The Physician–Hospital Team: A Successful Approach To Improving Care in a Large Academic Medical Center

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Abstract

Initiatives to improve the quality and efficiency of care in academic medical centers (AMCs, teaching hospitals) can benefit the performance of academic departments as well as the hospital. However, the value of performance improvement programs in an AMC is often challenging. At Jefferson Medical College, clinical efficiency and bed availability are important priorities to the Department of Medicine. To this end, a multidisciplinary program was designed to (1) improve the quality and consistency of care by adapting and adopting national guidelines for patients with heart failure and acute coronary syndrome; (2) identify and improve hospital operational supports and maximize resource utilization; (3) increase hospital functional capacity to make way for increased volume; and (4) improve housestaff education and practice by using evidence-based approaches and by optimizing teaching relationships between housestaff and attending faculty. The eight-month project (November 2002 to July 2003) resulted in improvement in several quality measures including increased use of beta blockers and angiotensin converting enzyme inhibitors for heart failure patients, reduced length of stay for heart failure and acute coronary syndrome patients, and increased satisfaction of the clinicians involved in caring for these patients. However, the project was not without barriers including individual physician's unwillingness to embrace change and an inability to incentivize change. Development of faculty leadership skills and enhanced physician accountability helped in overcoming the challenges of change.

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Initiatives to improve the quality and efficiency of care in academic medical centers (AMCs, teaching hospitals) can benefit the performance of academic departments as well as that of the hospital.[1–3] For example, adapting national guidelines for quality and safety enhances the education of housestaff and students while promoting increases in bed availability that allow increased physician revenues through additional procedures and referrals.[4,5] In addition, improved discharge efficiency allows the major influx of new patients to occur in the morning when a full complement of house officers is available—a demand magnified by the requirements of recent 80-hour workweek regulations. Thus, efforts to improve hospital performance can also serve to link the missions of the hospital and the academic departments.

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Despite the demonstrated value of performance initiatives to academic physicians, the implementation of these programs in an AMC setting is often challenging.[6,7] Although academic faculties view quality of care as an important part of their mission, they often view the need to improve efficiency of care as "the hospital's problem." Furthermore, not all academic physician leaders are empowered to effect changes in hospital procedures and practices or have access to the relevant hospital management teams. In addition, engaging physicians in operational redesign and cultural change can be problematic or complex.[8–13] Performance initiative programs often cross multiple administrative "silos" in both the hospital and various academic departments.

At Jefferson Medical College, clinical efficiency and bed availability are important priorities to the Department of Medicine (DOM). To this end, in 2002, a multidisciplinary program was designed; this initiative was led by the DOM but implemented as a collaborative effort between the DOM and Jefferson Medical College and Thomas Jefferson University Hospital. Called Project CARE (Coordinated Approaches Redesigned for Excellence), the project was designed to:

- Improve the quality and consistency of care,
- Identify and improve hospital operational supports,
- Increase hospital functional capacity, and
- Improve housestaff education and practice by optimizing teaching relationships between housestaff and attending faculty.

A physician-led consulting firm, with extensive experience in restructuring AMCs and nonteaching hospitals, designed and managed Project CARE, and the project was carried out in four phases over an eight-month period (November 2002 to July 2003): initiation, diagnostic engagement, redesign, and pilot implementation (see Table 1 for key milestone dates and a brief description of each phase).

Although several recent studies have demonstrated that guidelines can be successfully adopted in AMCs, in most of these studies there is little insight

Table 1
Key Milestones for Project CARE

Timeline	Phase	Components	Participants
November 2002	Project launch	• Review of data • Communications planning • Chartering of leadership teams	Steering committee
November through mid-December 2002	Diagnostic engagement	• Identified contributors to inefficiency • Evaluated of impact of organizational culture • Developed a detailed work plan	Steering committee Clinical teams DOM retreat
Mid-December 2002 through late June 2003	Redesign	• Adapted and adopted guidelines for local use • Identified where changes were needed • Developed order sets and clinical tools • Intermeeting vetting	Clinical management team Steering committee Clinical teams Operational teams
June 2003 through October 2003	Implementation	• Pilot implementation (6/1–7/1) • Staged implementation (7/1–10/1) • Full implementation (10/1–present)	Clinical management team Steering committee Clinical teams Operational teams

provided about the "on-the-ground" changes required to implement these large-scale guideline initiatives.[14–16] In this article, we provide detailed information about the organizational, leadership, and cultural changes that the implementation of Project CARE showed us to be necessary to achieve improved outcomes, utilizing recently approved national guidelines for the care of patients with acute coronary syndrome and congestive heart failure.

