

Partnering for Quality and Patient Safety: A Provider/Payer Collaborative

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THE QUALITY INCENTIVE PAYMENT SYSTEM

Overview

In early 2002, Mercy Health System of Southeastern Pennsylvania and Independence Blue Cross embarked on an ambitious and innovative Hospital Quality Incentive Payment System (HQIPS). This early pay-for-performance collaboration resulted in the creation of a broad and uniform evidence-based program of clinical quality improvement and patient safety efforts within the entire Mercy system and enabled Independence Blue Cross to launch its first ever "Hospital Pay-for-Performance Initiative" with a facility-based provider.

During the first two years of the program, the HQIPS has yielded significant improvements in patient safety processes and outcomes related to critical care, medical and surgical care, and medication safety, and it has also served as a catalyst for a cultural transformation of the newly reorganized Mercy Health System. This success can be attributed to several factors:

- the focus and accountability of the senior leadership
- the coordination and leveraging of system resources
- the hard work and dedication of physicians, nurses, pharmacists, and other clinical caregivers across the entire system

The program continues to expand its scope into the third and fourth years.

This type of payer/provider partnership in the areas of quality and patient safety represents the future of health care performance improvement, as shown by the recent demonstration projects started by the Centers for Medicare & Medicaid Services (CMS) and other payers. Mercy's success demonstrates the power and the potential success of these types of partnerships in improving the health care delivered within hospitals in the U.S.

Historical Background

In January 2002, Mercy Health System was in the midst of a major organizational change. Three Philadelphia area hospitals had recently been acquired by Mercy's parent organization, Catholic Health East. The hospitals were in the process

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of being incorporated into the Mercy system, and Mercy had just closed another underutilized hospital. These changes presented a timely opportunity for Mercy to develop a new identity and new methods of working together and integrating business processes throughout its six hospitals. It was also a time when Independence Blue Cross was negotiating a series of hospital contracts, and its President and Chief Executive Officer (CEO), G. Fred DiBona, Jr., was seeking a way to enhance payments to facility providers based on quality and a framework to improve provider/payer collaboration.

From a perspective of quality and performance enhancement, the newly reorganized system was operating as six separate entities, each with developed plans and tactics for improving performance and with insufficient integration and consistency among them. The Institute of Medicine's series of well-known reports had already been established, calling for more integrated and structured quality efforts directed toward improved patient safety. Mercy thus faced a dual challenge:

- to place a new focus on integrating and improving patient safety processes
- to bring together a newly formed health system

At the same time, Mercy began negotiating a provider contract with Independence Blue Cross, the largest commercial payer in the Philadelphia region. With a well-established primary care physician pay-for-performance program already in place, Independence Blue Cross was interested in promoting the pay-for-performance concept with its hospital providers. Mercy saw this as an opportunity for the new system to be a partner in the design and to participate collectively in an innovative patient-safety program, thereby using quality as a catalyst for cultural and business integration of the newly formed system. Mercy agreed to participate.

Beginning in early 2002, Mercy and Independence Blue Cross began several months of negotiations, resulting in the creation of the HQIPS. A simple premise served as the foundation of the project: the HQIPS would be largely based on well-established quality indicators, validated by recognized third-party quality organizations. These quality indicators would focus on improvements in patient safety with an emphasis on medications and evidence-based medication process improvements.

HQIPS QUALITY INDICATORS

The principal evidence-based items in the HQIPS, the third-party organizations promoting them, and a brief background on each item are described next.

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Rounds of Clinical Pharmacists in the ICU

Society of Critical Care Medicine and American College of Clinical Pharmacy

Lucian Leape, MD, and his colleagues at the Harvard School of Public Health demonstrated the value of active clinical pharmacist participation and intervention in critical-care settings, which decreased the rate of adverse drug events (ADEs) by 66%.¹ On the basis of this study and a subsequent position paper from two prestigious organizations,² the process of active involvement of clinical pharmacists in all Mercy intensive-care units (ICUs) became a major indicator in the HQIPS. The goal was clinical pharmacy involvement, as documented with a tracking sheet of interventions in 100% of ICU patient-days (including night-time admissions and weekend days).

