

Prescriptions for Excellence in HEALTH CARE

A COLLABORATION BETWEEN JEFFERSON SCHOOL OF POPULATION HEALTH AND LILLY USA, LLC

Editor-in-Chief: *David B. Nash, MD, MBA* • Managing Editor: *Janice L. Clarke, RN, BBA* • Editorial Staff: *Dorah C. Meiris, Alexis Skoufalos, EdD*

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Editorial

A New Generation of Quality Advocates

By *David B. Nash, MD, MBA*

Editor-in-Chief

As I reviewed the articles for this issue of *Prescriptions for Excellence in Health Care*, I found myself wondering about the future of the National Quality Forum and the important priorities established by the National Priorities Partnership (NPP). Who will advance the agenda for high-quality, safe, patient-centered health care in the future?

The answer to my question became apparent when I attended the 2nd Annual American Medical Student Association Quality and Safety Institute. Over the course of this 3-day event, more than 20 medical and premedical students learned about cultural barriers to quality, tools to measure quality, and strategies to advance projects at their home institutions. The timely and informative sessions were taught by faculty from the Jefferson School of Population Health, Drexel University College of Medicine, The National Board of Medical Examiners, New York Hospital Cornell Medical Center, Robert Wood Johnson Medical School, and Christiana Care (DE).

The bottom line is that quality and safety can no longer be “electives” in a medical school curriculum. While most current faculty lack knowledge and expertise in this field, today’s students will ensure that this critical information

becomes part of the standard medical school curriculum of the future. Moreover, they will put the information to use in their professional lives – following the fine examples set forth by the authors in this issue.

The lead article, “*Practical Ideas for Patient and Family Engagement in Health Care*,” offers hospitals and health systems several practical, easily applied suggestions for involving patients and families in their health care. The following article, “*Care Coordination in the Context of a Population Health Management Model*,” describes the breadth and depth of this relatively new field as it relates to the NPP goal of care coordination.

The third article, “*Leapfrog: Unique and Salient Measures of Hospital Quality and Safety*,” describes a successful, high-impact health care reform initiative that

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originated in the private purchaser sector. The goal of “eliminating overuse while ensuring the delivery of appropriate care” is addressed in terms of reduction of unwarranted procedures in the final article, “*Applying Appropriateness Methods to Address Overuse While Ensuring the Delivery of Appropriate Care: The Example of Cardiac Revascularization.*”

I hope that these articles will inspire readers to become advocates for the NPP’s National Priorities and Goals within their organizations and, equally important, will champion the case for quality and safety in medical school curricula.

As always, I am interested in your feedback; you can reach me by e-mail at: david.nash@jefferson.edu or visit my blog at: nashhealthpolicy@blogspot.com.

David B. Nash, MD, MBA is Founding Dean and the Dr. Raymond C. and Mrs. N. Grandon Professor, Jefferson School of Population Health.

A Message from Lilly

Project REPORT: Leveraging Health Information Technology to Improve Patient Safety

By Kraig Kinchen, MD

With the passage of the Health Information Technology for Economic and Clinical Health Act, the United States has demonstrated a commitment to speeding the adoption of electronic medical records (EMRs) by health care providers.¹ The promise of health information technology (HIT) often focuses on the use of EMRs and health information exchanges to improve the information available to health care providers for the delivery of care to individual patients. Increasingly, the health care community also is recognizing the opportunity to improve service delivery by leveraging HIT to gain population-level insights about targeted interventions.

Post-market medication safety surveillance is an important illustration of the potential utilization of HIT for population-level health care information. While extensive clinical trials prior to a medication’s launch provide critical information about the benefit-risk profile of a medication, patient safety is promoted further through information gained once the medication is being used in clinical practice.