The Project

Initiation phase

The initiation process was designed to accomplish three objectives: (1) review current performance to identify and quantify opportunities, (2) charter leadership teams, and (3) communicate the project's intent and rationale to the relevant constituents. An earlier review of hospital performance data revealed two groups of patients whose care could be improved in important ways: patients hospitalized for exacerbation of heart failure (HF) symptoms or for an acute coronary syndrome (ACS). These patients represent the most common reasons for admission to our AMC, and because of marked deviations from national norms in length of stay at our AMC, even small improvements in clinical efficiency can produce important financial benefits.[17–20] In addition, referring physicians were frustrated by their inability to admit critically ill cardiac patients due to a lack of available beds, whereas housestaff noted variations in approaches to the care of these patients despite published national guidelines.

With this as our clinical focus, two clinical work teams—one for each diagnostic group—were chartered to facilitate the overall program. Each work team was led by a Department of Medicine vice chair (GM for the HF group; HW for the ACS group) and each work team was charged with adapting and adopting guidelines, developing standard order sets, and identifying the need for specific operational teams to complete critical tasks. A steering committee, consisting of representatives from a large number of disciplines, was charged with "hands-on" oversight including the identification of dependencies and chartering spin-off analyses and operational redesign. An executive oversight team—including the chair and vice chairs of medicine, the chair of emergency medicine, and the chief executive officer, chief operating officer, and chief medical officer of the AMC—was charged with the authority to make decisions, commit resources, and hold stakeholders accountable to timelines and deliverables.

Diagnostic engagement phase

Following the initiation phase, the diagnostic engagement phase allowed clinical work team members to develop first-hand experiences with data, issues, personnel, and processes that contributed to the status quo. First, they identified contributors to clinical and operational inefficiency in faculty and housestaff practice behavior, interdepartmental processes, and hospital operations. Second, they built joint understanding among the clinical and operational stakeholders about the importance of the project and their roles in improving performance. Finally, they developed a detailed work plan.

Data gathering began with confidential semistructured interviews of hospital and university leadership as well as individual physicians. This process informed the teams' understanding of Project CARE's importance while testing hypotheses about the causes of current underperformance. In addition, team members gained an understanding of leadership alignment and capabilities, cultural characteristics, perceived obstacles to change, and operational barriers. Focus groups with full-time and volunteer faculty, medical housestaff, and hospital administrators, nurses, and case managers complemented the interviews and refined the emerging understanding of the organization's infrastructure.

In addition to operational issues, this phase included an evaluation of the organization's culture in order to understand the extent to which unseen factors contribute to or inhibit performance. A strategic retreat allowed participation of over 80 full-time and volunteer faculty, housestaff, and hospital and university leaders and staff. During this retreat participants worked to reveal the organization's "simple rules"—truths that operate invisibly beneath the surface yet have a fundamental influence on acceptable behaviors as well as the organization's design and operation.[21,22] Insights from this process enabled project leaders to articulate rules that were impediments to change and needed be broken to achieve the organization's goals. For example, one of the simple

rules that were revealed was that it was difficult to "challenge Jefferson's great tradition." The implication was (as is seen in many AMCs) that "we don't need to change how we manage our patients because we are a highly esteemed teaching hospital." Through the process of public discussion about current performance and best practices in other centers, clinicians and executive leaders understood the importance of challenging this rule.

Other findings from the diagnostic engagement process included more operational issues related to bed availability. This included problems with poor discharge coordination, an inappropriate use of telemetry beds, and problems with the scheduling function. A significant amount of attention was paid to the "asynchrony" of how physicians and housestaff communicate and make decisions, as well as housestaff concerns about the potential negative impact on teaching. For a summary of findings, please see List 1.

Finally, the organization revealed a traditional disdain for "cookbook" medicine, which could potentially inhibit the adoption of practice guidelines and standard order sets. Also, there was an inherent fear among volunteer faculty members that full-time faculty would "take over" their patients, especially in the context of the high-level care of a cardiac care unit (CCU). Armed with these operational and cultural insights, the diagnostic engagement phase provided the DOM and hospital leaders with a well-informed, multifaceted, high-level work plan.

