

# Cost Management in Cardiac Care™

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## Arkansas project nearly eliminates routine bilateral catheterizations

*Right caths add expense, risk, and do not improve care*

**H**ospitals in Arkansas have nearly eliminated routine bilateral cardiac catheterization for Medicare patients undergoing angiography.

Participants in the Health Care Quality Improvement Program (HCQIP) of the Arkansas Foundation for Medical Care (AFMC), based in Fort Smith, made sure their state's hospitals were aware that the use of right heart catheterization in conjunction with left angiography rarely yields useful information in the absence of right-sided disease. The American College of Cardiology/American Heart Association Guidelines for Cardiac Catheterization and Cardiac Catheterization Laboratories state that "without specific indications, routine right heart catheterizations . . . are unnecessary."<sup>1</sup>

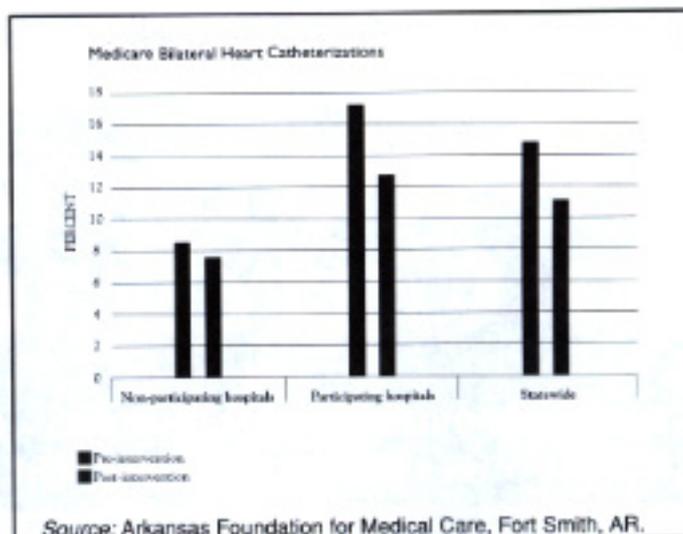
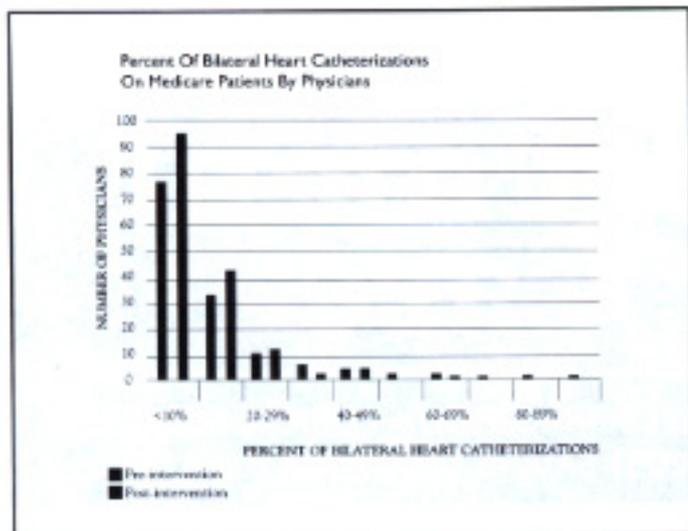
Before HCQIP's project, 80% of Arkansas hospitals performed bilateral heart cath only about a fifth of the time. Several outliers, however, performed the procedures at rates higher than statewide benchmarks.

"New York state's peer review organization, IPRO, had conducted a similar study," says **Sandy Grinder**, RN, CPHQ, director of HCQIP at AFMC, "and they learned from cath lab directors that the possibility of finding unanticipated results from a right heart cath in conjunction with a left-sided procedure was in the range of 1%."

Several years ago, when Lake Success, NY-based IPRO ran its study, physician reimbursement in that state for a bilateral procedure was

## KEY POINTS

- Bilateral cath can increase costs and morbidity without increasing value to the patient care process.
- Its role has diminished because of increasing sophistication of other testing modalities.
- This Arkansas quality project profiled its use and encouraged asking, 'Is it appropriate?'
- Costs for concomitant right cath are \$300 plus \$400 for lab time.



Source: Arkansas Foundation for Medical Care, Fort Smith, AR.

60% more than for angiography alone. Left cath requires about 30 minutes of laboratory time, and personnel time cost was about \$1,200. Investigators estimated that equipment and supply costs for right heart cath was approximately \$300; and if the procedure required an additional 10 minutes of lab time, that would add another \$400 for the second procedure, totaling \$700.

The group concluded that right heart cath increased costs to the hospital without adding revenue. Those extra costs are not covered by the patient's DRG, and the extra procedure exposes the patient to additional risk, such as allergic reactions, arrhythmias, myocardial ischemia, and perforation of the heart.

"The only time a concomitant right cath is appropriate is if coronary artery disease is complicated by clinically significant congenital heart disease, valvular heart disease, pulmonary hypertension, chronic obstructive pulmonary disease, or CHF," says Grinder.