Post-market efforts to refine the understanding of the benefit-risk profile of a medication include

both passive and active surveillance systems. Recently, the importance of HIT in improving active surveillance has received increased focus as the Food and Drug Administration (FDA) has moved forward with the development of the FDA Sentinel Network Initiative, an effort to utilize large health care databases to actively detect potential medication-related adverse events.²

Eli Lilly and Company has worked to contribute to the understanding of HIT-enabled active surveillance through involvement in multistakeholder pilot projects including the Observational Medical Outcomes Partnership³ and the eHealth Initiative’s Connecting for Drug Safety Collaboration.⁴

Complementing active surveillance efforts, the passive surveillance system relies on health care providers and others to voluntarily submit information on suspected medication-related adverse events to the FDA through paper-based or Web-based reports to the FDA’s MedWatch program.⁵ MedWatch reports include clinical information that helps regulators and manufacturers to evaluate the potential relationship between a marketed medication and an adverse event.⁶ However, a number of factors, including perceived

time limitations of busy clinicians, may hinder the ability of providers to initiate efforts to populate and submit these forms with the information that would best facilitate evaluation.

Lilly, along with a number of other stakeholders, recognizes that the passive surveillance system also has the potential to be enhanced through HIT. The digitalization of health care information through HIT may offer an opportunity to improve the quantity and quality of MedWatch reports by auto-populating important MedWatch fields with electronic information from the EMR or health information exchanges.

Project REPORT (Reporting Events and Patient Outcomes Related to Therapy) is a recent collaboration between Lilly and Dr. Atif Zafar’s team from the Regenstrief Institute and the Indiana University (IU) School of Medicine. For this pilot project, Dr. Zafar’s team created a Web-based MedWatch form that could be populated with data from the Indiana Health Information Exchange (IHIE). After being made aware of the new system, providers at IU primary care clinics had the ability to prepare MedWatch forms that included imported IHIE data on comorbid conditions, concomitant medications, and

relevant lab values. Subsequent to including a brief narrative on the potential adverse event and some additional information, the provider could review the form and have it sent to the FDA through Project REPORT. Reflecting on the Project Report pilot project, Dr. Zafar stated, “The REPORT system provides a mechanism for providers to quickly report important adverse drug events that would otherwise go unreported due to the time burdens associated with the reporting process.” His team is in the process of improving the system as well as looking for opportunities for partnerships that would extend the system to other health care providers that participate in IHIE.

What is learned from Project REPORT will contribute to the growing body of information that can be gained from other efforts to

leverage HIT to enhance the passive surveillance system. The ASTER (ADE Spontaneous Triggered Event Reporting) Project, a collaboration between Partners Healthcare, Pfizer, and others, represents a significant effort to enable clinicians to auto-populate MedWatch fields using EMR data.⁷

Lilly hopes that such initiatives will stimulate further multistakeholder, collaborative efforts to improve adverse event reporting. The timely evaluation of data can promote a more thorough understanding of a medication’s benefit-risk profile and enable clinicians to enhance patient safety at the point of care.

Kraig Kinchen, MD, is Senior Advisor to Electronic Exchange of Healthcare Information at Eli Lilly and Company.

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Practical Ideas for Patient and Family Engagement in Health Care

By Maulik Joshi, DrPH

A few years ago, my then 7-year-old daughter was hospitalized for asthma complications. When my wife walked into the hospital room and saw our daughter’s medical chart on a cart by the door, she began to look through it, trying to understand the information. A nurse walking by told my wife that she could not look at the chart. She whisked it away to the nurses’ station. Although we noticed medical charts outside of other patient rooms, we never saw our daughter’s chart again.

As clinicians stood outside our daughter’s room discussing her case before discharge, my wife and I felt like outsiders. We wanted to know what we could do to control our daughter’s asthma so she would not return to the hospital. But our conversations

with the medical team left us without answers to our questions. Every conversation ended with a practitioner telling us to call the outpatient clinic and make an appointment with the pediatric pulmonologist.

Did we receive outstanding care at this hospital? Yes. How was the staff? Heroic. Could the system have better engaged us in our daughter’s care for a better health outcome? Absolutely!

The National Priorities Partnership (NPP) has identified patient and family engagement in health care as 1 of its 6 National Priorities – “...to make health care safer, more patient-centered, affordable, and effective.”¹ Patients and their families want to become more involved in managing

their health care and making decisions about treatment and procedures. Research has shown that engaged patients help achieve better health outcomes, lower service utilization, and lower costs.²

The NPP set 3 goals to engage patients and families:

- All patients will be asked for feedback about their experience of care, and this information will be used by health care organizations and their staff to improve care.
- All patients will have access to tools and support systems that enable them to effectively navigate and manage their care.