Prophylaxis of Venous Thromboembolism

Agency for Healthcare Research and Quality (AHRQ)

Numerous studies have documented the value of prophylaxis of venous thromboembolism (VTE) in preventing life-threatening deep venous thrombosis and pulmonary embolism for multiple surgical and medical indications.³⁻¹² The AHRQ included appropriate VTE prophylaxis as one of its major recommendations.¹³

The VTE prophylaxis measure (Figure 1) was perhaps the most difficult one to codify into the program, because the literature includes diverse clinical conditions (orthopedics, neurosurgery, trauma, and general surgery as well as illnesses), all of which have their own recommendations for prophylaxis. Nevertheless, Mercy and Independence Blue Cross developed and agreed on standards for patient risk and treatment based on the available evidence of best practices.

Perioperative Antibiotic Prophylaxis

Agency for Healthcare Research and Quality (AHRQ)

The development of infection at a surgical site is a major source of morbidity and mortality in hospitalized patients. The appropriate use of perioperative antibiotics (*Periop Abx*) significantly reduces the risk of postoperative infection. Similar to VTE prophylaxis, the *Periop Abx* indicator has been documented for several surgical procedures in multiple studies and is a major AHRQ patient safety recommendation.¹⁴⁻¹⁶

Rounds of Intensivists in the ICU

Leapfrog Group

Inspired by the Leapfrog Group's drive toward a full-time dedicated intensivist model,¹⁷⁻¹⁹ the intensivist indicator is designed to promote patient management in the ICU by board-certified physicians in critical-care specialties. As designed, this indicator did not require the adoption of the full-time dedicated intensivist model, as advocated by Leapfrog; however, these board-certified physicians must manage or co-manage all patients in the ICU during every day of their ICU stay.

Other Medication Safety Indicators

Adoption of "Free-Flow-Protected" Infusion Pumps

Institute for Safe Medication Practices (ISMP), ECRI

Along with the pharmacist involvement in the ICU effort, the medication safety portion of the HQIPS includes the use of "free-flow-protected" medication infusion pumps and the cre-

ation of a medication-error telephone hotline for patients, families, and hospital caregivers.

Free flow, or *gravity free flow*, refers to the uncontrolled delivery of an infusion to a patient instead of a controlled or metered delivery as intended. The free flow of certain types of drugs, such as narcotics and heart stimulants, poses the potential for serious patient harm and can be fatal. Overinfusion of less potent drugs and intravenous (IV) solutions also poses a serious threat to patients who are susceptible to fluid overload.^{20,21} The Quality Collaborative established the goal of eliminating all infusion pumps that were not free-flow-protected in all Mercy hospitals. The Joint Committee on Accreditation for Healthcare Organizations (JCAHO) included this point as one of its six National Patient Safety Goals in 2003.

Creation of Medication Safety Telephone "Hotlines"

The medication hotline indicator called for (1) initiating a dedicated telephone line at each hospital, whereby patients, families, and hospital caregivers can anonymously report their concerns about medication safety; (2) daily tracking and follow-up on these reports; and (3) ongoing, hospital-wide educational and promotional efforts related to the hotline.

IMPLEMENTATION AND IMPROVEMENT PROCESSES

With the many pressing challenges facing hospitals today, it is clear that significant improvements in clinical quality and patient safety cannot occur in the absence of focus at the highest level. Gavin Kerr, Mercy's CEO, emphasized that the HQIPS provided a unique opportunity to place intense focus on quality and patient safety and to unify and integrate the culture of the changing organization. He positioned the program as one of the top three priorities for the system as a whole and made each CEO accountable for the performance of each hospital.

An entire infrastructure to support and manage high-level performance on the project was created at both system and individual hospital levels. At the system level, a support services steering team was created, consisting of Mercy Health's Chief Medical Officer (CMO), the Vice President of Managed Care, and the Vice President of Quality Management. The committee was charged with the following tasks:

- interfacing with the payer partner
- instructing hospital personnel on the details of the program
- performing data management, analysis, and reporting
- sharing best practices and successes
- providing encouragement, persuasion, and focus to participating clinical personnel in the hospitals

Each hospital created its own HQIPS project team, consisting of the hospital CMO, the Chief Operating Officer (COO), the Chief Nursing Officer (CNO), the Director of Quality, and the Pharmacy Director. Some teams have been chaired by the CEO of the hospital as a way of driving the focus on performance. The committees deliberated on the best solutions to improve each indicator at the hospital and brought in additional caregivers, such as medical staff, nurses, and pharmacists, as

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VTE Prophylactic Measure

General Surgery

General Surgery services requirements for VTE prophylaxis vary, depending upon three criteria; the classification of surgery as major or minor, patient age, and patient risk factors.