The Arkansas group agreed that, like IPRO, they too could decrease the cost and risk to the patient if they could eliminate that unnecessary step.

First, they examined Arkansas facilities for variations in practice style. Most, they found, perform a right cath in a minority of their angiographies. A few outliers, however, did have high percentages

of bilateral procedures.

In 1995, **William E. Golden, MD**, principal clinical coordinator of AFMC, sent a letter to its state's hospitals presenting those statistics and asking them to participate in a project aimed at reducing bilateral cath except where necessary. The letter stated that:

- Right catheterization is a procedure of diminishing importance and diagnostic value when in conjunction with left heart angiography.
- Bilateral catheterization in the absence of clinical indication increases risks to the patient and cost to the system with minimal, if any, benefit to the care of the individual.
- Hospitals should review their performance of cardiac catheterization to see if there is a need for local guidelines on the procedure.

Golden's letter requested a response from the facilities outlining the impact of those findings. Hospitals were asked to assess their use of bilateral cath and report what actions had been taken to modify care.

The letter was well received, says Grinder, and resulted in active discussions at medical staff meetings and prospective auditing of catheterization use. Many hospitals targeted a bilateral cath rate of 1% to 20% as an institutional benchmark.

"This was our first project that looked at

### COMING IN FUTURE MONTHS

■ A heart treatment rejected in the '60s gets a new look

■ Physicians rate appropriateness of angiography

■ Are AMI symptoms — besides chest pains — ignored?

■ IGF-I may improve cardiac function in burn victims

■ Noncardiac surgery for patients with coronary artery disease

resource utilization as opposed to compliance with a practice guideline,” says Golden. “That made us nervous, because this had some implications about changes in revenue.”

A bilateral cath potentially costs the hospitals, but there is a financial incentive for the providing physicians. Performing a cath in an inpatient setting is DRG-based, so the hospital has a fixed reimbursement. The addition of the second procedure increases the costs associated with cath lab time as well as supplies. There was a cost-effectiveness issue for the facilities; but for the physicians the project had income implications. More money went into the pocket of physicians who did right cath.

“There was a motivation on the part of facilities to look at appropriate use of those diagnostic techniques,” he continues, “but one or two physicians in the outlier facilities were a little perturbed at the implications of the report. There were a couple of letters of protest from them. To our pleasant surprise, the institutions and their medical staff committees held their ground.”

The committees set up monitors to oversee and review the physicians’ practice patterns, and made institutional decisions — they expected to see different behavior.

“That required commitment on their part to set local practice standards,” says Golden. They told the providers that they had to alter their style of practice.

“Prior to releasing the project, the Arkansas chapter of the College of Cardiology reviewed the concept and endorsed our cited guideline on the utility of bilateral cath,” says Golden. “When physicians voiced objections to the project, they were swimming upstream not only against their colleagues at the facility but against their professional society as well.”

When HCQIP remeasured, there was considerable reduction in bilateral cath. Few outliers with rates above 20% remained. Two years after the letter to Arkansas hospitals, a follow-up was sent that included an analysis of more than 7,000 cases. **(See graphs, p. 2.)**

Overall, stated the letter, the use of bilateral heart cath had declined in a statistically significant fashion from the initial study period. Today, two facilities performing 13% of all catheterizations account for a third of the state’s bilateral procedures.

“Twenty-eight hospitals participated in the project,” says Grinder. “Only two facilities increased their bilateral caths, and that was because they

weren’t doing caths at all when the project began. They were going from zero to a low number.”

Grinder points out the significance of the fact that nonparticipating hospitals had little improvement while participating hospitals had a significant drop in bilateral procedures. Arkansas now has one of the lowest rates of bilateral catheterization in the country.

“Any organization could replicate our study and show improvement in its rates,” she says.