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- All patients will have access to information and assistance that enables them to make informed decisions about their treatment options.¹

The NPP also emphasizes shared decision making as an important underlying goal in health care — calling for it to be “the norm for most diagnostic and treatment processes.”¹

To help achieve these goals, I offer the following practical suggestions for involving patients and families in their health care. I believe that these ideas have merit and are worth testing as a means for achieving our overall aim.

Involve patients and families in the design and redesign of care.

Asking patients for feedback typically means distributing patient satisfaction questionnaires, but it also can include hands-on involvement for patients. For example, hospitals and health systems could include patients and families on care improvement teams and advisory councils. Such involvement gives patients formal opportunities to participate more directly in the design and redesign of processes, and their involvement and feedback helps to accelerate the pace of improvement.

Engage patients and families in the care process.

Two years ago, the Agency for Healthcare Research and Quality and the Ad Council launched a patient involvement campaign with a Web site called “Questions Are the Answer” (<http://www.ahrq.gov/questionsaretheanswer/>). The site features a “question builder” that helps patients prepare a list of questions for medical appointments. The message to patients is clear: get more involved in your health care.

Hospitals and health systems can engage patients in the care process by including them and their families in multidisciplinary daily patient rounds. A study by Rosen et al compared and

evaluated conventional rounds with family-centered multidisciplinary rounds in an inpatient pediatric ward. After family-centered rounds, the staff reported better understanding of patients’ medical plans, better ability to help the families, and a greater sense of teamwork.³

Scheduling liberal visiting hours is another way to engage families. A research trial showed a positive clinical impact with a more flexible and open visiting policy in the intensive care unit.⁴ By participating in the care process through rounds or hospital visits and being prepared for appointments, patients and families have direct access to tools and support systems that help them manage their care.

Provide patients and families with easily accessible, meaningful, and understandable information.

Hospitals and health systems can begin by giving patients full and easy access to their personal health records. Ross and Lin reviewed outcomes from several studies in which patients were permitted access to their health records. They concluded that giving patients such access showed “modest improvements in doctor-patient communication, adherence, patient empowerment, and patient education.”⁵

Along with access to health records, providing customized educational materials for each patient is important. Customized materials are written in the patient’s preferred language and at an appropriate reading level. Ease of reading is very important. NPP cites a recent study that found that over 75% of patients discharged from emergency departments do not understand the information or instructions they receive. More alarming, a majority of these patients *do not realize* that they lack understanding.⁶

In addition to providing understandable information, accommodating each patient’s language preferences and cultural needs ensures that the hospital or health system is providing patient-centered care.

Address needs of patients and families with limited English proficiency (LEP).

A national study conducted by the Health Research & Educational Trust found that 80% of hospitals encounter LEP patients “frequently,” defined as at least monthly and often weekly or daily. Surveyed hospitals identified over 30 languages they had encountered, from Spanish (encountered by 93% of the hospitals) to Tagalog and Thai (encountered by 21% and 20% of the hospitals, respectively).⁷

Strategies to address the needs of LEP patients and families include: establishing a centralized program or department to coordinate language services; implementing remote or telephonic interpretation; hiring trained medical interpreters in high-volume languages and bilingual staff members with training in medical interpretation; providing training to clinicians on how to access and work with interpreters; and designating more positions—particularly clinical positions—as bilingual.

Transparency is an additional goal when engaging patients and families. Many hospitals and health systems currently report clinical outcomes including comparative costs and quality information. As a result, many health care consumers are gathering information before seeking medical treatment. Hospitals and health systems must ensure that the information they provide is relevant and useful. In a recent article on “patient-centeredness,” Berwick suggested that hospitals “extend transparency to all aspects of care, including science, costs, outcomes, processes, and errors.”⁸

Conclusion:

During my daughter’s hospital stay, my wife and I wanted to become more engaged in the care process. Participating in rounds, having access to her health record, or sharing in decision making would have made us feel less like outsiders and more like active participants in her care. Many

hospitals and health systems are doing more and doing better at engaging patients and families in the care process. The journey continues.

