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**Fast-track surgery pleases patients, saves resources**

A new anesthesiology dosing system enables patients to wake up sooner after general anesthesia. Often, they can bypass phase I of post-anesthesia care and leave the surgery area in an hour. Using a brain-wave monitor, anesthesiologists titrate drugs so the dosage is just enough to keep the patient unconscious. Fast-tracking can reduce resource utilization, given certain staffing models and alignment of processes related to surgery. . . . . Cover

### **Brain-wave monitor fine-tunes anesthesia doses**

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The success of monitored anesthesia care depends on clear identification of business objectives and understanding of the clinical processes involved.

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## Fast-track surgery pleases patients, saves resources

*Clinicians caution against unrealistic expectations*

**A** new way of integrating technology with the art of medical practice has led to shorter wake-up times following general anesthesia. Known as “fast-tracking,” the technique usually enables patients to bypass the phase I post-anesthesia care unit (PACU). They can leave the outpatient or inpatient surgical area, sometimes as soon as one hour.

Given shorter lengths of stay in the surgical unit, researchers suggest that salaried staff are freed up for other tasks and hourly personnel work fewer hours. While it’s logical to predict fast-tracking represents the future of anesthesiology practice, the arguments against it are worth considering. Experts are not entirely united in their support of the innovation.

The tool that enables fast-tracking is the Bispectral (BIS) Index, developed by Aspect Medical Systems in Natick, MA. A sensor strip, attached to the patient’s forehead, continuously measures the depth of the hypnotic state through EEG patterns or brain waves. The BIS monitor records and displays them as numerical values on a screen.

The real-time data allow the anesthesiologist to titrate anesthesia dosing with greater precision than the conventional methods of monitoring blood pressure, heart rate, and taking into account the patient’s physical characteristics.

BIS monitoring has been commercially available since 1998. While further studies of the potential cost savings are in progress, clinicians who discussed fast-tracking with QI/TQM are cautiously optimistic about its value.

In a recent study,<sup>1</sup> researchers built a computer simulation model for calculating the potential cost

*Continued from cover page*

### **Small hospital launches high-tech stroke solution**

A 160-bed hospital in a rural area uses virtual consultations with off-site specialists as part of its t-PA therapy for stroke patients. Intravenous t-PA can reverse ischemic stroke damage if given within three hours. Impressed with the community hospital's procedures, specialists at a nearby urban medical center asked the staff to help them initiate a similar program . . . . . 29

### **System offers clinics daily CHF monitoring**

For \$50 per patient per month, clinics and health plans can stay in touch with their congestive heart failure (CHF) patients. Patients transmit their weight and symptom data via their telephones and a programmed scale. At the clinic, the computerized system alerts clinicians to critical changes in individual patients. The monitoring system, Cardiocom, potentially reduces the outside monitoring costs of \$150 per patient, per month and prevents unnecessary hospitalizations. . . . . 32

## **QUALITY TALK**

### **Employers, consumers, and the Internet re-define health care quality**

Companies shop for health benefits based on their employee demographics and geographic distribution. An emerging trend is to allot a defined amount for health care benefits and allow employees to spend it as they see fit. Such developments will broaden the definition of health care quality to include accessibility of service and interpersonal sensitivity of clinicians. The occurrence of malpractice claims often correlates with problems in compliance, utilization, and efficiency . . . . . 34

## **DATA WATCH**

### **Hospital directory serves industry and consumers**

An on-line data service furnishes a combination of free as well as subscriber-only information. Visitors to the AHD.com site can look up nearly any hospital and obtain a summary of its services, type of ownership, financial background and general performance statistics. Subscribers may receive detailed clinical or financial data for benchmarking and marketing. Custom information includes databases and contact lists . . . . . 36

## **COMING IN FUTURE ISSUES**

- Teaching clinicians alternatives to restraints
- How employers color the quality of care
- Reduce ICU days by establishing ventilator guidelines

benefits of fast-tracking. "[The model] takes the values of three- to six-minute savings per case and translates the small cost savings into personnel planning data for ambulatory surgery centers," explains **Paul Manberg**, PhD, vice president of clinical, regulatory, and quality assurance for Aspect Medical Systems. Manberg is a member of the research team; Aspect Medical Systems sponsored the study.

The research identifies several variables that determine the cost savings with fast-tracking:

- Staff compensation patterns in an ambulatory surgery facility. Decreased labor costs depend on whether staff are paid on salary or on hourly rates.

- Reductions in PACU nurse staffing achieved when patients go directly from the operating room to phase II PACU, bypassing phase I PACU. (In phase I PACU, care resembles that given in an intensive care unit.)

- Delays in surgical support processes such as wait times for test results, prescriptions, transport of patients out of the surgical area, or physician release allowing patients to go home.

- Number of patients anesthetized each day.