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## Focus on Outsourcing

# Outsourcing cuts costs, keeps patients smiling

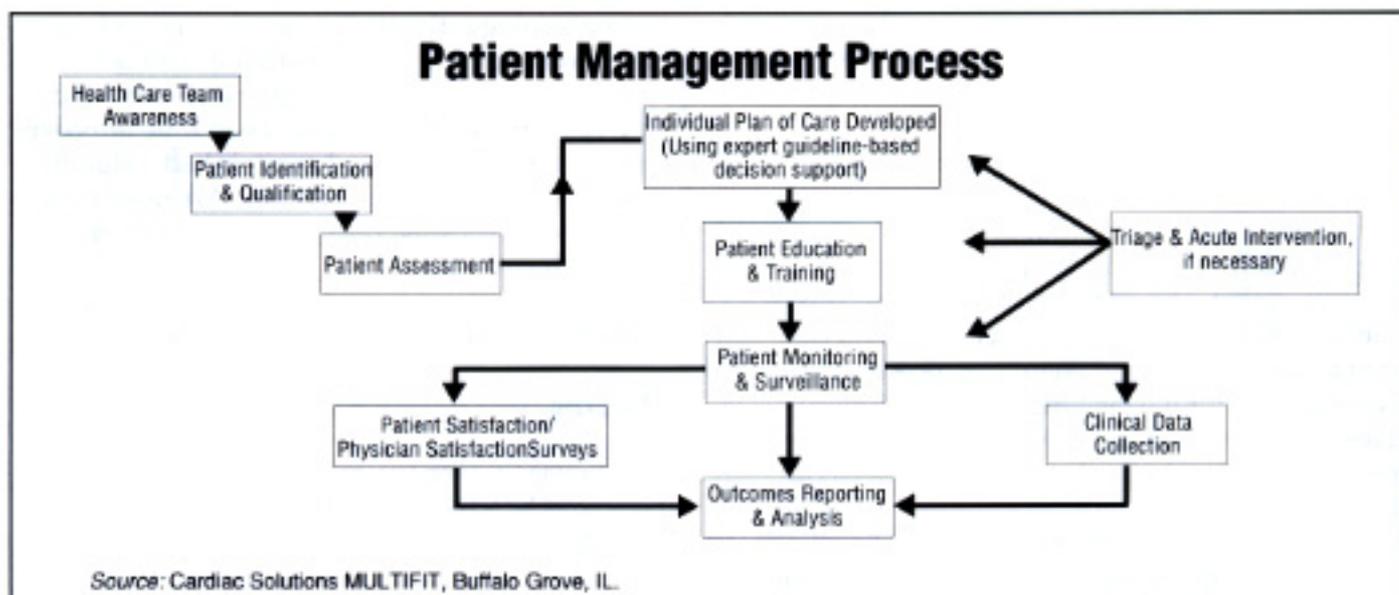
## Systems emphasize education, follow-up

If you are not yet outsourcing your patients with congestive heart failure (CHF) or cardiovascular disease, you have a few options to consider. Utilizing one of the several services available could save your facility money and improve clinical outcomes at the same time by drastically reducing admissions and emergency department (ED) visits. The key factor shared by home-based systems for managing these patients is frequent nursing contact — in-person and by telephone.

In the three years the program been offered, MULTIFIT, licensed by Buffalo Grove, IL-based Cardiac Solutions, has reduced hospitalization rates by 87%, ED visits by 67%, and cardiology visits by 31% among 51 heart failure patients

## KEY POINTS

- Save money while improving clinical outcomes by outsourcing patients with chronic disease.
- One firm reduced hospitalization by 87%, ED visits by 67%, and cardiology visits by 31%.
- Another firm more than halved inpatient hospital days, admissions, and ED visits.
- A third decreased hospital admissions by 83% and increased quality of life by 44%.



hospitalized at a northern California Kaiser Permanente medical center.<sup>1</sup> The patients' functional status improved significantly, and symptoms improved.

In another population of patients — about 2,000 members of Humana, a large managed care organization in Louisville, KY — inpatient hospital days, admissions declined by 58%, and ED visits were cut in half.<sup>2</sup>

The patients at Humana had New York Heart Association (NYHA) Class III and IV failure; 90% maintained or improved their classification while under the care of MULTIFIT. The patients had a 15% overall improvement in functional status, and a 10% mortality rate as compared to the national average of 24%. In addition, sodium intake declined by a fifth. Total hospital expenditures were reduced by 62%, and there was a 78% reduction in CHF-related costs.

Like other CHF management programs, Multifit has such good results because it addresses the key issues that are known to contribute to the exacerbation of heart failure:

- suboptimal utilization of medications such as angiotensin-converting enzyme (ACE) inhibitors;
- poor adherence to sodium restrictions and pharmacologic therapy;
- inconsistent post-hospitalization follow-up and symptom identification.

The outsourcing system employs nurse managers with a minimum of five years of cardiac experience and ensure that they are supervised by physicians. Nurses work individually with patients and help them manage their symptoms in the home environment. After an initial in-home visit, the nurses work with patients mostly by telephone. When a situation warrants, the program is set up to call on contracted local "nursing partners" to make additional home visits.

The protocols of MULTIFIT and other disease management programs are based on national guidelines for the care of patients with left ventricular systolic dysfunction from the Agency for Health Care Policy and Research and the American Heart Association. **(See chart, above.)**

The guidelines often fail in clinical practice, experts say, because no one has the specific responsibility of making sure they're implemented and logistic problems that include little time for individual patient-physician contact. Outsourcing systems solve those problems by employing nurse managers who evaluate each patient's treatment plan and medications to make sure they follow the guidelines. If guidelines and true treatments don't match, the managers point out the discrepancies to the physician and determine changes to be made.

After initial assessment, a care plan is developed including pharmacologic and lab management, symptom triage, patient contact schedules,

According to 1998 statistics from the American Heart Association in Dallas, TX, 4.9 million Americans suffer from congestive heart failure (CHF) at a cost of more than \$20.2 billion annually in emergency room visits, hospital admissions, and disease-related complications. The disease is the single most frequent cause of hospitalizations in people aged 65 and older, and about 400,000 new cases of CHF occur each year. ■

and lifestyle management. Typically, patients are placed on optimal doses of ACE inhibitors. In the study above, the number of patients who received target doses of lisinopril increased by 82%.