Design phase

The design phase activated Project CARE among a broad range of disciplines. First, we focused on adapting national guidelines for each diagnosis to reflect the practices of our community.[23,24] Next, we identified where the emerging clinical practice guidelines required changes in faculty and volunteer physician practice behavior, housestaff schedules, and hospital operations. Working collaboratively among physicians, we developed order sets and other clinical tools to make it easier for faculty and housestaff to conform to chosen guidelines. Finally, after reviewing recommendations with the steering committee, we presented a unified plan to the executive oversight team, who ratified the plan on behalf of the organization and committed required resources.

The keys to the design phase were the two clinical work teams—one for each of the target disease states. Each team met at intervals of approximately every six weeks, with a deliberate structure and a sequential agenda, enabling the chair of each work team to pace the process and maintain accountability to the steering committee. Using the "80:20 Rule" (80% of the benefit came from 20% of the effort), the teams focused initially on "key decision points," those selected aspects of care where standardization would provide the most likely improvements in quality or efficiency. They defined the changes needed in both physician practice behavior, housestaff teaching and rounding schedules, and hospital operations to support the emerging guidelines. They also chartered operational teams to address specific areas and develop recommendations for the steering committee to review and approve.

The clinical work teams identified several important changes to improve the management of patients with ACS and HF and to ensure the availability of resources for patients with these and any other cardiac diagnoses. First, we formally designated an existing telemetry unit as an intermediate cardiac care unit with a housestaff team dedicated to the care of patients with ACS and HF as well as other cardiac conditions. Second, we assigned dedicated case managers to this unit. Third, we rescheduled morning report from 7:30 AM to 11:00 AM to enhance direct and early interactions between housestaff and attending physicians, improve education, and facilitate availability of hospital beds. Finally, and most importantly, we established a new physician leadership position to oversee care of medical cardiac patients, manage patient flow between the emergency department, the CCU, and the step-down telemetry unit, improve housestaff education, and provide consultative support for the management of critically ill patients. We created the position so that the person holding it could function collaboratively with a senior nurse manager to provide ongoing implementation of Project CARE and support longer-term management.

List 1

Key Findings from the Diagnostic Engagement Process of Project CARE, by Topic

Bed Availability

- Inappropriate use of telemetry beds
- Poor discharge coordination
- Central scheduling problems
- Inadequate resources for room turnover
- No process for prioritization (except for certain services)

Discharge Process Issues

- Poor discharge reporting (to facilitate room cleaning and transfer of patient from the emergency room)
- Lack of planning and communication with patient/family regarding date/time of discharge ("waiting for ride")
- Subacute care placement problems
- No institutional commitment to specified discharge time or process
- Timely lab availability peridischarge
- Need for expanded case management support

Attending Staff Issues

- Lack of uniform rounding time
- Practices with frequent attending changes
- Variable agreement about when/if to involve specialist
- Lack of coordinated rounding with housestaff
- Variability in effective communication with housestaff and attending staff

Housestaff Issues

- Housestaff concern that process will further impair educational process (less time for teaching)
- Need to clarify the medical admitting resident's role in support of admitting process
- Early morning housestaff rounding not focused on decision making and action

As a final part of the redesign phase, we built consensus for structural changes and adoption of practice guidelines through multiple educational venues including grand round presentations in different divisions and departments; in-service lectures to nursing staff, housestaff, and cardiology fellows; and individual and group dinner meetings with members of the volunteer faculty. These meetings provided an open forum for engagement and were used to seek comments, criticisms, and enhancements of the proposed guidelines and the role and responsibilities of the new CCU attending physician.

Implementation phase

We designed the implementation phase as a series of pilots with rolling implementation of key initiatives. First, we implemented "stand-alone" elements of the redesign to achieve early results and build momentum from those successes. Next, we conducted "test runs" for more complex elements to refine them before final implementation. During this process we measured the contribution of individual components of the process to estimate overall impact. During this period, we moved the DOM's morning report from early to late morning and asked each clinical service to adopt a new structure and time for morning attending rounds, introduced standard order sheets for ACS and HF in the emergency department and medical floors, and established the new position of CCU director with responsibilities for controlling throughput for CCU and step-down beds and providing consultative services for critically ill patients in the CCU. The role of the CCU director was adjudicated with the volunteer faculty to gain the volunteer attending physicians' support for the director's role, to define the CCU director's relationship with attending physicians, and to maximize the overall impact of the CCU director in affecting the quality of cardiac patient care.