For ambulatory surgery centers, the study shows potential labor cost savings of \$7.39 per case from the combination of new anesthetics and BIS monitoring. Those savings are most likely to occur at centers staffed by full-time nurses who are frequently required to work overtime.

It's different in hospitals, notes another investigator on the study, **Alex Macario**, MD, MBA, Assistant Professor of anesthesia and health research and policy in the department of anesthesia of Stanford (CA) University School of Medicine. "Most of the costs in a hospital are overhead or fixed costs. So if you reduce patient time, you will not be saving a lot of dollars because you have to have the staff there anyway." However, the researchers suggest that fast-tracking could increase productivity by freeing staff for other work when they are not taking care of patients.

The study looked at staffing and clinical practice models originally designed for standard progression of patients through phase I and phase II PACU care. Other clinical and patient satisfaction features of fast-tracking make it attractive enough that clinicians foresee wider use.

If it becomes the norm, it could determine the architectural design of ambulatory and inpatient operating room suites in years to come. **(One hospital already has made such a change. See**

**“Brain wave monitor fine-tunes anesthesia doses,” p. 28.)** As data emerge from surgical units specially designed for fast-tracking, we may see different results than what present studies show. Meanwhile, clinicians familiar with fast-tracking like the quality improvements they see.

### ***Clinical implications of fast-tracking***

For patients to bypass phase I PACU, the surgical and postoperative procedures have to work like a tightly choreographed dance. “Fast-tracking forces you to do the QI process,” observes Macario. “The physicians and nurses have to collaborate. It forces us to institute pathways that can eliminate duplicate tests and unnecessary steps. For example, if a cardiac bypass patient is to be extubated within four to six hours in the ICU, we have to talk about what needs to happen in the operating room.”

Post-surgical pain management is another critical element of a fast-tracking plan, adds **Suzanne Richins, RN, MBA, FACHE**, director of Patient Care at McKay-Dee Hospital in Ogden, UT. The surgeon and anesthesiologist need to collaborate on medication plans because if the patient requires narcotics for postoperative pain, it negates the benefits of fast-tracking, she notes.

Though fast-tracking, by definition, bypasses phase I PACU, protocols must include procedures for emergency phase I PACU care. A patient can go into crisis in seconds, and there’s no time to call in special staff or equipment. “If someone goes badly in fast-tracking, you need airway management equipment close by,” Richins points out. “While you don’t need the one-to-one patient-to-equipment ratio as in regular anesthesiology, the fast-tracking staff have to be equally trained to use the equipment.”

### ***Patient satisfaction could be pivotal factor***

The consensus among those *QI/TQM* talked to is that patients want to spend the least possible amount of time in a medical facility. Richins cites data from patient surveys at McKay-Dee Hospital, which indicate equal satisfaction with surgery involving general anesthesia or fast-tracking. “We’ve had no complaints about fast-tracking.” She calls it “perfect” for outpatient surgery, if followed by high-quality post-surgical pain management.

**Franklin Dexter, MD, PhD**, associate professor

## **Key Points**

- Monitored anesthesia care, known as “fast-tracking,” enables patients to wake up sooner from general anesthesia and sometimes go home one hour after surgery.
- The technique is made possible by the Bispectral (BIS) Index. A sensor attached to the patient’s forehead measures the depth of the hypnotic state and displays the values on a screen. Thus anesthesiologists can titrate the exact drug doses required to keep the patient unconscious.
- Fast-tracking can save staffing and drug costs under the right circumstances.
- The technique has its share of supporters, but the jury is still out on whether it will become the norm for anesthesia care.

**(See related articles: “Brain-wave monitor fine-tunes anesthesia doses,” p. 28; and “The business side of surgical fast-tracking,” p. 29.)**

in the department of anesthesia at the University of Iowa in Iowa City, says his impressions of patient satisfaction concur with McKay-Dee Hospital’s data. Dexter is part of the research team that conducted the cost-savings study. “In my experience, patients are more satisfied with fast-tracking for ambulatory surgery, although I have no scientific studies to back it up,” he says.

Prerequisites to high satisfaction include well-aligned patient and family expectations. “The patient and family need to expect that a patient who is undergoing monitored anesthesia care may be leaving an hour after the end of surgery.” Another key is thorough education about home care, Dexter adds.

### ***Wave of the future? Well, maybe***

While they agree that fast-tracking holds great promise, health care professionals are not blind to the pressures that could temper widespread use. Dexter describes the clinical concerns of anesthesiologists and nurse anesthesiologists, for instance.

Patient safety could be jeopardized if the phase I and phase II PACU areas were separated. It could delay the availability of a crash cart or breathing equipment when seconds count.

“Another concern of many anesthesiologists and administrators of surgical suites is that billings could decrease with fast-tracking.” Dexter says that

## Brain-wave monitor fine-tunes anesthesia doses

Two years ago, a technology made its debut for translating electroencephalogram (EEG) readings into useful assessments of a surgical patient's hypnotic state. In some organizations, it has significantly shortened the cycle from completion of surgery to the patient's departure from ambulatory and inpatient care.