Besides providing a check-and-balance, outsourcing systems provide good decision-making by competent nurses at a cost lower than physicians would charge. And there is less hassle for physicians.

“Physicians love it,” says **John Roglieri, MD**, medical director of NYLCare Health Plans of New York (NY). “We get the patients off their backs. We tell them when a patient’s getting into trouble. The patients wait for our phone call instead of theirs. Every physician needs an extra pair of hands and an extra pair of ears, and that’s what we’re giving them.”

It is hard for many patients with CHF or other chronic cardiovascular disease to stay on the straight and narrow, and an outsourcing system provides something akin to a support group to decrease patients’ potential to stray. Nurses provide patient education and support.

### Here’s contact information for companies mentioned in this article:

**Cardiac Solutions**, Ralin Medical, 1371A Abbott Court, Buffalo Grove, IL 60089. Telephone: (800) 343-6311. Web site: [www.ralinmed.com/](http://www.ralinmed.com/).

**Stuart Disease Management Services**, 1800 Concord Pike, Wilmington, DE 19850-5458. Telephone: (302) 892-4435. Web site: [www.usa.zeneca.com/business/health.htm](http://www.usa.zeneca.com/business/health.htm).

**LifeMasters**, 450 Newport Center Drive, Ste. 410, Newport Beach, CA 92660. Telephone: (949) 721-0330. Web site: [www.lifemasters.net](http://www.lifemasters.net).

After the initial home visit and case conference with the physician to assess the patient’s situation and needs, the nurse begins regular contact with the patient by telephone. Patients are called weekly, then monthly as their conditions improve. The nurses follow a scripted format for the calls, asking a series of questions and entering the responses into a database. They also discuss a specific educational topic with the patient each call.

## Virtual nursing? CHF patients interact via the Net

### *Internet may automate healing process*

**T**he Internet may soon help congestive heart failure (CHF) patients improve their quality of life while reducing health care costs. Newport Beach, CA-based LifeMasters began a study last fall that compares three groups of Medicare patients diagnosed with heart failure — a traditional care group, a telephonic interactive voice response intervention group, and an Internet intervention group. So far, the study is demonstrating a 67% increase in nurse efficiency through the automation of data collection and paperwork.

Fifty patients in the Internet intervention group are supplied with a personal computer, an Internet service connection, and computer training and maintenance.

Each day, patients go to a central Web site, submit their personal password, and enter their vital signs and symptoms. Upon noticeable changes in a patient’s daily record, a staff nurse contacts the patient for information verification, then issues an alert report to the

patient’s physician by fax, e-mail, or telephone.

The Internet study is showing enhanced compliance and reduced costs. Admittedly, say study authors, providing 50 patients with hardware and training is costly, but the goal of the study is to determine whether patients of Medicare age — typically not computer literate — can be persuaded to use the Internet to better their care. If they can, the technology empowers them to take an active role in their own disease management. It prompts them to take their medications and comply with other daily routines as prescribed by their physician.

The patients’ pages on the Web site also provide educational information and news stories related to their condition and chat rooms that give patients additional support by offering interaction with health care professionals and others with CHF.

The use of the Internet in disease management allows practitioners to monitor large numbers of patients with multiple diseases, to customize programs to patients’ needs, and to immediately communicate potentially catastrophic changes in the patients’ conditions. Patient confidentiality is protected through the use of passwords and encryption. Data servers reside on LifeMasters’ secured internal network. ■

The results of the phone conversations are reported to the physician along with results of written questionnaires patients complete four times a year. The provider sees reports on clinical indicators such as functional status, sodium intake, and medication compliance as well as utilization data on hospital admissions, ED visits, and any procedures. Progress reports are submitted to the patients as well. Seeing their improvement on paper is a good motivator for patients. If patients know someone is watching their sodium intake, for example, they're much more likely to watch their diet.

Triage is available 24 hours a day, seven days a week. If a situation arises that warrants a personal visit, a home health nurse is dispatched. He or she may perform emergency treatments such as IV diuresis if the physician directs. Home visits also may be done periodically for elderly patients in cases where it is important to see the home environment, the medications being taken, and meals being prepared.

Another disease-management program has resulted in a decrease in hospital admissions and a significant improvement in quality of life for CHF patients, according to a new outcomes study of 149 patients, conducted by Stuart Disease Management Services of Wilmington, DE.<sup>3</sup>

The goal of the Stuart program was to reduce hospital admission and readmission rates, length of stay, total hospital days, and ED utilization. Prior to the outcomes study, only 23% of patients had been getting appropriate drugs to control CHF; and 72% of hospital admissions for patients age 65 and older were a result of complications associated with CHF.

After one year, the number of patients receiving drugs doubled, and hospital admissions for CHF decreased by 83%. Patients enrolled in the program also reported a 44% improvement in quality of life, including improved health and new personal relationships with telemonitoring nurses.