Project CARE also led to the initiation of many operational improvements. The DOM and hospital leadership chartered a new clinical management team—consisting of the CCU director, a senior hospital administrator, and a nurse manager—to provide an effective management structure for addressing daily administrative issues. We also chartered an executive oversight group to serve as a forum for clinical and administrative leaders to meet on a regular basis with hospital leadership. With collaboration among many stakeholders, including the Emergency Department, housestaff, volunteer and full-time faculty, the pharmacy, nursing staff and case managers, the clinical teams created standard order sets. Finally, an existing telemetry unit was repurposed as "the Project CARE unit" to concentrate resources effectively on behalf of patients with ACS or HF. This new "service" includes a dedicated housestaff team and an attending cardiologist with support from a case manager and a nurse manager. Initially encompassing 12 beds, the unit was gradually increased to house a total of 36 beds.

Results of the Implementation Phase

The change in morning report from 7:30 AM to 11:00 AM had a positive effect on many, although not all, teaching services. Attending physicians find it easier to communicate with the housestaff, teams are better able to round as a unit, and on some services nursing staff and case managers have been included on rounds. Unfortunately, the new time of morning report had no far-reaching effect on the times that patients are discharged. Many physicians, including both full-time and volunteer faculty, continue to see patients later in the day and do not utilize social workers and case managers to facilitate discharge planning effectively. The availability of standard order sheets also had a variable effect on practice indicators, as many physicians simply have not used the new forms. Indeed, six months after implementation, only 40% of admitted patients had their admission orders initiated from the standard order sheet. However, this number may have been biased downward by the concurrent implementation of a computer physician order entry system.

Project CARE proactively engaged the residents to provide them with an educational experience in process improvement and outcomes analysis. Members of the housestaff participated in all aspects of the program including the clinical work teams, focus groups, and the "retreat." An important outcome of the project was that the housestaff became invested in quality improvement. Indeed, when the project was completed, there were no ongoing quality improvement projects that were initiated and/or led by house officers. However, by July 2004, six separate projects, each resident-led, were actively involved in investigations. These included an assessment of the incidence and outcome of patients admitted with ACS who were diagnosed with metabolic syndrome and an evaluation of the risk of pulmonary emboli in patients undergoing surgical procedures. These studies were facilitated by a nurse-led outcomes research infrastructure that came about through recognition that data collection and analysis were important components of any attempt to effect cultural change.

That the educational experience for the residents was enhanced by Project CARE was evidenced by the fact that residents' evaluations of the cardiology teaching service improved after the implementation of changes recommended by the steering committee, including creation of the Project CARE unit. For example, end-of-year evaluations of "attending contact" improved from a mean score of 2.8 to a score of 4.2 on the CCU rotation and from a mean score of 3.7 to a score of 4.2 between 2001–2002 and 2003–2004 (score range 0 to 6). The score for the "quality" of the clinical experience increased from 4.04 to 4.35 on the cardiology inpatient service during that same time period.

The most discernable benefit of the implementation phase was improved management of ACS and HF patients. In the CCU, focused management resulted in an increased ability to provide beds for emergency transfers and, based on subjective analysis, a markedly enhanced educational experience for the housestaff. In addition, the newly commissioned Project Care unit brought together geographically distinct cardiology beds with a single attending physician, an identifiable housestaff team, nursing staff, and ancillary support. Overall, patients in this unit appeared to have a decreased length of stay. For example, the average length of stay for patients with heart failure who were treated in the Project CARE Unit was 5.5 days, whereas that for patients with the same DRG who were cared for on the general internal medicine service was six days. Similarly, patients admitted for acute myocardial infarction with complications (DRG 121)

had an average length of stay of four days on the Project CARE service compared with 7.5 days on internal medicine. However, it is difficult to make comparisons between these different hospital locations because the presence of dedicated nursing staff, a single attending, a cardiology fellow, a geographically assigned case manager, or a single housestaff team could all have contributed to these differences. By contrast, we were better able to track the improvements attributable to a standardization of care practices. There was an 87% use of angiotensin converting enzyme inhibitors after implementation of Project CARE as compared with a 75% level of utilization in the quarter preceding the start of the project.