The tool is the Bispectral Index (BIS), developed by Natick, MA-based Aspect Medical Systems Inc. It gives anesthesiologists a way to monitor a patient's level of consciousness, or depth of hypnotic state during surgery. Using that data, they can customize anesthesia. BIS offers higher precision in titrating anesthetics than conventional methods of monitoring vital signs and administering standard doses based on the patient's size, age, or health status.

The BIS Index helps to prevent the problem of too much or too little anesthesia. With just the right dose, patients recover faster. Further, anesthesia drug savings can amount to \$5 to \$20 per case, according to **Paul Manberg**, PhD, vice president of clinical, regulatory, and quality assurance at Aspect Medical Systems.

### Description

The BIS monitoring process translates brain waves into values reflecting the hypnotic state during surgery. The EEG signals are captured through a sensor placed on the patient's forehead. The readings display on a 3-pound, portable screen unit (7 inches by 6.8 inches) that mounts on an IV pole or lies on a flat surface.

Clinical trials show that patients anesthetized with the aid of BIS monitoring are more likely to bypass phase I of the post-anesthesia care unit (PACU).

### Range of uses

The uses range from complex cardiac surgeries to short outpatient procedures. The BIS Monitor is in use in more than 620 facilities including Massachusetts General Hospital in Boston and Community Hospitals Indianapolis (CHI). At CHI, fast-tracking, made possible by the BIS Monitor, has been key to designing a new surgery center without a phase I PACU. Each patient will move to a private room immediately following surgery.

### Costs

The BIS Monitor sells for \$8,900. BIS Sensors are \$15.00 each. Volume discounts are available. ■

if anesthesiologists and nurse anesthetists spend less time performing their clinical services, their billings decrease. With respect to a surgical facility's billings, it would depend on whether its anesthesia fee is calculated partly on the length of time patients are anesthetized. If part of the facility's anesthesia fee depends on time, then decreasing the duration of anesthesia time will decrease billings.

Macario says it's too early to predict whether fast-tracking will be the norm in the future. "Typically, we might spend \$35 to \$45 for anesthesia drugs and supplies to put an outpatient to sleep for surgery. Each anesthesiologist and surgical suite needs to determine whether the extra \$12 to \$15 per patient [for the nonreusable BIS Sensor strip] provide enough value to ensure routine use."

On the other hand, Macario notes, patients often request fast-tracking because the innovation has garnered considerable media coverage. "But whether it will be used routinely in the future is still unknown."

Richins leans toward the odds of wider application of the practice. "Pharmacology [associated with surgery] will continue to improve. Fast-tracking will reduce the length of stay, and that will result in labor cost savings."

While Dexter admits "I have a personal bias that fast-tracking is the way to go," he cautions surgical units not to adopt it without spelling out their objectives and weighing them against the proven benefits of fast-tracking. (See "The business side of surgical fast-tracking," p. 29, for the typical objectives for fast-tracking and conditions for achieving them.)

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### Recommended reading

1. Gan TJ, Glass PS, Windsor A, et al. Bispectral Index monitoring allows faster emergence and improved recovery from propofol, alfentanil, and nitrous oxide anesthesia. *Anesthesiology* 1997; 87:(4)808-815.

2. Song D, Joshi GP, White PF. Titration of volatile anesthetics using Bispectral Index facilitates recovery after ambulatory anesthesia. *Anesthesiology* 1997; 87:(4)842-848. ■

# The business side of surgical fast-tracking

If patients required less anesthesia and woke up and left the surgical suite sooner, wouldn't it make sense to adopt fast-tracking procedures in your organization? Before you decide that fast-tracking is right for your inpatient or ambulatory surgical services, ask "What are we trying to accomplish?"

In other words, "What's your business plan?" asks **Franklin Dexter**, MD, PhD, associate professor in the department of anesthesia at the University of Iowa in Iowa City. It might be to take care of all the patients who come to your facility at the lowest cost. If yours is a for-profit facility, however, it's important to evaluate whether fast-tracking might actually decrease revenues instead of costs.

Typical objectives for fast-tracking include:

1. reduce costs;
2. enhance patient satisfaction;
3. raise the through-put of a surgical facility;
4. increase revenues.

The first two are the most common objectives of fast-tracking, according to Dexter. Most of the cost savings accrue from lowering the costs of phase I post-anesthesia care unit (PACU). However, most institutions will fail to decrease costs if they use fast-tracking for random patients. "The cost savings will materialize only if you fast-track around 50% or more of the patients," he emphasizes. (See "Brain wave monitor fine-tunes anesthesia doses," p. 28.)

As for patient satisfaction, fast-tracking is a winner — under the right conditions. Those conditions include careful post-surgical pain management and alignment of patient and family expectations regarding discharge times and home care. (See cover story, "Fast-track surgery pleases patients, saves resources.")