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# ABC = Aspirin, Beta-blockers, Clot busters

*NY concentrates its efforts on 3 indicators for AMI*

**F**indings from the 1994 national Cooperative Cardiovascular Project (CCP) goaded New York state's peer review organization (IPRO) in Lake Success, NY, toward an initiative that is already improving treatment for patients with acute myocardial infarction (AMI). The "ABC" project deals with three crucial measures that can lower in-hospital and 30-day mortality rates:

- providing aspirin on the day of the heart attack;
- administering beta-blockers to selected patients;
- administering thrombolytics within an hour of the AMI.

In 1994, CCP researchers examined records of all Medicare patients admitted for heart attack — 230,000 cases nationwide and 16,000 in 200 New York state hospitals.

"They looked at every case billed out as an AMI (ICD-9-CM code 410) over an eight-month period," says cardiologist **Monte Malach**, MD, clinical professor of medicine at New York University and State University of New York in Brooklyn and medical director at IPRO. The researchers looked at whether care was being provided according to nine standards developed by the American College of Cardiology (ACC) and American Heart Association (AHA). They found some room for improvement and told each of the PROs to do what they could to try to better outcomes.

As project leader, Malach conducted sessions around the state and pointed out significant problems in the Medicare population — gross underuse of aspirin and beta-blockers and less than timely use of reperfusion. During face-to-face meetings as well as teleconferences, administrators and

## KEY POINTS

The goal of the ABC project is to improve these stats:

- Only half of AMI patients in NY state receive aspirin within 24 hours.
- 39%-43% receive beta-blockers within 12 hours.
- 26%-36% receive timely reperfusion.

researchers discussed study results, and hospitals were encouraged to develop quality improvement programs.

Two years later, IPRO went back and remeasured New York hospitals' compliance with the CCP standards.

"When we remeasured for a four-month period in 1996," Malach says, "we saw significant improvement; but in three critical areas, much still needed to be done. We also saw that we needed to change our focus."

The initiative had been directing its efforts at the general hospital staff — internists, cardiologists, and family physicians — but now it had to refocus on the EDs because that's where the patients come in.

"We had meetings with EDs around the state to go over this," says Malach. "Because changing any form in a hospital involves a lot of red tape, we developed a stamp to put on the progress sheet."

The stamp says, "Aspirin, yes, no, and reasons for no; beta-blockers, yes, no, and reasons for no; and reperfusion, yes, no, and reasons for no."

Administering thrombolytics within an hour had increased from 60% in 1994 to 66% in 1996; administering beta-blockers at discharge increased from 60% in 1994 to 76% in 1996.

"Despite increases," he says, "the values were still thought to be too low."

The "C" of the ABC initiative has to do with the use of clot-busters and timing.

"You only have up to six hours from the moment of infarct to open arteries with these thrombolytics," says Malach. "The door-to-needle time standard nationally is one hour, and in New York state, most hospitals have it down to thirty minutes or faster by improving the process."

One of the original quality indicators of the CCP was administration of beta-blockers at discharge — the "B" of ABC.

"There's significant documentation in the literature that beta-blockers should be given within 12 hours because of its remarkable benefit in reduced fatal ventricular arrhythmias and overall 30-day and one-year mortality rates," he says.

First-day aspirin use actually dropped to 53% in 1996 from 59% in 1994, but Malach says he thinks that's a documentation issue. "Some patients don't consider aspirin a drug and fail to document."

According to ACC/AHA guidelines, aspirin should be given on the day of the heart attack and continued on a daily basis thereafter. Beta-blockers should be given within 12 hours in order to reduce risk of ventricular fibrillation and tachycardia.

Aspirin and beta-blockers also reduce the likelihood of a second attack. Thrombolytics should be given within an hour of arriving at the emergency department (ED). Fast therapy has been shown to reduce 35-day mortality by 18-21%.

"The [progress sheet] stamp has been actively accepted and aggressively used," says Malach. His team is in the process of remeasuring for a three-month period in 1998, but the numbers are not yet in.

"It's gratifying to see how focusing on 'ABC' as three quality indicators has made a difference," he says. "We have no hard information yet, but I've been making tours, and my observations are that improvements are being made."

### *Suggested reading*

Marciniak TA, Ellerbeck EF, Radford MJ, et al. Improving the quality of care for Medicare patients with acute myocardial infarction: Results from the Cooperative Cardiovascular Project. *JAMA* 1998; 279:1,351-1,357. ■

## For better or worse, see what patients are seeing

### *Site rates CABGs, stents, angios, scores hospital*

Your hospital's cardiac surgery scores are probably displayed now on the Internet, thanks to a new service that rates cardiac surgery and cardiology programs in hospitals around the United States. (See examples, p. 8.)

Statistics on coronary bypasses, valve replacement surgery, and interventional procedures including angioplasty, stent placement, and atherectomy as well as diagnostic procedures are all there.