Recognition of discharge issues led to the development of a waiting area for discharge patients as well as criteria for utilization of monitored beds. The clinical management team helped to manage problems quickly and aggressively as they arose on the medical units and to communicate between the DOM, nursing administration, and hospital administration. Furthermore, the executive oversight committee was invaluable for ensuring rapid high-level decision making and appropriate resource allocation. These changes also had potential impact on a variety of outcome indices; however, the specific effect on any one outcome was difficult to measure.

Goals Achieved and Lessons Learned

Project CARE was a mission-driven, multidisciplinary effort at a single AMC. The program was focused on patient care for the organization's two most common discharge diagnoses, ACS and HF, both of which had initial indicators for length of stay and guidelines for care that deviated substantially from national benchmarks. The overall design of the initiative followed the standard quality improvement process of "plan-do-check-act," focused on identifying key barriers to change (root-cause analysis), implementing process changes and tests of change, and, based upon what was learned, implementing new designs. However, the initiative's success was attributable to the attention paid to the importance of leadership, a topic that is often not discussed in reports of organizational change initiatives.

Project CARE revealed three challenges of AMC leadership that may occur in other organizations as inhibitors of change: leadership overload; the lack of effective structures of authority, accountability, and functionality; and the leadership capabilities of individual faculty. A key challenge was the incidence of leadership overload. Many health care leaders experience an unrelenting overload of work leading to "time bankruptcy" and short organizational attention spans. However, initiating change requires significant incremental effort and resources, and such efforts are often incompatible with existing workloads. For example, the leaders of the clinical work teams attended several meetings, each lasting approximately three to four hours, during the redesign phase. However, each meeting also required advanced planning, document preparation, time to engage other critical stakeholders to gain their inputs and buy-in, and follow-up communications. Thus, although their efforts produced the desired clinical and operational outcomes, there was a constant concern that critical faculty leaders would become "immunized" by their experiences and avoid participation in subsequent development efforts. We attempted to obviate these concerns by providing management and administrative support for scheduling, documentation production, and document distribution using DOM resources. However, it became obvious that for future efforts the sponsoring department must consider providing monetary support to "buy back" time of key participants from their clinical activities.

A critical barrier to success for Project CARE was the lack of an existing accountability structure to provide leadership authority that corresponded to the scope of the project. To ensure the success of such a comprehensive and collaborative effort, therefore, an ad hoc leadership structure was implemented to streamline decision making and to allocate resources at multiple levels. The interdisciplinary clinical work teams evaluated national guidelines, identified critical decision points, and designed tools and materials to implement standards of care at an operational level. The project steering committee—consisting of faculty leaders and clinicians from several departments, medical housestaff, nursing staff, and hospital managers—reviewed recommendations from the clinical work teams, identified dependencies, and chartered subgroups to address operational supports. An executive oversight team provided the ultimate authority to make decisions and commit resources. Thus, the leadership structure was designed to facilitate the desired outcomes through an unprecedented level of collaboration between faculty leaders and hospital leaders while at the same time providing housestaff and nursing staff an opportunity to become engaged in the process and to participate as agents of change.

An interdisciplinary initiative such as Project CARE has the potential to "tap" leaders who may be unaccustomed or unprepared to lead others. There was ample opportunity for participating physicians to expand their leadership portfolios, particularly through their participation as work team leaders where they needed to shepherd the guideline development and implementation planning process. Skills required for these roles included managing resistance and negotiating conflict, making decisions with limited data, conducting focus groups as a means of gaining input, and achieving buy-in without defensiveness. In addition, the senior physicians participating in the executive oversight team learned new ways of collaborative problem solving focused on resource allocation, program development, and performance management.

Faculty leadership development is a perennial priority to AMCs, but is often neglected because of clinical imperatives. Project CARE provided an ideal opportunity to develop faculty leadership capabilities in the course of doing the work by providing a skills laboratory for the participating physicians. Participants were exposed to the consequences and challenges of organizational change and were coached to improve interpersonal skills that reduce resistance and enhance collaboration across disciplines. In addition, the project brought to light a number of issues that, although peripheral to Project CARE, touched off other critical and sometimes political obstacles in the AMC. This raised a continuing challenge of setting

expectations and maintaining focus in the face of emerging issues.