Detail for general surgery

Patient age	Surgery Classification*	Risk**	Protocol required***
<40	Major	Mod None	Mod/High Mod
	Minor	Mod None	Mod Mod
40–60	Major	High Mod None	Very High High Mod/High
	Minor	Mod None	Mod Mod
>60	Major	High Mod None	Very High High Mod/High
	Minor	Mod None	Mod Mod

Procedure	Required Prophylaxis for this Procedure
Orthopedic Surgery	
Elective Hip/Knee Replacement	LMWH or warfarin
Hip Fracture Surgery	LMWH or warfarin
Neurosurgery	
All Neurosurgery	IP, LDUH, or LMWH
Trauma	
General Trauma	LMWH with ES or IPC LMWH
Medical	
Ischemic Stroke	LDUH, LMWH, or danaparoid

Dictionary of Protocols

LDUH = Low-dose unfractionated heparin (i.e., SQ heparin)
 LMWH = Low-molecular-weight heparin (e.g., Enoxaparin, Fragmin, etc.)
 ES = Graduated elastic stockings
 IPC = Intermittent pneumatic compression (e.g., pneumatic TEDs)

*Surgery Classification:

Major: Surgery is major if it enters a body cavity (thorax, abdomen, and calvarium) or has the potential for having significant complications; included would be orthopedic procedures and extensive cannulation procedures. (This requires a mutually acceptable CPT database definition.)

Minor: Non-major surgery is classified as minor. Minor procedures include peripheral vessel cannulations and skin incisions.

**Risk Classification:

High Risk Factors

Prior VTE
 Malignancy
 Hypercoagulable State

Moderate Risk Factors

Hx of immobilization/paralysis
 Obesity
 Pregnancy
 Oral contraception use
 Congestive heart failure
 Nephrotic syndrome
 Myeloproliferative disorders
 Gross varicose veins
 Indwelling CVPs
 Inflammatory bowel disease
 System lupus erythematosus

***Protocols required:

Lo	No prophylaxis necessary
Mod	LDUH or LMWH or ES or IPC
Mod/High	High (LDUH or LMWH) should be considered, but Mod (LDUH or LMWH or ES or IPC) is acceptable
High	LDUH or LMWH
Very High	(LDUH or LMWH) and (ES or IPC)

Figure 1 Algorithm for the prophylaxis of venous thromboembolism (VTE). CPT = Current Procedural Terminology; CVP = central venous pressure; Hx = history; Mod = moderate; SQ = subcutaneous; TEDs = thromboembolic disease stockings.

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required for each indicator.

The education of the caregivers throughout each hospital has been primary in the project's success. The hospital CMOs have informed and elicited the support of clinical departmental chairs and the medical staff leaders. Medical executive committees and medical staff meetings have served as venues for informing others about the program. The CMO and members of the hospital's steering committee conducted more intensive one-on-one sessions about each indicator for the key medical staff members (e.g., perioperative antibiotic prophylaxis for the surgeons and the intensivist ICU for the physicians).

Educating the key system medical staff members and receiving their feedback have been critical to the success of the program. Occasionally, physicians provided compelling responses for requiring changes to the program as originally designed. The following examples are presented for one indicator, Periop Abx.

A general surgeon provided literature suggesting that preoperative antibiotics were not necessary for patients undergoing low-risk laparoscopic cholecystectomies, as had been required by the original indicator. Because a subsequent evidence-based review determined that the literature was unclear on this issue, Mercy and Independence Blue Cross mutually agreed to exclude laparoscopic cholecystectomies from the indicator's analysis.

In another case involving the same indicator, the obstetricians explained that antibiotics were not always given to mothers undergoing cesarean section until after delivery. Their feedback resulted in a shift to the appropriate window of antibiotic administration during cesarean births.

The creation and implementation of clinical tools have also been a key strategy for the success of the HQIPS to date. Each hospital designed improvement tools that met their own needs and circumstances. When hospitals achieved success with a tool, other hospitals shared and adopted it as appropriate. Examples of clinical tools that were created to meet the goals of the program included the following:

- *preprinted order sets*: used for VTE prophylaxis and Periop Abx
- *point-of-care signage and reminders*: used for telephone hotlines, VTE prophylaxis, and Periop Abx
- *provider documentation tools*: used for pharmacists in the ICU, Periop Abx, and VTE prophylaxis
- *policy and procedures*: used for free-flow-protected pumps

Although clinical tools and education have been essential to the program's success, nothing has been as valuable as the focused actions and interventions of dedicated caregivers throughout Mercy's institutions.