Producers of the site, HealthCareReportCards in Lakewood, CO, have plans to update ratings twice a year, and the site will soon also include scores in other fields such as respiratory illness, oncology, and neurosurgery — adding new areas

### **KEY POINTS**

- A new Web site rates cardiac surgery and programs in hospitals nationwide.
- Patients can see how you're doing just by clicking on.

approximately once a month. The mortality data used to produce the ratings were purchased from the Baltimore-based Health Care Financing Administration — Medicare Provider Analysis and Review (MEDPAR).

Mortality rates — in-hospital, 30 days after discharge, and six months after discharge — are registered for Medicare patients treated between 1995 and 1997. The ratings are “apples to apples” — they are adjusted for the fact that some hospitals attract sicker patients and thus have a higher mortality rate.

About 15% of hospitals are ranked four stars (very good) or five (best), and 70% get a three-star rating, meaning that they were average or had an expected mortality rate.

The site does not include information on physician performance. ■

**Coronary Bypass Surgery**

The report card assigns a number of stars to each hospital's performance score.

**Report Cards**

- ★★★★★ Best
- ★★★★ Very Good
- ★★★ Average
- ★★ Below Average
- ★ Poor

Hospital	City - State	# of Medicare Cases	In-hospital Deaths/Mortality	In-hospital + 3 Months Deaths/Mortality	In-hospital + 6 Months Deaths/Mortality
Mercy General Hospital	Sacramento - CA	1,512	★★★★★	★★★★★	★★★★★
Sutter Memorial Hospital	Sacramento - CA	1,063	★★★★	★★★★	★★★★
Mercy San Juan Hospital	Carmichael - CA	371	★★★	★★★	★★★
N T Endow Memorial Hospital	Chico - CA	357	★★★	★★★	★★★

Click here to see lower volume Hospitals | More Details | More Details | More Details

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Report Card: Sacramento Area, California - Coronary Bypass Surgery

## Publishing CABG results may mean better outcomes

*New York, California profiling efforts secure results*

Since 1989, New York has been collecting and publishing mortality rates and detailed clinical and outcomes data on all hospitals and on individual surgeons who performed coronary artery bypass grafts (CABG) in the state. New York is the first to release such risk-adjusted provider profiling and, though meant to increase consumer awareness, the effort has been controversial.

Mortality rates for bypass surgery appear to have declined in the state, but critics of the program claim that since the profiling effort, New York surgeons now routinely transfer high risk patients to hospitals outside the state in order to maintain a good record. One review stated that substantial numbers of

**Coronary Bypass Surgery**

In-hospital + 6 Month Deaths/Mortality

**Data**

Actual Mortality: The percent of the total number of patients that actually died.  
 Predicted Mortality: The percent of the total number of patients predicted to die by the risk adjustment scale.

Hospital	Predicted/Actual Graph	Predicted/Actual & Score
Mercy General Hospital Sacramento, CA 1,512		Data Explanation Predicted: 7.01% Actual: 4.94% Score: +24
Sutter Memorial Hospital Sacramento, CA		Predicted: 7.23% Actual: 5.80% Score: +20
Mercy San Juan Hospital Carmichael, CA		Predicted: 8.40% Actual: 6.02% Score: +14
N T Endow Memorial Hospital Chico, CA		Predicted: 5.93% Actual: 7.56% Score: -28

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Data: Sacramento Area, California - Coronary Bypass Surgery

Source: Sarah P. Loughran, vice president, HealthCareReportCards, Lakewood, CO.

patients had been transferred to the Cleveland Clinic from New York.<sup>1</sup>

For a new study, a group of physicians examined Medicare data from patients in New York who underwent bypass surgery.<sup>2</sup> They confirmed that, since the enactment of New York's provider profiling, mortality rates dropped significantly and faster than the rest of the nation — 33% vs. 19% — but found no evidence that high risk patients in New York were forced to seek help in other states or access to procedures had declined in high-risk patients since the program's initiation. They concluded that the provider profiling program is a potential means of improving patient outcomes while maintaining access to care.

### **California's CHOP gets high marks**

Hospitals need to know what others in the state and elsewhere are doing, says a new survey. The 1996 California Hospital Outcomes Project (CHOP) has been deemed by hospital CEOs to be "somewhat helpful" in improving the quality of care for acute myocardial infarction (AMI) patients.<sup>3</sup> The Agency for Health Care Policy and Research in Rockville, MD, surveyed 374 CEOs to see what they thought of the project, which presented 30-day inpatient death rates for AMI patients treated in California.

Three-fourths of leaders surveyed found the report most helpful for benchmarking performance, improving how physicians code patients' diagnoses, and educating physicians about medical record documentation and clinical pathways. One of the investigators noted that hospitals want to know what others with good outcomes are doing differently so they can improve their practices.

Some hospitals took specific quality improvement actions following release of the CHOP report — they developed or refined AMI pathways, improved use of thrombolytic therapy, or re-assigned medical staff to improve AMI outcomes.

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## **LIPID, CARE trials: Pravastatin improves post-AMI survival**

*Drug reduces risk of repeat heart attack, too*

The world's largest and longest-running heart trial, the Long-Term Intervention with Pravastatin in Ischaemic Disease (LIPID) study, shows heart attack survival rates are increased by almost a quarter with pravastatin (Bristol-Myers Squibb's Pravachol).