The goal of raising through-put in a surgical facility often surfaces as a facility looks for ways to avoid a bottleneck, caused by, for instance, limited availability of ventilators or a shortage of nurses trained for PACU care. Regardless of your objective, successful fast-tracking depends on two conditions:

- Anesthesiologists and nurses develop and approve protocols for patient selection, patient education, and PACU follow-up.
- Phase I PACU is located immediately adjacent

## Need More Information?

For techniques and best situations in which to practice monitored anesthesia care, contact:

- **Alex Macario**, MD, MBA, Assistant Professor of Anesthesia and Health Research & Policy, Department of Anesthesia, Stanford (CA) University School of Medicine. Telephone: (650) 723-6411. E-mail: amaca@leland.stanford.edu.
- **Franklin Dexter**, MD, PhD, Associate Professor, Department of Anesthesia, University of Iowa, Iowa City. Telephone: (319) 356-2782. E-mail: franklin-dexter@uiowa.edu.
- **Suzanne Richins**, RN, MBA, FACHE, Director of Patient Care, McKay-Dee Hospital, Ogden, UT. E-mail: mksrichi@ihc.com.

For more about the BIS Monitor for anesthesia care, contact:

- **Paul Manberg**, PhD, Vice President, Clinical and Regulatory Affairs and QA, Aspect Medical Systems Inc., 2 Vision Drive, Natick, MA 01760-2059. Telephone: (508) 653-0603. E-mail: pmanberg@aspectms.com. Web site: www.aspectms.com.

to the phase II PACU. The same nurses should staff both units. "If a patient suddenly needs intubation, you can't run down the hall to get a crash cart," Dexter warns. ■

## Small hospital launches high-tech stroke solution

*Program includes specialists via Internet*

If administered within three hours of a stroke, the drug t-PA (tissue plasminogen activator) can reverse stroke damage that would turn an active person into an invalid. But success depends on speed and teamwork of the caliber you might expect in an Olympic relay race. "Time is brain," says **John Hartness**, MD, chairman of the stroke treatment improvement committee at Union Regional Medical Center (URMC) in Monroe, NC.

T-PA assessment and therapy is a process in which minutes count and handoffs are numerous. "I can't emphasize the team effort enough," Hartness explains. "If any one person is not there

## Key Points

**Location:** Union Regional Medical Center (URMC), a 160-bed community hospital in Monroe, NC.

**Situation:** The hospital was in the midst of upgrading its stroke care program in 1995 when the results from clinical trials for the new t-PA (tissue plasminogen activator) treatment came out. One challenge to adopting its use was the absence of neurological specialists whose input was required for patient assessment and administration of the drug. The hospital uses specialists from Charlotte, NC, 30 miles away. In the case of t-PA treatment, transporting patients that distance would lose precious minutes during the three-hour post-stroke window during which the drug can reverse brain damage.

**Solution:** The hospital's stroke care committee created a procedure for electronically notifying the specialists and transmitting CT-scans and X-rays. Additionally, the group streamlined procedures from the time paramedics pick up a stroke victim through the start of intravenous t-PA. Since the protocol went into use, the average arrival-to-CT-read cycle is 45 minutes and t-PA starts in less than 60 minutes. Impressed with the process, specialists in Charlotte invited the URMC staff to help them initiate a similar treatment program.

to do his job, it breaks down.

"The sooner t-PA starts, the greater the benefits. But after three hours [from the time of the stroke], there's more harm than good," he stresses.

That time frame is a distinct challenge for URMC. The 160-bed hospital's catchment area is largely rural. When specialists are needed, URMC's clinicians usually turn to the larger medical centers in Charlotte, 30 miles away. Monroe isn't a place where you'd look for adoption of a revolutionary and highly complicated therapy within months of its introduction.

But URMC was upgrading its stroke care procedures in 1995 as Hartness kept one eye on the t-PA clinical trials. When the guidelines emerged in December that year,<sup>1</sup> the hospital was positioned to consider them.

Candidates for treatment are people who sustain

an ischemic stroke caused by a blood clot that becomes lodged in the brain or in an artery supplying blood to the brain. Administered intravenously, t-PA dissolves clots that block blood flow. It does not work for hemorrhagic strokes, which are caused by a ruptured blood vessel in the brain.

### *'Country cousins' teach city docs*

An interdisciplinary committee included members from the area's stroke care network. Represented were radiology; lab; surgery; physical, occupational, and speech therapy; nursing; social services; intensive care; and the emergency department (ED), as well as the local family practitioners. The committee created technological links with the offsite specialists. "We had to tweak our processes so we wouldn't lose patients to the time barrier," Hartness recalls. The t-PA protocol went into use in June 1996.