In the overall management of this project, emphasis has been placed on the designation of a single individual accountable for each indicator at each hospital, usually a care manager, pharmacist, nurse manager, or physician who was responsible for creating the awareness and education, developing the tools and strategies, and relentlessly monitoring the real-time compliance with the desired outcomes. Without the focus and commitment of these dedicated caregivers, success with any

improvement in quality, especially a multifaceted project such as the HQIPS, would not be possible.

DATA COLLECTION, MANAGEMENT, AND REVIEW

Data from each indicator, including a pre-implementation baseline period, were collected from automated sources when appropriate, or they were collected manually when necessary. The data were managed centrally via a Microsoft® Access database.

Interim reports were created on a monthly basis at each hospital and indicator level, and they were distributed widely within the organization. These reports were also discussed at monthly hospital steering committee meetings and at monthly CEO council meetings. The regular reporting at high-level meetings provided a rapid feedback loop on interval performance and drove accountability from the system CEO to hospital CEOs and to hospital project teams.

A set of traveling trophies was awarded at the CEO council honoring monthly top hospital performers. The trophies provided recognition for exceptional hospital performance and created a sense of healthy inter-hospital competition.

RESULTS OF THE QUALITY INDICATORS

Rounds of Clinical Pharmacists in the ICU

The goal of having clinical pharmacists make rounds to see all of the patients in the ICUs every day is an extremely difficult one to achieve. Most Mercy hospitals did not have a culture of decentralized pharmacist activities before HQIPS. Hospital-based clinical pharmacists were, and still are, in increasingly short supply because of growing competition from retail pharmacies and other employment opportunities. Finally, not all of Mercy's ICU pharmacists conducted formal multidisciplinary rounds, making it more difficult for the pharmacists to personally interact with the entire care team.

Despite these barriers, and even though several hospitals began with essentially no on-site interventions by pharmacists, all of Mercy's institutions responded positively to this

Table 1 Categories of Documented Pharmacist Interventions

- Inappropriate drug level testing, drug interactions, and falsely low levels resulting from such conditions as hypoalbuminemia
- Paralysis and sedation, such as inappropriate doses, bolus vs. drip administration, and no sedation ordered
- Anticoagulation problems, changing testing reagents, shifting therapeutic levels, and drug interactions
- Prompt identification of thrombolytic complications, thereby leading to rapid intervention
- Drug dosages and clarifications about the route of drug delivery before administration
- Avoidance of drug allergies during or after prescribing a drug from an inappropriate drug class
- Rational prescribing of expensive therapeutic agents

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challenge, some dramatically so (Figure 2). Four hospitals responded with pharmacist interventions in more than 70% of ICU patient-days, improved or sustained over the first two years of the program.

The measure of including pharmacists in the ICU was based solely on the process of pharmacist intervention in the ICU and was not meant to replicate the Leape trial.¹ However, pharmacists accomplished hundreds of successful interventions in the ICU. For example, some of their efforts related to those shown in Table 1.

The inclusion of pharmacists by the HQIPS in ICU procedures has had a dramatic impact on the level of patient safety in the Mercy Health System, as shown earlier, and has improved the multidisciplinary interaction within the ICUs as well.

Despite the challenges involved, all of the system's hospitals plan to increase the presence of clinical pharmacists in their ICUs for the third and fourth years of the program.

Prophylaxis of Venous Thromboembolism

Preventing VTE was difficult because of the clinical complexity of this indicator and the broad scope of its impact. Numerous tactics were necessary, including education, reminders, real-time intervention, and re-education by many clinical personnel in all hospitals.

Despite the problems, however, most Mercy hospitals were able to increase the rate of appropriate VTE prophylaxis into the mid-80% range and above (Figure 3). Institutions that were not able to obtain rates above the 85% range typically had one clinical situation that lowered their scores, for example, ischemic stroke or varying philosophies regarding the use of clopidogrel (Plavix®, Bristol-Myers Squibb/Sanofi), acetylsalicylic acid, or VTE prophylactic agents. These isolated controversies provided a reminder that the physician is the final arbiter of the patient's treatment plan and that changing physician behavior can be very challenging.