Researchers compared the effects of the cholesterol-lowering medication (40 mg/day) with those of placebo over a period of six years in 9,000 patients ranging in age from 31 to 75.<sup>1</sup> The study results demonstrate that the agent plays an important role in reducing death from a second heart attack and stroke in heart attack survivors. Pravastatin:

- reduced total deaths by 22%;
- reduced deaths from coronary heart disease by 24%;
- reduced the total number of heart attacks by 29%;
- reduced stroke by 19%.

Originally designed to be a seven-year study, LIPID was stopped early because of compelling evidence that patients treated with pravastatin derived significant benefits compared to patients taking placebo.

Study participants had a history of myocardial infarction or hospitalization for unstable angina and had cholesterol levels of 155-271 mg/dL. Both placebo and medication groups received advice on following a cholesterol-lowering diet. Death from coronary heart disease occurred in 8.3% of the patients in the placebo group and 6.4% of those in the pravastatin group. The incidence of all cardiovascular outcomes — AMI, death from coronary heart disease or nonfatal myocardial infarction, stroke, and coronary revascularization — was consistently lower among patients assigned to receive pravastatin.

Of patients who survive heart attacks, two-thirds typically suffer a second within seven to 13 months. In a related study, the cholesterol and recurrent events (CARE) trial, pravastatin was shown to reduce the risk of repeat cardiac events among women who have already had heart attacks.<sup>2</sup>

Researchers studied a group of nearly 600 postmenopausal women who had heart attacks three to 20 months earlier. All participants had

cholesterol levels less than 240 mg/dL with LDL levels between 115 and 174. One group took pravastatin 40 mg/day for five years; the other group took a placebo. After one year, the risk of coronary events, including fatal and nonfatal heart attack and stroke for the medication group dropped by half.

Pravastatin is generally well-tolerated. Most common side effects are headaches, rash, and gastrointestinal disturbances.

Out of the recent 71st scientific session of the Dallas-based American Heart Association, come results of another trial underlining the benefits of cholesterol-reduction.

The AVERT (Atorvastatin Versus Revascularization Treatments) trial demonstrated that aggressive LDL reduction to levels below 100 mg/dL delays the first ischemic event and decreases need for revascularization.

AVERT enrolled 341 patients with stable coronary artery disease — all candidates for angioplasty — and randomized them to either atorvastatin (Parke Davis/Pfizer's Lipitor) 80 mg/day or angioplasty. About 87% of patients on atorvastatin in the 18-month study were able to avoid revascularization during 18 months of follow up.

During follow up, patients on the lipid-lowering therapy had a 36% reduction in coronary events compared with angioplasty patients, with events occurring in 13% of atorvastatin patients and in 21% of angioplasty patients.

## References

1. The Long-Term Intervention with Pravastatin in Ischaemic Disease (LIPID) Study Group. Prevention of cardiovascular events and death with pravastatin in patients with coronary heart disease and a broad range of initial cholesterol levels. *N Engl J Med* 1998; 339:1,349-1,357.

2. Lewis SJ, Sacks FM, Mitchell JS, et al. Effect of pravastatin on cardiovascular events in women after myocardial infarction: The cholesterol and recurrent events (CARE) trial. *JACC* 1998; 32:140-146. ■

## PORT IHD study available

You can order the Agency for Health Care Policy and Research's final report on ischemic heart disease by calling the AHCPR Clearinghouse at (800) 358-9295. *Outcome Assessment Program for Ischemic Heart Disease: Patient Outcomes Research Team (PORT) Report*, a 72-page report, AHCPR publication No. 98-N003, is free while supplies last. ■

## ACI-TIPI accurately distinguishes conditions

A computerized prediction device could be in your future, but can it improve the accuracy of triage decisions on the probability of acute ischemia? Yes, say researchers who recently looked at nearly 11,000 chest pain patients presenting at 10 emergency departments (ED) around the country. They determined that use of their "acute cardiac ischemia time-insensitive predictive instrument" (ACI-TIPI) could discriminate among patients with and without ischemia.<sup>1</sup>

The researchers estimate that wide use of their system could safely prevent more than 200,000 unnecessary hospitalizations and more than 100,000 unnecessary admissions to coronary care units. More than half of ED diagnoses of acute myocardial infarction (AMI) or unstable angina prove to be incorrect, they say, and those incorrect diagnoses result in 2 million unnecessary hospitalizations and \$8 billion each year.

Underdiagnoses also occur, sending home about 2% of AMI patients. To help correct that situation, the study authors developed a predictive instrument for triage decisions that is incorporated into a conventional computerized EKG. It computes a patient's probability of having acute ischemia on the basis of seven yes/no questions, including the presence of chest pain, history of heart attack, and EKG ST-segment of T-wave abnormalities.