Maulik Joshi, DrPH, is President of the Health Research & Educational Trust and Senior Vice President for Research at the American Hospital Association. He can be reached at: mjoshi@aha.org.

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Care Coordination in the Context of a Population Health Management Model

By Tracey Moorhead

Population health management encompasses a broad continuum of care services, from wellness and prevention through disease management and complex case management. This continuum of care represents the evolution of the traditional disease management industry from one focused on managing single chronic conditions to one focused on managing multiple comorbidities. It recognizes that early intervention can keep healthy people well, help those who are at risk stave off the development of chronic conditions, and educate those with chronic illnesses about condition management techniques to mitigate complications and exacerbations.

DMAA: The Care Continuum Alliance provides services along all points of this continuum - from wellness to population health management to disease management - via its member organizations, which include health plans, labor unions, employer organizations, pharmaceutical manufacturers, pharmacy benefit managers, health information technology innovators and device manufacturers, physician groups, hospitals and hospital systems, and academicians. These diverse

organizations share DMAA's vision of aligning all stakeholders to improve the health of populations. Members seek to maintain and improve health care quality and restrain health care costs by providing targeted interventions and services to individuals who are well, at-risk, or managing 1 or more chronic conditions.

The expansion of services to encompass a full continuum of care, along with the dramatic expansion of population health management providers, highlights the importance of careful coordination of services and providers. With the evolution from single-state disease management to population health management strategies, the focus is on techniques and tools for improved care coordination.

Population Health Management Model

On behalf of the population health management industry, DMAA: The Care Continuum Alliance advances a population health improvement model that contains the elements of a fully-connected health care system to provide all members of the health care team with essential tools to ensure proactive, coordinated, quality health care. The

population health improvement model highlights 3 components:

- the central care delivery and leadership roles of the primary care physician;
- the critical importance of patient activation, involvement, and personal responsibility; and
- the patient focus and capacity for increased care coordination engendered by wellness, disease, and chronic care management programs.

The convergence of these roles, resources, and capabilities in the population health improvement model ensures higher levels of quality and satisfaction with care delivery. Further, coordination and integration are important tools to address health care workforce shortages, individual access to coverage and care, and affordability of care.

Accountability must be assigned for delivering and coordinating appropriate cost-effective care. Likewise, the achievement of targeted improvement and goals for population health must be explicitly recognized and proportionately rewarded. To this end, the population

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health improvement model envisions optimizing physician office practices and other services that improve population health and add value. To best achieve this, payers, purchasers, patients and their advocates, and other members of the health care team must promote and ensure appropriate reimbursement schedules for cognitive services, care coordination, referral activities, and adherence to desired processes such as the use of evidence-based clinical guidelines.

Key components of the population health improvement model include:

- population identification strategies and processes;
- comprehensive assessments of physical, psychological, economic, and environmental needs;
- proactive health promotion programs that increase awareness of the health risks associated with certain personal behaviors and lifestyles;
- patient-centric health management goals and education, which may include primary prevention, behavior modification programs, and support for concordance between the patient and the primary care provider;
- self-management interventions aimed at influencing the targeted population to make behavioral changes;
- routine reporting and feedback loops, which may include communications with patients, physicians, health plans, and ancillary providers;
- evaluation of clinical, humanistic, and economic outcomes on an ongoing basis with the goal of improving overall population health.

The population health improvement model supports care coordination goals in a wide variety of ways. First and foremost, it encourages patients to have a provider relationship whereby they receive ongoing primary care in addition to specialty care, and complements

the physician/practitioner and patient relationship and plan of care across all stages, including wellness, prevention, chronic, acute, and end-of-life care.

The model supports physicians by offering additional resources to address gaps in patient health care literacy, knowledge of the health care system, and timeliness of treatment. It also provides technical assistance to physicians – from collecting, coordinating, and analyzing patient-specific information and data from patients and multiple members of the health care team to analyzing data across entire patient populations.