As a backdrop to the leadership challenges that emerged, a cultural evaluation provided insight into the "simple rules"[21,22] that would either facilitate or abrogate the opportunities for change. This process revealed several important obstacles to change that needed to be overcome for Project CARE to succeed. First, there was an identifiable gap in leadership accountability that allowed confusion about decision making within the university and hospital hierarchy. The executive oversight team bridged this gap. Second, a culture had been built to avoid obvious internal conflict and to gain universal consensus before initiating change. This obstructing "rule" was obviated by focusing the efforts of the project initially on a newly defined and geographically bounded hospital service that was managed exclusively by full-time faculty. Finally, there was a general belief that new initiatives should not challenge the great traditions of the institution. This obstacle was overcome by aggressive education and by seeking buy-in from important patient advocates including the nursing staff and the housestaff. By stating these "rules" publicly and challenging those that obstructed change, the project's participants became sensitized to the underlying forces of resistance and developed better mechanisms for achieving operational and performance breakthroughs.

Consistent with the results of many quality improvement projects, Project CARE was not universally embraced by the faculty. Although "report cards" provided information to individual physicians as well as to clinical leaders, we found that some physicians were simply unable or unwilling to change their practice patterns. This was most clearly evidenced by our inability to significantly alter physician practice in terms of time of discharge for patients who were not hospitalized on the Project CARE unit. This experience has taught us that an important component of changing the culture is to align incentives with performance. That is, ensure that a portion of an individual physician's salary is predicated on compliance with outcome and process initiatives. Because the hospital environment includes both volunteer and full-time faculty, financial incentives had not been culturally acceptable at our institution. However, the lessons learned from Project CARE have reinforced the need for financial incentives as an important tool in cultural change and efforts are now in process to align incentives based on both performance and outcome variables.

The use of a specialized consulting group was a key element to the success of Project CARE. While serving as facilitators and project managers, the consulting team also played a developmental role by providing both leadership coaching and strategic education to project team members. By the end of the project, the DOM had developed a unique team of skilled academic leaders enriched by lecture-based leadership training and practical experience who were newly equipped to facilitate future missions. From a pragmatic standpoint, the consulting group also played an important role in helping to communicate issues throughout the complex leadership hierarchy of the AMC. As external experts, consults can often navigate internal boundaries to inform, educate, and motivate senior leadership without political baggage.

Despite the success Project CARE brought to the CCU and the Project CARE Unit (which still benefit from the project's changes), the project has yet to be successful in initiating broad-based changes across all units in the hospital. There remains reluctance on the part of some physicians to use standard order sheets for routine admissions and an inability to track compliance with national standards and benchmarks in a timely and physician-specific manner. Furthermore, non-Project CARE patients with cardiovascular disease have no geographic identity while hospitalized, making it difficult for dedicated housestaff to track and manage them or influence their care patterns.

To obviate some of the important roadblocks to initiating broad-based changes across all units in the hospital, the DOM has taken several steps. First, the DOM has worked closely with the practice plan to develop a proposal for an electronic medical record. At the same time, the hospital has begun implementation of an electronic ordering system. Together, these technologic advances will provide an opportunity to track order set compliance on a daily basis and to identify conformity with recommended practice standards—information that will be helpful in changing physician behavior. In addition, the DOM and the university are developing an incentive system that will provide an opportunity to "reward" physicians based on compliance with defined goals. Efforts are also being made to increase collaboration between full-time and volunteer faculty to gain enhanced cooperation in achieving goals for improvements in hospital-based care. Finally, using lessons learned from the initial Project CARE targets, standard templates are being developed to improve care for other common disease states.

Summing Up

Project CARE represents an important ongoing commitment by the DOM to develop and implement guidelines for the management of common diagnoses while at the same time shortening length of stays, improving patient flows, and decreasing readmission rates. Multiple academic and hospital departments made a significant commitment to the project. The project has enabled our AMC to better understand the levels of leadership commitment, accountability, and collaboration that are necessary to implement a clinical program that has broad-ranging implications for an AMC and has demonstrated the effectiveness of projects that are led by the DOM. The infrastructure and new level of collaboration developed in Project CARE will provide a foundation for future clinical initiatives in a time of great challenge for AMCs.

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References

1 Pronovost PJ, Jenckes M, To M, et al. Reducing failed extubations in the intensive care unit. Jt Comm J Qual Improv. 2002;28: 595–604.

2 Yost NP, Bloom SL, Sibley MK, Lo JY, McIntire DD, Leveno KJ. A hospital-sponsored quality improvement study of pain management after cesarean delivery. Am J Obstet Gynecol. 2004;190:1341–46.