The ED orchestrates the moves:

- Paramedics make a heads-up call to the ED when they are dispatched to a possible stroke episode. In transit, they assess the patient for signs such as facial paralysis, general weakness, and impaired speech skills. If possible, they draw a blood sample to shave minutes off procedures in the ED.

- ED staff, meanwhile, clear a large front room to accommodate the stroke care team.

- Upon receiving a call from the paramedics, ED staff telephone or page the radiologists, neurologists, and neurosurgeons, alerting them to watch for X-rays and CT scans transmitted electronically, usually over the Internet.

- Word goes out to URMC's lab and radiology technicians to stand by for tests.

- If a blood sample is not ready upon arrival, the ED nurse draws it within 10 minutes, or calls a physician if it has to be drawn from a large blood vessel. Testing rules out hypoglycemia.

- A nurse administers a stroke scale to determine the extent of brain injury.

As the specialists in Charlotte learned more about t-PA through their consultation on URMC's cases, they spread the word to their peers. Soon, Hartness and his team received invitations to come to Charlotte and tell their story.

"Here we were, the country cousins, telling the city doctors about our new stroke treatment program! It was a surprise to all of us that we were using t-PA before the centers in Charlotte. We usually expect it to be the other way around," he says.

URMC takes care of about 150 stroke episodes each year. Here are a few of their t-PA statistics:

- The therapy has been administered 11 or 12 times, according to Hartness.
- Average arrival-to-CT-read cycle is under 45 minutes.
- T-PA starts in less than 60 minutes.
- More than 50% of the t-PA recipients experience complete, or nearly complete prevention of long-term brain damage. In the clinical trials,<sup>1</sup> patients treated with intravenous t-PA were at least 30% more likely to have minimal to zero disability three months later.

Recently, in a new URMC record of 25 minutes for arrival-to-CT-read, t-PA spared a 91-year-old man from spending the rest of his life paralyzed and bedridden. It saved his family the ordeal and expense of moving him to a nursing home. He didn't even need rehab after he left the hospital.

Economically, t-PA is a bargain when compared to the cost of long-term disability, Hartness explains. His point is clear in the case of another URMC stroke patient. The age 40-something truck mechanic suffered a severe ischemic stroke but arrived in time for t-PA. He was able to walk out of the hospital and go back to work after a brief recovery period. "In that case, we saved two breadwinners — the mechanic and his wife, who would have had to quit working to take care of her husband," Hartness notes.

### ***Coordinating clinical response***

Hartness credits part of URMC's complication-free track record to conservative adherence to the time and patient profile guidelines. "About 80% of the hemorrhaging from the drug comes in cases where it is given outside of the guidelines. But we've also been very fortunate," he concedes. "Sooner or later, we will experience complications." Even with timely administration, the drug can cause cerebral hemorrhaging for some patients.

In the clinical trials, 6.4% of the t-PA recipients had brain hemorrhage; only 0.6% of the placebo recipients had similar problems. Three months post-stroke, mortality was 17% in the t-PA group and 21% in the placebo group. Hartness emphasizes the cerebral hemorrhage risks from using the drug more than three hours after the stroke usually outweigh potential therapeutic benefits.

Early in the stroke care initiative, the emphasis was on coordination of the clinical response, he says. "Now we're ready to get the information to the community that there is something we can do

for strokes, if they can get in here fast enough." The local news media have cooperated by running newspaper, radio, and television stories. Community groups sponsor educational programs. "People are starting to get the point that they should act fast when they see the symptoms in themselves or in their loved ones," Hartness notes.

Eventually, URMC will work with the schools to introduce stroke symptom recognition into the science curricula. The goal is for children to carry the message home. With that goes the never-ending emphasis on prevention. According to Hartness, smoking is quite prevalent in the area. His observation is confirmed by a recent study<sup>2</sup> conducted by the National Center for Health Statistics of the Centers for Disease Control and Prevention in Atlanta. Hypertension is disproportionately high among residents of southern states, especially middle-aged, non-Hispanic white men living in nonmetropolitan regions.

### ***Doing what works locally***

The stroke treatment program at URMC grew out of the VHA's Clinical Advantage initiative. VHA is a nationwide network, based in Irving, TX, whose membership comprises community-owned health care organizations and physicians. Clinical Advantage is a member resource for converting clinical knowledge into patient care practices.

The hallmark of the effort, according to VHA vice president for clinical affairs, **Stacy Cinatl**, is the interplay between standardization and flexibility. One set of practices or objectives cannot work for all VHA organizations, as the membership runs the gamut from academic medical centers to rural clinics.

Available care improvement programs include: Acute myocardial infarction, medical error reduction, and congestive heart failure. The theme is "Here's the science, find ways to make it work in your organization."

