MANAGED HEALTHCARE INSIGHTS℠
Thought Leaders Tackle Today's Issues

NUMBER SIX IN A SERIES

Health Care Quality Means Business

Based on a conference in Philadelphia on Oct. 11, 2002

Presented by Wharton Health Care Management Alumni Association

Continuing education credit for pharmacists and physicians sponsored by The Chatham Institute, Chatham, N.J.

SPECIAL SUPPLEMENT TO
Care
January 2003
Vol. 12, Number 1

Managed Markets Group
TAP Pharmaceuticals Inc.

TABLE OF CONTENTS

This special supplement is supported by an unrestricted educational grant from TAP Pharmaceuticals.

INTRODUCTION AND OVERVIEW

Health Care Quality Means Business

In this sixth installment of the "Managed Healthcare Insights℠" series, derived from the Wharton Health Care Management Alumni Association conference in Philadelphia on Oct. 11, 2002, a distinguished faculty addresses the business case for quality health care. Fueled by the recent Institute of Medicine report estimating up to 98,000 preventable medical errors annually in American hospitals, the quest to heighten the quality of health care has captured the attention of patients, employers, and providers, triggering changes that, ultimately, will redefine the nature of health care in this country. Within these pages, 10 experts address the issue of quality health care from a host of vantage points, outlining effective methods to eliminate waste and reduce costs while improving patient safety.

Bruce Bradley, director of health plan strategy and public policy at General Motors and a founding member of the Leapfrog Group, describes the hospital safety initiatives that 115 major purchasers of health care are using to reduce waste, inappropriate care, and inaccurate prescribing. Pennsylvania's malpractice insurance crisis is highlighted in an article by C. Mitchell Goldman, Esq., and Thomas Gaudiosi, CEO of Pennsylvania Health Care Providers Insurance Exchange, who outline effective ways to bring stability back to the marketplace. Lillee Gelinas, RSN, MSN, chief nursing officer and vice president at VHA Inc., looks at the effects that severe shortages in the health care workforce are having on quality of clinical care. John Kelly, MD, explains how technological advances are being used to significantly reduce medical errors at Abington Memorial Hospital, where he is chief patient safety officer.

Technological advancements also are boosting patient education efforts significantly. According to David Shulkin, MD, the educated consumer will place new demands on providers, who must adapt to this growing trend or "risk extinction." Barry P. Chaiken, MD, MPH, vice president of medical affairs at McKesson Corp., and Richard Fiedotin, founder of ePocrates, focus on the critical role of technology in reducing medical errors and improving quality. Robert J. Blyskal, executive vice president at Medco Health Solutions, shares innovative approaches that plan sponsors and pharmacy benefit managers can use to ensure that medications remain both accessible and affordable to those who need them.

David Nash, MD, director, office of health policy and clinical outcomes at Thomas Jefferson University Hospital, concludes with a candid and insightful analysis of the substantial challenges that may impede progress toward improvement and the success that is possible when sound business approaches are strategically applied to efforts to improve quality of care.

Technology Helps Eliminate Medical Errors

BARRY P. CHAIKEN, MD, MPH
Vice President, Medical Affairs,
McKesson Corporation, Boston

In 1999, approximately 43,000 people died from motor vehicle accidents, 42,000 from breast cancer, and 7,000 from medication errors — but none from errors in nuclear power plants. Nuclear power plants are complex and difficult to run, and their managers, therefore, focus on identifying potential errors and instituting processes to prevent them. NASA likewise conducts the same error-fault analysis with space flight, recognizing the need to anticipate trouble before it appears. Regrettably, the health care system has not fully embraced this process-analysis approach to identify potential errors and prevent them.

The estimate of 7,400 deaths from medication errors comes from the controversial Institute of Medicine (IOM) report, *To Err is Human: Building a Safer Health System* (Kohn 1999). In addition, the report suggests that anywhere from 44,000 to 98,000 patients die each year from medical errors of all kinds. These figures only consider inpatient care; the studies on which they were based did not consider the ambulatory setting. Setting aside the debate on the actual extent of mortality due to errors, the number is unacceptable at either end of the estimated range and warrants attention. Fortunately, through the use of technology and the application of process-improvement strategies, organizations can reduce those numbers significantly.