Perioperative Antibiotic Prophylaxis

Instituting the Periop Abx measure proved to be more easily accomplished, probably because it affected a smaller cadre of clinical providers (surgeons, anesthesiologists, and perioperative nurses), and a relatively more confined venue—the operating room (OR) complex of each hospital. Furthermore, low baseline levels resulted in part from a lack of appropriate documentation on the OR record.

The Periop Abx interventions showed substantial improvement at all hospitals (Figure 4). This dramatic progress was the result of a relentless focus by the clinical champion at each hospital, usually an OR nurse or anesthesiologist, to put in place a structure and process to ensure that the appropriate drugs were given within the appropriate time frame relative to the

procedure and that their administration was correctly documented in the OR record.

Rounds of Intensivists in the ICU

At the baseline evaluation, specialty physicians were managing patients in the ICU at rates between 70% and 90%. By the end of the second year, three hospitals had achieved improved intensivist management rates compared with baseline (Figure 5).

In response to this indicator, one hospital even adopted the more aggressive full-time, dedicated intensivist model, and several other hospitals are currently evaluating a move to this model.

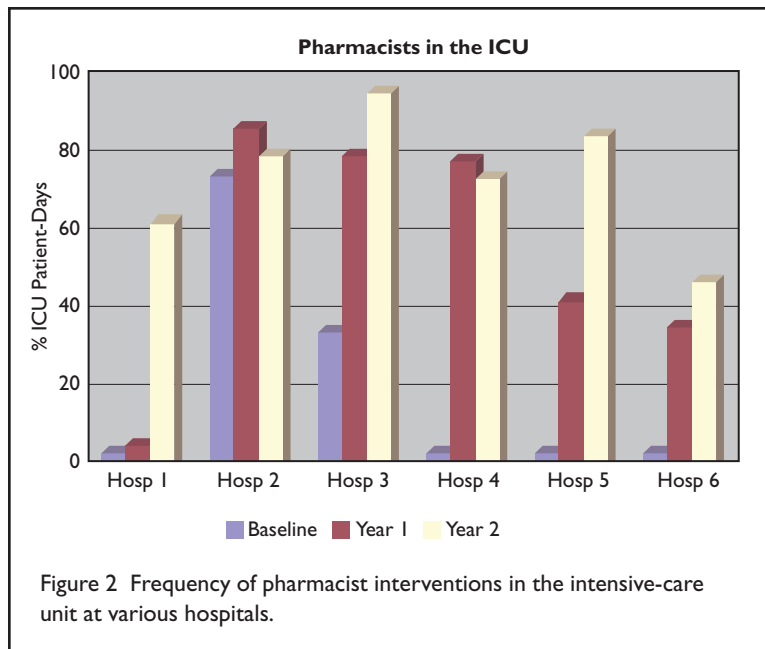


Figure 2 Frequency of pharmacist interventions in the intensive-care unit at various hospitals.

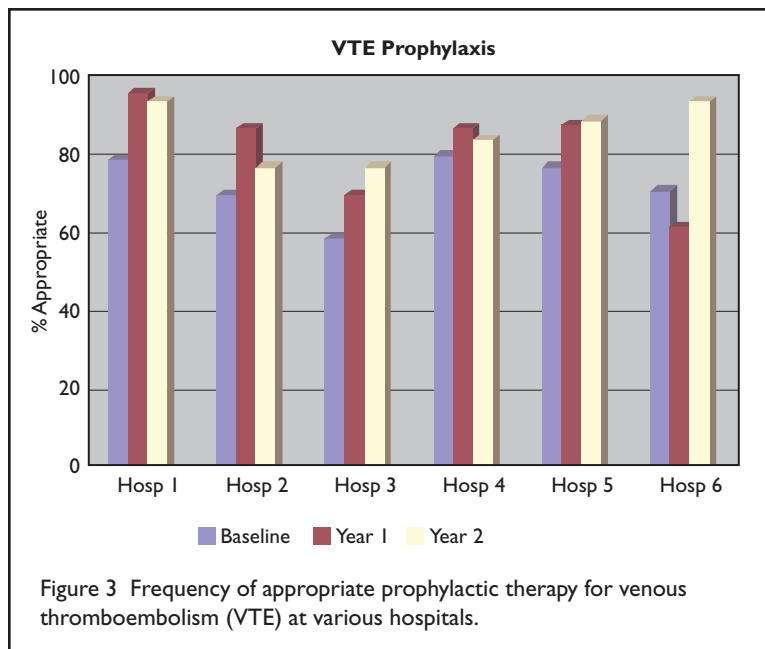


Figure 3 Frequency of appropriate prophylactic therapy for venous thromboembolism (VTE) at various hospitals.