The Clinical Advantage stroke care program involves five domains:

- 1. Coordination of care**
- 2. Saving brain**
- 3. Preventing complications**
- 4. Secondary stroke prevention**
- 5. Restoration of function**

Participating institutions learn how to apply proven change methodologies like rapid-cycle change as taught by the Institute for Healthcare

## Need More Information?

For more on t-PA therapy guidelines and application, contact:

- **Patty Eury**, RN, Nurse Director of Outpatient Services, Union Regional Medical Center, 600 Hospital Drive, Monroe, NC 28111. Telephone: (704) 283-3198.
- **National Institute of Neurological Disorders and Stroke**, Bethesda, MD. World Wide Web: [www.ninds.nih.gov](http://www.ninds.nih.gov).

To learn more about VHA's Clinical Advantage initiative, contact:

- **Ivy Elkins**, Marketing Manager, VHA Inc., 220 E. Las Colinas Blvd., P.O. Box 140909, Irving, TX 75039-5500. Telephone: (972) 830-6914. E-mail: [ielkins@vha.com](mailto:ielkins@vha.com).

Improvement in Boston, and PICOS, the QI improvement process introduced by General Motors in Detroit, as applied in the manufacturing world. (For more information about PICOS, see "Grass Roots QI" in *QI/TQM*, April 1999, p. 52.) Collaboration and information-sharing take place through VHA-sponsored chat rooms monitored by experts, and shared literature reviews, case studies, and care techniques.

The experience at URMIC makes a strong case for the potential of applying complex medical processes in primary care facilities. The keys are strict adherence to proven guidelines and creative partnering of human and technical resources.

"Everybody has to look at how resources are being used in their institutions. Start asking 'Who could learn new skills? How can we find the consultants to fill in for our knowledge limitations?'" Hartness suggests. "At first people here didn't think they could learn what they needed to know to use t-PA, but the enthusiasm grew when they saw that we got good results from tweaking our work processes and applying the drug protocol. Now, everyone is very proud of our success and nobody wants to be the reason it doesn't work."

Cinatl predicts that consumer demand will grow as people learn about t-PA through local media and articles like the one in a recent issue of *Good Housekeeping*.<sup>3</sup>

(For another example of effective deployment of human and technical resources, see "An EMR is only as good as its electronic foundation" in *QI/TQM*, December 1999, p. 141.)

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## System offers clinics daily CHF monitoring

### *Automated data prevent hospitalizations*

While third-party monitoring of congestive heart failure (CHF) patients is better than no monitoring, a new technology offers a way to bring it in-house with potentially impressive quality outcomes.

**Mary Jo Macklem**, RN, nurse clinician in the CHF Clinic of the Park Nicollet Clinic in Minneapolis, uses the system, Cardiocom, for daily patient feedback. "We can quickly review [patients'] current weight, symptoms, medications, and trends on the screen and know specifically who needs our assistance."

By using the Cardiocom CHF management program, at \$50 a month per patient, health care organizations can eliminate outside monitoring fees of at least \$150 a month per patient, according to **Daniel Cosentino**, president of Cardiocom,

## Key Points

- A new phone monitoring system for congestive heart failure patients enables providers to maintain daily contacts instead of contracting with outside services.
- The computerized system transmits the patient's weight and symptom data via a specially designed in-home scale. Patients and providers report ease of use.
- At \$50 per patient per month, the system can save 65% of average third-party monitoring fees as well as the cost of preventable hospital admissions.

based in Excelsior, MN. Daily monitoring also offers a high probability of preventing hospital readmissions, which average about \$7,000 per episode. (See *QI/TQM*, January 2000, cover story.)

Cardiocom entered the commercial market in October 1999, and already it's been installed in health care systems around the country, Cosentino says. Patients welcome the ease of use and the closer ties with their nurses. Soon, the company will expand the program to include blood-pressure and pulse-rate monitoring.

The basis of the system is a Telescale placed in the patient's home. It connects into an electrical outlet and the phone jack. Equipped with a computer chip, the Telescale transmits the patient's weight to the clinic's computer via the phone line. It also sends the patient's answers to 12 questions regarding key signs of an impending CHF crisis. Some of the questions cover medication compliance, shortness of breath, and decreased urine output. It takes patients roughly two minutes to step on the scale, dial the clinic, and answer the wellness questions. They have their choice of communication modes: voice or a numeric or Braille key pad.

"Clinicians only spend time with patients who need it the most," Cosentino says. "The daily monitoring is better than random calls that can miss patients who are headed for a crisis."

Patient data reaches the provider within 30 seconds. The system records the data and alerts staff about patients requiring intervention. It compiles customized reports to mesh with the user's existing record-keeping system. Routine reports include:

- individual patient summaries;
- trend reports on the clinic's CHF patient population;
- hospital and emergency room admissions.

Macklem uses Cardiocom for patients with the highest risk of readmission. "Most of them are elderly people who had compliance issues or who have bad vision and could not see a regular home scale. Before we introduced Cardiocom, they would not have weighed themselves every day. If they only weighed themselves once a week, they could have gone into a crisis before they weighed themselves again."