The degree to which the public blames medical errors on physicians is not certain, although in most highly publicized malpractice cases, the public seems to side with the patient. In contrast, most patients view their own physicians as highly competent, hard-working individuals. Few people would describe their personal physician as possessing skills that are merely average or as being incompetent. In reality, the physician population contains few practitioners at either extreme, and the majority of physicians are highly trained, competent professionals who provide good care. That said, the public generally believes that medical errors are due to careless and incompetent physicians, nurses, and other health care professionals — a viewpoint that is inconsistent with reality.

If the health care industry is to learn from those industries that excel at safety (e.g., airlines), preventing errors has little to do with human mistakes and much to do with poorly designed and executed processes. The message of the IOM report is clear — safety is a systems problem, not a people problem.

Medication, therapeutic, and other types of medical errors could be significantly reduced through the use of information technology solutions. Several hospitals use computerized physician order entry systems with clinical decision support (CPOE/CDS) to enhance patient safety while reducing the overall cost of care. These systems employ evidence-based medical guidelines to help physicians order those tests, medications, and therapies that are proven to deliver the best outcomes in patients, while alerting clinicians to potential complications and contraindications. Other types of technological solutions could also serve to avert errors in patient treatment. These include robots and cabinets for medication distribution, and use of bar codes at the point of care for medication administration.

Leapfrog leads the way

To enhance patient safety in the health care institutions that care for their employees, several large employers formed the Leapfrog

Group. Today, more than 120 Fortune-500 companies are members of Leapfrog. After much consideration, the group settled on the following three initiatives as first steps to promote patient safety:

- *CPOE/CDS to reduce medication errors.* Leapfrog cites researchers who report that up to 50 percent of all medication errors occur at this stage of the medication-management process.
- *Evidence-based hospital referrals,* to direct patients to centers where disease and procedure-specific care is of high quality. Leapfrog believes that centers that perform a high number of procedures or have extensive experience with treatment of a particular disease will produce better patient outcomes.
- *Use of intensivists* (highly trained critical-care doctors) in critical-care units and access to those physicians on a 'round-the-clock basis. Leapfrog believes this measure will improve patient outcomes, because these physicians have greater experience in critical-care issues than their primary care colleagues do.

Clinician adoption: key to improvement

Historically, physician adoption of clinical information technology tools has been slow and difficult. Yet, the potential benefits of clinical information technology tools cannot be tapped unless adoption is widespread. Although physicians are stereotypically perceived as technophobic, evidence exists that this is not necessarily the case. For example, according to a recent study, about 90 percent of physicians accessed the Internet in 2000, with 55 percent accessing it daily (Deloitte 2001). In addition, about 33 percent use personal digital assistants (PDAs), according to the fifth annual Modern Physician/PricewaterhouseCoopers survey (Versel 2002).

To learn more about physicians' adoption of technology, San Francisco-based McKesson Corp., a vendor of information technology, commissioned Harris Interactive, the online market researcher, to examine key drivers that move physicians to use new information technology (Chaiken 2002). Through an online survey, Harris interviewed 200 physicians and 100 nurses in community-based hospitals of at least 200 beds. In addition, Harris held an online focus group of CEOs, CMOs, CIOs, and CNOs. Both physicians and nurses responded overwhelmingly that quality of patient care was the most important issue for them. This challenged the commonly embraced paradigm that economic pressures supersede patient care for clinicians. Some 60 percent said they believed that existing clinical information technology can improve quality of care. An additional 26 percent indicated that they expected it to be available in 2 to 5 years.

More probing questions dealt with specific use requirements. Doctors told Harris they want access to patient information — laboratory results, pathology reports, radiology results and more — from one screen, with single sign-on for all applications. In addition, they desire to use a variety of devices (e.g., desktop computer, PDA, pager) to access clinical information remotely and while mobile.