Further, the model assists unpaid caregivers, such as family and friends, by providing relevant information and care coordination, and by addressing cultural sensitivities and preferences of individuals from disparate backgrounds.

Finally, the model promotes care coordination by promoting complementary care settings and techniques, such as group visits, remote patient monitoring, telemedicine, telehealth, behavior modification, and motivation techniques, for appropriate patient populations.

Accountable measurement of progress toward optimized population health should include various clinical indicators including process and outcomes measures; assessment of patient satisfaction with health care; functional status and quality of life; economic and health care utilization indicators; and impact on known population health disparities. These indicators can demonstrate the effectiveness of coordination activities across services and providers.

Care Coordination in Population Health Management

As already described, population health management is a system of coordinated health care interventions and communications for at-risk and chronically ill populations. Population health management supports care

coordination by facilitating/supporting integration across providers or care settings to link chronically ill individuals and their families with health education and appropriate services and resources. Care coordination also includes interrelationships across health care services and strategies, from primary prevention and acute care to chronic and end-of-life care. As such, care coordination is a central component of population health management.

The National Priorities Partnership, convened by the National Quality Forum (NQF), has established 6 key goals to transform health care and create and expand world-class, patient-centered, affordable care by eliminating waste, harm, and disparities, and thereby reducing disease burden. Care coordination to ensure patient-centered, high-value care is among these priorities and associated quality goals include improved communication and medication management during transitions in care and reductions in 30-day readmissions and emergency department visits.

The NQF defines “care coordination” as “a function that helps ensure that the patient’s needs and preferences for health services and information sharing across people, functions, and sites are met over time. Coordination maximizes the value of services delivered to patients by facilitating beneficial, efficient, safe, high-quality patient experiences and improved health care outcomes.”

The NQF has designed 5 care coordination domains: 1) health care “home”; 2) proactive plan of care and follow up; 3) communication; 4) information systems; and 5) transitions and “handoffs.” The population health model encompasses these 5 domains to achieve improved care coordination.

Summary

The population health improvement model represents the evolution of traditional, single disease state management by facilitating and ensuring

patient-focused care coordination to improve the quality of health care provided to individuals across the continuum of care and services. The population health improvement model is closely aligned with the National Priorities Partnership's efforts to improve care coordination. Aligning the goals

and components of care coordination offered by DMAA: The Care Continuum Alliance, the NQF, and the National Priorities Partnership enables the dissemination of a comprehensive tool that all stakeholders can utilize as they transition from single condition programs, created and delivered in a

silos, to whole person, whole population health management.

Tracey Moorhead is President and Chief Executive Officer of DMAA: The Care Continuum Alliance. She can be reached at: tmoorhead@dmaa.org.

Leapfrog: Unique and Salient Measures of Hospital Quality and Safety

By Leah Binder

Health care reform initiatives from the public sector dominate the headlines. Lesser known, but equally dramatic, are reform initiatives grown in the private sector. In fact, many valuable lessons learned from health benefits purchasers' initiatives have been incorporated into policy makers' proposals for health care reform at the federal and state levels. These purchaser initiatives have had a dramatic impact on the delivery of health care in the United States.

The Leapfrog Group (Leapfrog) is the purchaser's foremost agent of change in the health care system. Founded in the year 2000 by large employers and business groups on health, Leapfrog aims for "giant leaps forward in the quality, safety, and affordability of health care." To accomplish this, Leapfrog collects and publishes a "dashboard" of information on hospital performance and supports purchasers in using that information to structure their purchasing decisions. Data are collected on performance measures via an annual voluntary Leapfrog Hospital Survey. Results, including comparisons of performance among hospitals, are reported publicly. The current report contains data from more than 1200 US hospitals. Leapfrog organization members (purchasers) agree to use the information in their health purchasing decisions.