The initial concern at Park Nicollet centered on the patients' acceptance of and compliance with daily monitoring. As it turned out, "Most of the patients are thrilled with the Telescale," says Macklem. "Some even say it's like having a home

visit by us each day. We can catch a change in symptoms before a crisis develops. When we call the patient, we have the footwork done."

The ease of use that patients enjoy extends to providers as well. She says the system was up and running within a few days after the phone lines were installed.

### **Cost details**

Users pay \$50 per month for each patient monitored. The minimum is 100 patients, or \$5,000 a month. Here's what the fee covers:

**1. Cardiocom software with free upgrades as they become available.** The software can be integrated into the provider's existing network. Data are generated in a Microsoft Access database and are compatible with other commonly used software packages.

**2. A computer with accessories, including the required modems, a 17" color monitor, a rewritable and recordable CD-ROM drive, and a laser printer.** As the patient population increases, additional modems and memory are provided.

**3. A Telescale for each patient in the program.** Shipping fees for the scale are extra. The amount varies. Sometimes the delivery goes directly to patients' homes. Other providers request bulk shipment to a hospital or clinic for distribution to patients.

**4. Installation and on-site training.** One condition prospective users need to consider is that Medicare does not reimburse for the monitoring, Cosentino acknowledges. "But we're working on that." ■

### **Need More Information?**

For CHF patient monitoring, contact:

- ☐ **Mary Jo Macklem**, RN, Nurse Clinician, CHF Clinic, Park Nicollet Heart Center, Meadowbrook Medical Building, Suite W200, 6490 Excelsior Blvd., St. Louis Park, MN 55426. Telephone: (612) 993-3509.

For details on Cardiocom automated patient feedback systems, contact:

- ☐ **Daniel Cosentino**, Cardiocom, LLC, 20640 Linwood Road, Excelsior, MN 55331. Telephone: (888) 243-8881. E-mail: dlcosen@ibm.net.

# QUALITY TALK

*This month, Keith Moore discusses the future of quality in health care. He describes developments such as the on-line purchasing of health care benefits and the growth of consumer assertiveness in health care decisions. Moore is president of McManis Associates, a Denver-based research and management consulting firm. One of the firm's subsidiaries offers medical malpractice insurance. Moore shares some provocative insights into the relationship between quality measures of clinical practice and malpractice claims. He has worked with health care clients including VHA Inc., as well as health plans, government agencies, and companies in the financial industry. His latest book Beyond Managed Care (Jossey-Bass) is due out in June.*

**Q.** You've stated in other interviews and in your writing that a growing number of health benefit buyers base their decisions on outcomes of care rather than merely settling on the lowest bid. Can you give us examples?

**A.** There is a group of buyers that is highly focused on outcomes. It's best to give an example of a specific market — just one of many. In the Orlando market, there is a large group of buyers led by the Walt Disney Co. Disney will openly tell you that its average employee is going to be there about three years. What Disney would like in a health plan is simply very, very low cost. They'll say, "We don't want wellness; we don't want psych [psychiatric care]. We want a very, very inexpensive plan, targeted primarily toward young people who can smile." They don't want more psychiatric coverage than is mandated by law.

Then there is a second segment in the marketplace. The best example of that segment would be a large local school district that wants the best plan it can get. It is very concerned about quality, and is constantly seeking any measures of quality it can find. The Orange County (FL) School District, is one example of that assertive, quality-focused segment.

The third group, led by companies such as Marriott International and 7-Eleven Inc., are most concerned that their employees are spread all over the place. When they describe what they would like, they say, "First, I certainly do not

want to talk to you about buying a health plan for Orlando. My employees are spread all over, and one of my biggest problems is how to aggregate them." This third segment falls between the first two, in emphasis on quality.

There are different quality-demanding segments among today's employers. There are those that are not nearly as concerned about quality as they are about price. And some are in between.

We take the position in our new book, and elsewhere, that a major shift is taking place. It's about to accelerate in pace, and it's going to produce some fundamental changes in the health care marketplace. That shift is the increasing role of the consumer. Consumers, when they get sick, are going to play a larger role in the decision-making process, as the employer is playing a smaller role.

Several factors will cause that change. For one example, a number of employers are basically trying to back out of the health care choice process. It's similar to what has taken place with retirement plans. Employers are thinking about paying a certain amount of money and telling employees, "Here are three plans we have screened. You'll get the same contribution from us no matter which you choose, and you can pay the difference." That's one example by which consumers are playing a much more active role.

Another example is that in many markets, including Denver, you'll hear ads for Internet sites where you can buy your health care coverage. And in the Pacific Northwest, you can go on the Internet to Costco, the value shopping store, and buy your health care! Costco has made arrangements with physicians and hospitals and others to form its own provider network, and it's acting as a wholesaler of health care directly to the consumer.