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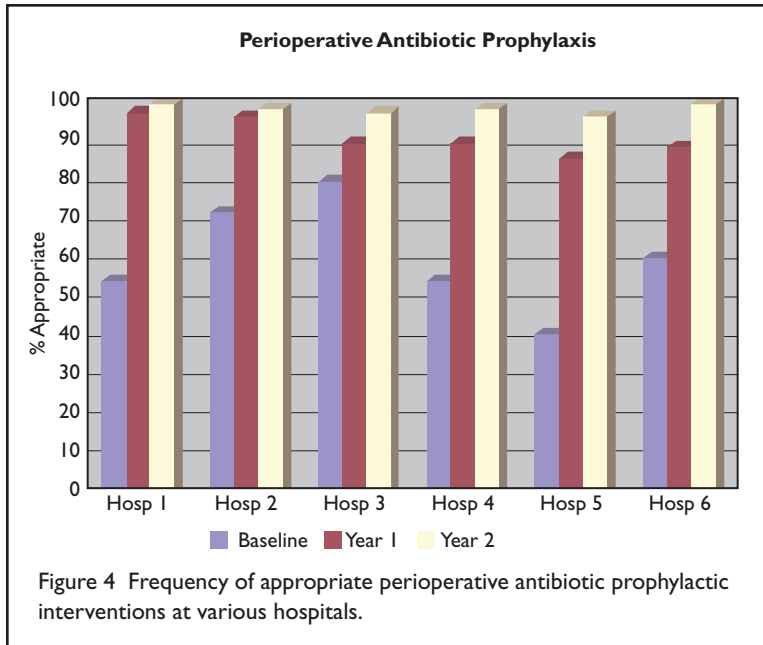


Figure 4 Frequency of appropriate perioperative antibiotic prophylactic interventions at various hospitals.

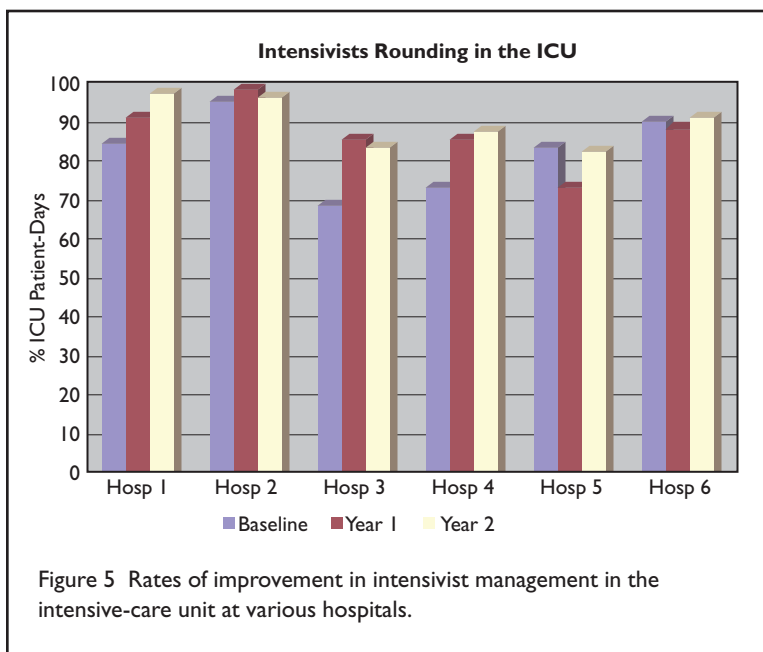


Figure 5 Rates of improvement in intensivist management in the intensive-care unit at various hospitals.

Other Medication Safety Indicators

Adoption of "Free-Flow-Protected" Infusion Pumps

As a result of the project, a system-wide policy was created to remove all infusion pumps that were not protected by free flow. New pumps were acquired, or current pumps were retrofitted, as outlined by ECRI,^{20,21} an organization that is well known for its objective evaluation of the safety of medical equipment.