## Reference

1. Selker HP, Beshansky JR, Griffith JL, et al. Use of the acute cardiac ischemia time-insensitive predictive instrument (ACI-TIPI) to assist with triage of patients with chest pain or other symptoms suggestive of acute cardiac ischemia. *Ann Intern Med* 1998; 129:845-855. ▼

## CIBIS-II evaluates bisoprolol; gives nod

Among studies reported last fall at the Second Annual Scientific Meeting of the Heart Failure Society of America in Boca Raton, FL, is the CIBIS-II trial which evaluated the effects of bisoprolol, a

selective beta 1 beta-blocker, in patients with left ventricular dysfunction and heart failure. The trial was stopped prematurely because of positive results in the beta-blocker arm. Approximately 2,600 patients throughout Europe with Class III or IV congestive heart failure were slowly up-titrated with bisoprolol or placebo over a period of several months. All were on an angiotensin converting enzyme (ACE) inhibitor and diuretics. Entry criteria included an ejection fraction (EF) of less than 35%. Eighty percent were male, and more than half had coronary artery disease. At the time the trial was stopped, all-cause mortality had decreased in the beta-blocker group by 32%. Total and heart failure hospitalizations were decreased in the beta-blocker group. In summary, CIBIS-2 resulted in a 32% reduction in all-cause mortality, 45% reduction in sudden death, 30% reduction in hospitalization for CHF, and 15% reduction in all-cause hospitalization. No significant adverse reactions occurred.

The results, says **Jonathan Abrams**, MD, of the University of New Mexico in Albuquerque, underscore the concept that all patients who have congestive heart failure with substantial EF depression should be given a beta-blocker unless contraindications exist. Beta-blockers clearly increase survival in heart failure with impaired left ventricular systolic function. ▼

## FDA approves expansion for prescribed aspirin uses

Substantially more indications for aspirin use in cardiovascular and cerebrovascular patients have been approved by the Food and Drug Administration (FDA).

Under a new ruling, a year from now, physicians will receive prescribing information about the use of aspirin in patients with transient ischemic attack, ischemic stroke, angina, and acute myocardial infarction; after certain revascularization procedures; and in the treatment of rheumatologic diseases.

The new labeling will not be included on over-the-counter aspirin labels. The updated labeling will state, "To minimize adverse events, low dosages (50-325 mg) are recommended for cardiac and cerebral vascular uses. (75-325 mg are recommended for angina and previous heart attack.)"

It will also state that the FDA does not recommend or suggest the use of aspirin by healthy individuals to lower the risk of heart attack and concludes that there are not enough data to

recommend the use of aspirin in patients with peripheral vascular disease. ▼

## ACCP: Aspirin for adults at any level of risk

The American College of Chest Physicians (ACCP) in Northbrook, IL, has issued a new consensus statement on antithrombotic therapy. Among the new recommendations is that 160-325 mg aspirin be taken daily by any adult over age 50 who has only a single risk factor for cardiovascular disease.

A substantial increase over past recommendations, the new guideline will affect a large number of apparently healthy adults. The American Heart Association's recommendation for daily aspirin therapy is for individuals diagnosed with atherosclerosis and those with a history of infarction or recurrent angina. The association does not recommend daily aspirin therapy for persons without an established diagnosis of heart disease. ▼

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### Editorial Questions

For questions or comments, call **Susan Hasty** at (404) 262-5456.

## Warfarin still underused in high-risk stroke patients

It costs about \$15,000 to prevent a stroke, and the average total cost for a 65-year-old stroke patient in this country is \$100,000. Despite its cost-effectiveness, warfarin is used in only half of eligible patients, according to a new report.<sup>1</sup>

Among study participants not prescribed warfarin at discharge, 62% also were not prescribed aspirin. Elderly patients with an ischemic stroke associated with atrial fibrillation are at especially high risk for recurrent stroke, and the annual rate of recurrent stroke is higher than 10%. Warfarin has been shown to be highly effective in reducing this risk by two-thirds. The researchers believe there may be several reasons why warfarin is underused, including the misperception of hemorrhagic risk. To address the issue of underutilization of anticoagulation, the researchers suggest:

- The integration of data from many different sources including the results of new clinical trials and management guidelines.
- The use of simple, individualized reminders to change physician behavior — telephone or written follow-up.
- Computer-based alerts to improve compliance with treatment guidelines.

### Reference

1. Brass LM, Krumholz HM, Scinto JD, et al. Warfarin use following ischemic stroke among medicare patients with atrial fibrillation. *Arch Intern Med* 1998; 158:2,093-2,100. ▼

## FDA approves verapamil for essential HT

The Food and Drug Administration has approved a chronotherapeutic form of verapamil hydrochloride (SchwarzPharma's Verelan PM) for the management of essential hypertension. The once-a-day, 360 mg capsule containing the calcium channel blocker is designed for bedtime dosing and incorporates a four- to five-hour delay in drug delivery. The controlled onset delivery system results in a maximum plasma concentration of verapamil in the morning hours. The most frequently reported side effects of verapamil are constipation, headache, and dizziness. ■

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