Research shows that if 3 of Leapfrog's standards (ICU staffing, electronic

medication ordering systems, and use of higher performing hospitals for high-risk procedures) were implemented in all urban US hospitals, the nation could save as many as 57,000 lives, avoid as many as 3 million adverse drug events, and save up to \$12 billion in health care costs each year.¹

Leapfrog measures are endorsed by the National Quality Forum (NQF) and/or are consistent with those of The Joint Commission and the Centers for Medicare and Medicaid Services. Although the measures are standardized, the information Leapfrog collects from them is not readily available elsewhere. Leapfrog publicly reports and compares the variable performance of each participating hospital on a national scale, yielding a unique report that reveals salient information about hospital quality.

Selected by purchasers, Leapfrog measures are those of greatest importance and impact to consumers and include: hospital mortality rates for high-risk and common procedures, whether hospitals undertake endorsed methods for reducing infection, whether hospitals deploy endorsed safe practices, and whether hospitals have in place management protocols and technology that has reduced ICU deaths by 40% or medication errors by 85%.

Because Leapfrog collects data that is otherwise publicly unavailable and

considers measures with the greatest impact on consumers, the results of the survey attract considerable attention. The results allow policy makers and planners to pinpoint weaknesses in safety, quality, and affordability in US hospitals. Indeed, results from the 2008 survey included specific metrics to identify improvements hospitals must undertake to achieve performance levels that warrant the high price Americans pay for their health care.

Leapfrog findings from 1256 reporting hospitals include:

- Two thirds of hospitals do not have all of the NQF-endorsed safe practices in place to prevent infections.
- Fewer than 1 in 4 hospitals meet efficiency standards for heart bypass surgery or angioplasty.
- Three quarters of hospitals fail Leapfrog's mortality standards for pancreatic resection.
- Only one third of hospitals have ICU coverage that meets Leapfrog standards.
- Only 7% of hospitals meet Leapfrog standards for having in place the technology known to prevent medication errors.
- There is a 10-fold variation between hospitals with the lowest rates of

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pressure ulcers and those with the highest rates.

Overall, the survey results are disappointing; with regard to variation among hospitals, the results raise serious concerns. Depending on the measure, the highest performing hospitals' metrics exceed those of the lowest performing hospitals by 4 to 10 times. Clearly, there is substantial opportunity for improvement by the vast majority of reporting hospitals.

Employers throughout the country use Leapfrog as a platform for conversations and contracting with hospitals. Some employers utilize Leapfrog results as a tool in benefit design and in pay-for-performance programs. In addition, Leapfrog results are commonly used by employers to inform employees about the relative value of hospitals in their regions.

On a policy level, Leapfrog is one of the nation's pioneering champions of

value-based purchasing (ie, using good data on hospital performance to set reimbursement rates). Leapfrog works with policy makers and federal agencies to help structure new value-based purchasing strategies for Medicare and for health care reform proposals.

Leapfrog's policy on withholding payment for "never events" (28 serious adverse events defined by the NQF including objects left in after surgery or surgery on the wrong site) is consistent with its overarching principle of tying payment to performance. Leapfrog was the first national organization to issue a recommended policy on never events. In addition to calling for hospitals to waive all costs associated with the never event, Leapfrog's policy has 3 other key features: 1) apologize to the patient, 2) report the event to qualifying agencies, and 3) conduct a root cause analysis to prevent recurrence.

The Leapfrog Survey raises serious and disturbing questions about the

quality and cost-effectiveness of American hospitals. With the advent of health care reform, Leapfrog and its purchaser members seek opportunities to share lessons learned. Our national experience demonstrates the value of transparency when communicating quality and cost-efficiency information, as well as the advantage of tying reimbursement policies to performance. Collaboration among the private and public sectors to shine light on and reward the highest levels of achievement among hospitals will be essential to improve the quality and cost-effectiveness of care in the coming decades.

Leah Binder is Chief Executive Officer of The Leapfrog Group. She can be reached at: lbinder@leapfroggroup.org.