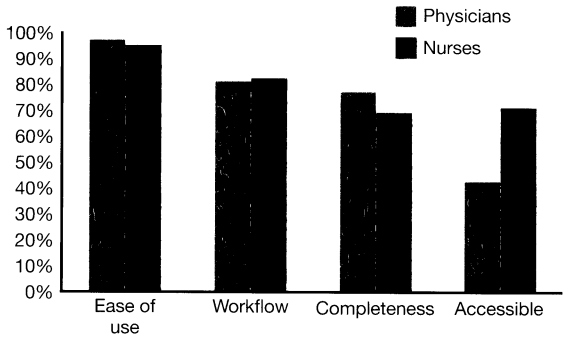
Finally, clinicians said the technology must be easy to use and fit into their workflow. This includes access from the hospital, clinic, or home. Physicians make up a small group of professionals who require continuous access to information yet lack a consistent place of work. To achieve high levels of physician adoption, clinical information technology solutions must satisfy this mobile workflow (Figure 6).

Looking for return on investment

Reducing errors via clinical information technology requires an investment of resources and political capital. Few facilities can "order" their clinicians to accept a new technology. Organizations

FIGURE 6 Technological Advances

What drives adoption?



must develop positive working relationships with members of their clinical staff to ensure a successful transition to the new technology, and build the foundation that will lead to smooth implementations of additional tools in the future.

Developing an institutional strategy helps to reduce the risk of failure. Successful strategies choose projects that initially offer significant benefits but have few associated risks. These projects often can deliver high levels of physician adoption that can then be leveraged when implementing more complicated clinical solutions, such as CPOE/CDS. By obtaining high levels of adoption early with simpler projects, a framework is established whereby more complex but incrementally more valuable solutions can have a greater probability of success. The goal is to achieve high levels of adoption early and to carry those adoption levels through the incrementally more complex clinical solutions as they are implemented.

For example, CPOE/CDS, a highly complex solution, forces physicians to use a computer to enter orders in the acute care setting. In addition, this application provides guidelines, order sets, and alerts at the time of ordering, thereby making the entire ordering process for the physician considerably more complex. This higher level of interaction with the clinical information technology solution requires a degree of change in physician workflow. This clearly demands proper training and more time for a physician to learn to use the solution. Until physicians become comfortable with a system and are able to appreciate its benefits, physicians initially may feel inconvenienced. In time, within institutions that properly plan the introduction of their technology solutions, this apprehension about the technology will dissipate.

Not all organizations have equal funds to pay for these solutions, and therefore will view the return on investment differently. Competing projects often may take precedence over patient safety information technology investments. Organizations with greater institutional endowments will have the opportunity to use both. Investment in technology presents a unique decision-making process for each organization.

Medical-error reduction

Medical errors can occur from a lack of knowledge in the caregiver. During the last 20 years, the number of pages in the *Physicians Desk Reference* has grown from about 1,100 to more than 3,000. This growth reflects the introduction of more than 30 new drugs each year. If new peer-reviewed medical journal articles are included, the amount of new information confronting a physician is not only staggering but also impossible to assimilate. Access to evidence-based medical guidelines at the point of care using information technology tools helps physicians process this new in-

formation and increases the probability that it will be used during decision making.

Other causes of medical errors include the confusing drug names that can easily be misinterpreted when reading marginally clear handwriting. Examples of commonly misinterpreted drug orders include confusion between the drugs Celebrex and Celexa, both frequently prescribed for elderly patients, yet one is for arthritis and the other is for depression.

Handwriting problems also cause orders to be incorrect in dosing and administration frequency. Often q.d., meaning once daily, is confused with q.i.d., meaning four times a day. Medical educators are trying to get physicians to replace q.d. with "q. daily," to reduce confusion. Some institutions have tried to combat the handwriting problem through penmanship classes for physicians. Unfortunately, this approach places blame on the individual, rather than focusing on process improvement.

CPOE/CDS orders are electronically standardized, and potential handwriting-induced errors are eliminated. In addition, CPOE/CDS offers physicians protocols for providing evidence-based care to their patients. Unlike paper protocols, which are inconvenient due to their lack of easy access and portability, CPOE/CDS brings disease-specific protocols to the point of care at the time of clinical decision making. Access to the information becomes an integrated part of the care process.