3 Perlstein PH, Lichtenstein P, Cohen MB, et al. Implementing an evidence-based acute gastroenteritis guideline at a children's hospital. Jt Comm J Qual Improv. 2002;28: 20–30.

4 Garfield D, Atre-Vaidya N, Sierles F. Teaching the APA Practice Guidelines to psychiatry residents: a novel strategy. Acad Psychiatry. 2002;26:70–75.

5 Helwig A, Bower D, Wolff M, Guse C. Residents find clinical practice guidelines valuable as educational and clinical tools. Fam Med. 1998;30:431–35.

6 Larson EB. Evidence-based medicine: is translating evidence into practice a solution to the cost-quality challenges facing medicine? Jt Comm J Qual Improv. 1999;25: 480–85.

7 Landon BE, Wilson IB, McInnes K, et al. Effects of a quality improvement collaborative on the outcome of care of patients with HIV infection: the EQHIV study. Ann Intern Med. 2004;140:887–96.

8 Graber ML. Physician participation in quality management. Expanding the goals of peer review to detect both practitioner and system error. Jt Comm J Qual Improv. 1999;25:396–407.

9 Foster T, Ogrinc G, Hamby L, Weeks WB. Improving the effectiveness of physician participation in local quality improvement efforts. Qual Manag Health Care. 2002;10: 25–30.

10 Handley MR, Stuart ME. An evidence-based approach to evaluating and improving clinical practice: guideline development. HMO Pract. 1994;8:10–19.

11 Becher EC, Chassin MR. Taking health care back: the physician's role in quality improvement. Acad Med. 2002;77:953–62.

12 Reinertsen JL. Physicians as leaders in the improvement of health care systems. Ann Intern Med. 1998;128:833–38.

13 Berwick DM, Nolan TW. Physicians as leaders in improving health care: a new series in Annals of Internal Medicine. Ann Intern Med. 1998;128:289–92.

14 Fonarow GC. Strategies to improve the use of evidence-based heart failure therapies: OPTIMIZE-HF. Rev Cardiovasc Med. 2004;5: S45–54.

15 Ferguson Jr. TB, Peterson ED, Coombs LP, et al. Use of continuous quality improvement to increase use of process measures in patients undergoing coronary artery bypass graft surgery: a randomized controlled trial. JAMA. 2003;290:49–56.

16 Mehta RH, Montoye CK, Gallogly M, et al. Improving quality of care for acute myocardial infarction: the Guidelines Applied in Practice (GAP) Initiative. JAMA. 2002;287: 1269–76.

17 Balinsky W, Muennig P. The costs and outcomes of multifaceted interventions designed to improve the care of congestive heart failure in the inpatient setting: a review of the literature. Med Care Res Rev. 2003;60: 275–93.

18 Costantini O, Huck K, Carlson MD, et al. Impact of a guideline-based disease management team on outcomes of hospitalized patients with congestive heart failure. Arch Intern Med. 2001;161:177–82.

19 Hanumanthu S, Butler J, Chomsky D, Davis S, Wilson JR. Effect of a heart failure program on hospitalization frequency and exercise tolerance. Circulation. 1997;96:2842–48.

20 Discher CL, Klein D, Pierce L, Levine AB, Levine TB. Heart failure disease management: impact on hospital care, length of stay, and reimbursement. Congest Heart Fail. 2003;9: 77–83.

21 Bard MA, Epstein AL. The simple rules of performance. Acad Clin Practice. 2002;14: 6–9.

22 The Bard Group. Changing the Rules: Simple Rules and the Pursuit of Perfection. Newton, MA: Bard Group, 2001.

23 Hunt SA, Baker DW, Chin MH, et al. ACC/AHA Guidelines for the Evaluation and Management of Chronic Heart Failure in the Adult: Executive Summary A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Revise the 1995 Guidelines for the Evaluation and Management of Heart Failure): Developed in Collaboration With the International Society for Heart and Lung Transplantation; Endorsed by the Heart Failure Society of America. Circulation. 2001;104:2996–3007.

24 Braunwald E, Antman EM, Beasley JW, et al. ACC/AHA 2002 guideline update for the management of patients with unstable angina and non-ST-segment elevation myocardial infarction–summary article: a report of the American College of Cardiology/American Heart Association task force on practice guidelines (Committee on the Management of Patients With Unstable Angina). J Am Coll Cardiol. 2002;40:1366–74.