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Applying Appropriateness Methods to Address Overuse While Ensuring the Delivery of Appropriate Care: The Example of Cardiac Revascularization

By David J. Ballard, MD, MSPH, PhD

The National Priorities Partnership (NPP) identified "eliminating overuse while ensuring the delivery of appropriate care" as 1 of its 6 Priorities and Goals. Within this goal, one area of concentration is the reduction of unwarranted procedures, including coronary revascularization procedures such as coronary artery bypass grafting (CABG) and percutaneous coronary intervention (PCI).¹ These goals are laudable; currently, CABG is the most common type of open-heart surgery in the United States, with 500,000 surgeries performed per year at a total annual cost of \$50 billion. Also common and costly, approximately 1.3 million PCI procedures are performed

in the United States each year at a total cost of \$60 billion.²

There is likely to be a larger opportunity to reduce overuse of PCI procedures than CABG procedures. Application of RAND methodology to determine appropriateness of cardiac revascularization procedures in 3960 Medicare beneficiaries in 1991 and 1992 demonstrated that 14% of PCI procedures were inappropriate.³ The percentage of inappropriate PCI procedures varied from 4% to 24% across states, and half of all PCI procedures were rated as having uncertain appropriateness. For CABG, variation across states was less

pronounced, with 10% of procedures rated as inappropriate (ranging from 0% to 14%), and only 15% of CABG surgeries rated as having uncertain appropriateness.⁴

Studies of cardiac revascularization in New York demonstrated lower rates of inappropriate use of PCI and CABG within that state. For patients who underwent PCI or CABG in 1990, the inappropriate rate of PCI use was 4% for men and 3% for women (with 34% and 40% of procedures having uncertain appropriateness for men and women, respectively); the rate of inappropriate use for CABG was 2% for men and 3% for women (with 7%

of CABGs rated as having uncertain appropriateness).⁵ Other studies of cardiac revascularization in New York have confirmed these rates^{6,7} and drawn attention to the larger proportion of uncertain appropriateness associated with PCI procedures.⁷

Cross-state studies have been more likely to examine CABG appropriateness than PCI appropriateness, and have found low rates of inappropriate and uncertain CABG use. In a study of patients who underwent CABG surgery in 1990 in 12 US Academic Medical Center Consortium hospitals, 2% of these procedures were rated as inappropriate and 7% were rated as having uncertain appropriateness.⁸ More recently, a study of 4684 CABG procedures performed in 2004 and 2005 in northern New England demonstrated an appropriateness rate of 99%.⁹

Despite general consensus among experts about when CABG is appropriate, questions have been raised about the effectiveness of the procedure, particularly for women.¹⁰ Early studies suggested that women were more likely than men to experience in-hospital mortality and morbidity after CABG, although long-term survival and functional recovery were similar in women and men.^{11,12} More recent studies have suggested that this difference may be observed because women have a disadvantageous preoperative clinical profile (eg, older age, poorer left ventricle function, more comorbid conditions).^{13,14} Smaller coronary arteries in women may also contribute to a higher risk of in-hospital mortality and morbidity following CABG surgery.¹⁵

Other researchers have found that operative mortality is higher for women even after adjusting for comorbidities, and have suggested that this may be due to a referral bias that results in later referrals for women and treatment that occurs later in the course of the disease.¹⁶ Overall, however, in-hospital

mortality and morbidity and long-term survival appear to be related more to risk factors and patient characteristics than to gender.¹⁰ As mentioned, rates of inappropriately used CABG surgery were found to be low and similar for men and women.⁵

There is scant evidence to date that the multiyear work of the cardiovascular physician community to produce appropriateness ratings for cardiac revascularization will have an impact on achieving the NPP Priorities and Goals.¹⁷ Studies have not yet examined changes in appropriate CABG and PCI use after implementation of specific interventions to improve rates of appropriate use. The development of such interventions should form an important focus for future research efforts.

An additional area for future research is the development of concurrent data collection tools to support real-time clinical decision making regarding the appropriateness of PCI and CABG surgery.¹⁸ Despite the availability of a data collection tool,¹⁹ there has been no effort to connect the data collected to algorithms linked to American College of Cardiologists' appropriateness ratings that enable classification of a prospective candidate for PCI.