Effective CPOE/CDS presents physicians with all the critical information needed to treat a patient, helps focus the physician on critical laboratory values and medications that could influence the treatment decision, and makes the ordering process, with potentially complicated calculations, simple and easy.

For example, for a patient with a pulmonary embolism who requires anticoagulation therapy, a computerized protocol would highlight current bleeding-time values, provide a list of prescribed medications that could affect bleeding times, and offer a standard set of orders to properly anticoagulate and monitor the patient. Not only can such a protocol perform the necessary drug calculations, it also can create a checklist of the factors that a physician needs to consider when anticoagulating a patient. In addition, the system permits the physician to deviate from the protocol and provide reasoning for such a decision. This creates a database of additional knowledge that could be used to monitor and enhance the effectiveness of the existing protocol. Finally, all medication orders can undergo drug-drug, drug-dose, and drug-allergy checking against an up-to-date electronic clinical database.

In contrast to complaints that protocols are "cookbook medicine," properly designed and implemented protocols reduce the burden on physicians to memorize miscellaneous facts, and allow them to focus on more complex problems of diagnosis and treatment.

Currently, Vanderbilt University Medical Center, in Nashville, has implemented CPOE/CDS for physician use. On an average day at Vanderbilt, more than10,000 orders are generated, with 70 percent of the orders entered by house staff or attending physicians. The remaining orders are made up of emergency and verbal orders. Of approximately 400 warnings generated each day, 15 percent to 20 percent result in a change in the initial ordering plan. Vanderbilt has demonstrated financial savings from a reduction in laboratory tests, selection of less expensive antibiotics, and improved documentation for reimbursement.

Other patient-safety technology

In addition to CPOE/CDS, such technologies as bar-coded medications and medication-dispensing robots and cabinets can help enhance patient safety by reducing medication errors. The same technology that helps grocery and department stores manage inventory and accurately price products at checkout is now being used in hospitals to increase the accuracy of the medication-management process. For example, bar coding of medications, patients, and health care staff allows information technology systems to automatically perform the five "rights" of medication administration — right drug, right dose, right route, right time, and right patient. Because bar-coding is regarded as a proven technology to enhance patient safety, Congress is considering its inclusion in patient-safety legislation.

Robots and cabinets utilize bar-coded medications to stock and dispense medications in the pharmacy and on the floors. Both have been proven to enhance safety while providing financial benefits through increased medication management efficiency.

Clinical-information tools also enable potential problems to be monitored and the appropriate clinical personnel notified as necessary. Such proactive surveillance helps to eliminate many life-threatening problems or identify them at an early stage, when they are more easily treated (e.g., patients on the heart medication digoxin who are susceptible to life-threatening complications if their serum potassium falls below the normal range). Automated surveillance tools free the physician from the unreasonable burden of remembering and then checking every potential problem.

Conclusion

Institutions that want to enhance patient safety and improve outcomes cannot ignore the multiple benefits of clinical information technology tools. Maximum benefits from such tools can be obtained only through well-planned use of various clinically helpful information tools that will be widely adopted by physicians. Once such technology is established, organizations can work to introduce more complex but incrementally more beneficial solutions such as CPOE/CDS. Such solutions can dramatically reduce variability of care, reduce costs, improve outcomes, and enhance patient safety.

References

Chaiken BP. Physician adoption of technology linked to providing benefits. *J Quality Health Care*. 2002;1(2):25–27.

Deloitte Consulting and Cyber Dialogue. *Taking the Pulse: Physicians and the Internet*. 2001. Available at: «http://www.deloitte.com/dtt/cda/doc/content/physicians.pdf». Accessed Nov. 22, 2002.

Kohn KT, Corrigan JM, Donaldson MS, eds. To Err Is Human: Building a Safer Health System. 1999. Washington: Institute of Medicine, National Academy Press.

Versel N. Wave of the (not-so-distant) future: annual healthcare IT survey shows rise in technology adoption. *Modern Physician*. Nov. 2002.