Creation of Medication Safety Telephone Hotlines

Medication safety hotlines were created in each hospital, and promotional materials, such as posters, stickers on all hospital phones, and announcements in hospital publications, were

made available. All of the hospitals have developed a system for tracking all calls and for rapidly resolving any problems and disseminating the information to the appropriate departments. Educational sessions on the medication safety and use of the hotline were conducted for all hospital personnel, and they are now included in all employee orientation meetings.

FUTURE DIRECTIONS

For the current third year of the HQIPS, a new indicator has been added: the use of ICU *safety checklists* throughout the Mercy system. The benefits of these checklists have been studied at academic and community hospital settings and have resulted in significant decreases in length of stay and mortality in the ICU.²²

To care for patients in the critical-care setting, a large team of clinical caregivers must coordinate to manage complex treatments and procedures. Misunderstandings and breakdowns in communication are all too common in ICUs and can lead to errors that may jeopardize patient safety. The concept of the ICU safety checklist is similar to that of a pilot's pre-flight checklist, in which all complex systems and safety procedures are systematically checked and communicated among the flight team. A similar process takes place in the ICU as all members of the clinical team discuss, document, and implement the detailed plan of care.

Mercy and Independence Blue Cross are collaborating on the rollout of this project. Large-scale education of ICU clinical teams throughout the system has been ongoing and culminated in a system-wide symposium led by Eric Dobkin, MD, in February 2004. Currently the Medical Director of the Surgical ICU at Hartford Hospital in Connecticut, Dr. Dobkin noted a 25% reduction in mortality in the ICU that was related to the use of the checklists.²³

The clinical teams in each ICU in the Mercy Health System (physicians, nurses, pharmacists, therapists) have been charged with designing a version of an ICU checklist that best meets the needs and goals of that particular ICU. The checklist program began on April 1, 2004.

list program began on April 1, 2004.

ACHIEVEMENTS

The Hospital Quality Incentive Payment System (HQIPS) within Mercy Health System, in partnership with Independence Blue Cross, has resulted in a transformation in Mercy's culture of clinical quality and patient safety and has yielded significant improvements in all Mercy hospitals across a broad spectrum of diagnoses, procedures, and processes.

Collaboration and camaraderie now exist among previously independent hospitals, and the hospitals are now actively sharing their successful strategies. Fluid communication is now commonplace, and a friendly mix of competition and cooper-

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ation exists among the hospitals. In short, the project has brought the members of the newly reorganized system closer together.

The program has emphasized the implementation of well-established, evidence-based clinical process improvements to result in better outcomes and patient safety. As is the norm in clinical quality improvement efforts, the goal has not been to replicate or revalidate the outcomes that have been shown in the medical literature but, instead, to put in place systems that bring about a reliable execution of established clinical processes.

In a few areas, such as VTE and Periop Abx, a computerized order-entry system (CPOE) would assist in “hard-wiring” some of these efforts concerning patient safety, and in the future, CPOE systems will do just that. However, health care providers are charged with improving patient safety in the here and now. Because fewer than 5% of hospitals in the Leapfrog Group focus areas have successfully implemented CPOE, several years may pass before CPOE technology can be successfully adopted. Health care providers should not wait to improve clinical quality and patient safety until such technologies are available at their institutions. “Low-tech” methods of improvement, such as those employed by Mercy’s HQIPS, will probably be necessary for years to come.

The success of this immense system-wide undertaking is attributable to multiple factors. First and foremost has been the leadership at the top of the organization. Gavin Kerr, Mercy’s CEO, has orchestrated the program’s direction in several ways. He set a vision for clinical excellence and a culture of continuous clinical improvement and provided the necessary focus on the program by establishing it as one of the top three goals of the entire organization. Finally, he established a model of accountability for performance for each system hospital flowing up to each hospital CEO and developed a system of monthly reporting.

Coordinating and leveraging Mercy Health System’s resources have also fostered success. The Support Services Steering Committee provided the interface with Independence Blue Cross, the guidance and education of the hospital project teams, and the data management and reporting capability to support the model of accountability.

However, the key to the program’s success has been the hard work and dedication of dozens of project leaders within each hospital. These exceptional individuals championed each of the indicator goals by using their experience and resourcefulness to educate their clinical colleagues and to design and implement strategies for improvement that best suited their environment. Without the work of these clinical professionals, no sustained clinical quality and patient safety efforts would have occurred.

The results that Mercy has achieved can, and should, be replicated in other organizations, but not without these key elements of success: the focus and accountability of the senior leaders, the coordination and leveraging of resources, and the efforts of hundreds of dedicated caregivers.

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