In this emerging marketplace, quality is about to become a far more dominant factor. It's always been highly important, but our difficulty is in measuring it. If you think employers have an interest in quality, you have to multiply that manifold when the consumer is in the driver's seat. Buyers are going to evaluate quality against other factors: Contractual access — how hard is it to get access to that provider today? Physical access — are they close to me? What kind of service do I get? Then, there's something a little more abstract; we call it customer affinity. It's more than service. It's whether providers seem to empathize with you and connect with you in some way. And, of course, cost is an important factor.

All those factors, in addition to quality as we might measure it in outcomes, are part of the marketbasket that a consumer or an employer evaluates. But when a consumer is evaluating — trust me on this — quality goes to the top of the list even faster than with the employer. So, we are about to see even more emphasis on quality than we have in the past.

**Q.** In that consumer-driven scenario, will health care organizations still have quality specialists and designated departments responsible for managing the quality programs? Or will that function be distributed throughout the organization?

**A.** I believe that the whole organization has to take a more emphasized approach to quality. And that means someone does have to be responsible overall.

On the other hand, if the consumer is going to play a stronger role in the health care decision-making process, we're talking about a more assertive and knowledgeable consumer than in the past. The number of consumers who access health care information over the Internet is growing monthly. And in some places, 40% of elderly households report that they are accessing health care information over the Internet, and playing a more active role in their own care.

The widespread embracing of new technology suggests that quality improvement will have to be a distributed function within the health system. Every service line will need to evaluate how to become more customer-friendly, more accessible from a consumer's point of view. And the service line probably will need to know how to involve the consumer more in the decision-making process, because that's part of what consumers want.

**Q.** Are the definitions of quality of care and quality of service going to change?

**A.** Increased consumer involvement could change the definitions, but I think the two will also become more intertwined.

**Q.** Could you describe a health care package containing high-quality service as well as care?

**A.** Here's one example: The protocols we have now, to a great degree, are clinical diagnostic protocols. They say, "We'll take this step, then this step, then this step."

I have to believe that the protocols of the future are also going to identify, and put in place, points at which the consumer is given more choices. Most of us who have protocols are basically measuring the degree to which we follow them. But there's more to it than that.

### ***The quality-malpractice claim connection***

The company and its subsidiaries with which I'm associated have a 12-year study of the causes of medical malpractice claims. It's an empirical study that looks at past claims and how they correlate with decision-making processes. Those data suggest to us that, in addition to the clinical protocol, there are a number of factors that play a key role in providing a higher probability of good outcomes.

I think the outcome measures of the future are going to combine that sort of empirically-based analysis with clinical protocols and patient satisfaction information. They will analyze those

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#### **Editorial Questions**

For questions or comments, call **Mary Kouri** at (303) 771-8424.

# DATA WATCH

Perhaps consumers lead the quest for on-line health information, but providers are close on their heels. One site that serves both audiences is AHD.com (the American Hospital Directory, [www.ahd.com](http://www.ahd.com)), which attracts 2,000 visitors a day. AHD.com is the 1997 creation of QuadraMed Corp., based in San Rafael, CA.

## Features

The content includes key performance measurements of individual hospitals and organizational highlights, including:

- services offered;
- type of ownership;
- 20 most frequent DRGs;
- statistics broken down by medical service, such as average length of stay and number of Medicare patients;
- statistics for the top 25 procedures;
- morbidity and mortality rates;
- clinical performance compared to other facilities;
- financial statements;
- utilization statistics;
- cost analysis.

## Functions

Health care industry users include professionals and analysts seeking to track trends, compare medical services, or extract data for marketing or benchmarking. Expect consumers, including the media, to check out a facility's accreditation or to compare service costs among providers in a given market. Recently, AHD.com integrated data from Health Forum, an American Hospital Association subsidiary. It is the first appearance of the American Hospital Association's Annual Survey data on the Internet.

## Costs

- *Free services* include summary data for most hospitals.
- *Subscription services* offer more detailed information about individual hospitals. Annual subscriptions cost \$395 per user, with discounts for multiple users within an organization. Due to partnership arrangements with QuadraMed, discounts also go to members of the Healthcare Financial Management Association, based in Westchester, IL, and the National Association of Health Data Organizations in Salt Lake City.
- *Custom data services* include custom reports and databases, mailing lists, and contact files.

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pieces of information together. Our studies have done something else, also. In several instances, we've looked at the patient record. We started with the emergency room. We looked at the records from three perspectives:

1. legal and regulatory compliance;
2. utilization;
3. efficiency.

We've learned from this process we call "tri-lysis," that when you have a potential outcomes-related (malpractice) exposure, it's amazing how often you also have a compliance problem and a utilization review problem. All three tend to occur together. It suggests that when we identify outcomes issues, we're likely to find the other three as well.

**Q.** Where does patient satisfaction figure in?

**A.** We're about to correlate patient satisfaction with that. I'm assuming it will correlate as well, but I can't prove it yet.

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