, QPS Division, 200 Harvard Mill Square, Suite 330, Wakefield, MA 01880.

*The QPSD Newsletter, FIRST Do No Harm, is a vehicle for sharing quality and patient safety initiatives of Massachusetts healthcare facilities and the work of the Board’s Quality and Patient Safety Division and Committee. Publication of this Newsletter does not constitute an endorsement by the Board of any studies or practices described in the Newsletter and none should be inferred.*