Examples of real-time decision-support tools include evidence-based guidelines that are integrated into practice through electronic or paper-based flow sheets and reminders, computer-assisted diagnosis tools, and mandatory solicitation of a second opinion for high-risk procedures such as CABG that are classified as inappropriate or as having uncertain appropriateness.^{20,21} Such tools can improve evidence-based clinical decision making and use of appropriate care.^{22,23}

Even with clinical decision-support tools, large reductions in the overuse of PCI are unlikely to occur without associated financial "carrots and sticks" that are yet to be defined. A variety of financial incentives have been used to

contain costs associated with surgeries that may be overused. As health care costs accelerated in the 1970s, payers began to institute the first surgical second opinion programs (SSOPs) and precertification requirements.²¹ Although overall surgery rates declined with SSOP use, the absence of controlled studies made it difficult to determine whether nonconfirmation accurately identified surgeries that should not be performed.²¹

Precertification requirements, designed to identify potentially unnecessary operations before they are performed, have also been used to contain costs associated with inappropriate surgeries. These requirements have been used both by public programs and commercial insurance carriers. For example, the Peer Review Organization (PRO) Program developed by Medicare in the 1980s required surgeons to obtain approval before patients could have certain surgeries. Screening criteria developed by individual PROs varied widely.²¹ Consideration could not be given to severity of disease, comorbidity, possible alternative treatments, or outcome probabilities; thus, the denial rate for PROs nationwide was only 1.6% in 1990.²⁴

More recently, pay-for-performance programs, which use financial incentives to encourage improvements in quality and efficiency, are increasingly used to contain health care costs and discourage overuse. In the Centers for Medicare and Medicaid Services Premier Hospital Quality Incentive Demonstration Project, small financial incentives (limited to 1% to 2% bonuses for selected Medicare populations) supported improvements in quality of care for CABG patients, including an average improvement in the CABG quality composite score from 84.8% to 97.4% during the first 3 years of the project.^{25,26}

With respect to eliminating overuse of cardiac revascularization, the NPP Priorities and Goals are commendable in light of the large number of these

(continued on page 10)

procedures that are performed in the United States and their high cost. A more significant opportunity exists to reduce inappropriate use of PCI because it is more likely to be performed despite uncertain appropriateness.

In order to eliminate the overuse of cardiac revascularization while ensuring the delivery of appropriate care, a variety of strategies will likely be needed. Although the literature lacks examples of specific interventions to improve rates of appropriate PCI and CABG use, real-time clinical decision-support tools can improve adherence to evidence-based care and may be useful to reduce overuse of cardiac revascularization procedures. Even with these tools, however, large reductions in the overuse of PCI are unlikely to occur without associated financial “carrots and sticks” that are yet to be defined. Future research should focus on identifying and measuring the impact of specific tactics to improve appropriate use of cardiac revascularization procedures

David J. Ballard, MD, MSPH, PhD, is Senior Vice President and Chief Quality Officer for the Baylor Health Care System, Dallas-Fort Worth, Texas. He can be reached at: dj.ballard@baylorhealth.edu.

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Key Healthcare Quality Organization Websites

Agency for Healthcare Research and Quality (AHRQ)

Federal agency charged with improving quality, safety, efficiency, and effectiveness of health care.

www.ahrq.gov/qual/

AQA Alliance

Focuses on improving patient safety, healthcare quality, and value by means of measuring performance at the physician/clinical group level and reporting outcomes with meaningful information for decision makers.

www.aqaalliance.org/

Institute for Healthcare Improvement (IHI)

Global resources for improving the quality of health care

www.ihl.org/IHI/about

National Quality Forum

Promotes change through development and implementation of national strategies for health care quality measurement and reporting

www.qualityforum.org/

Healthcare Quality Organization Meetings of Interest:

American Society for Quality World Conference on Quality and Improvement

St. Louis, Missouri – May 24-26, 2010

<http://wcqi.asq.org/>

Annual Quality Colloquium at Harvard

A hybrid conference, Internet event, and training tool

August 16-19, 2010

<http://www.qualitycolloquium.com/>

Joint Commission Annual Conference on Quality and Safety

Chicago, Illinois – June 23-25, 2010

<http://www.jcinc.com/callforpresentations2010/annualconference/>

