

CHF DISEASE MANAGEMENT™

The Complete Congestive Heart Failure Resource

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ACE inhibitors, higher awareness drive CHF mortality rate down

CDC says greater physician awareness reduces deaths further

Hear failure is a killer. There's no doubt about it. And there's no doubt that it is the fastest-growing diagnosis leading to hospitalization.

But recent figures from the Centers for Disease Control and Prevention in Atlanta show the stranglehold of the disease is loosening, just a little.

Mortality attributed to heart failure in patients 65 and older declined from 116.9 per 100,000 standard population in 1988 to 107.6 in 1995, an annual average decline of about 1.1%.

The decreased death rate was most striking for African-Americans: 3% per year for men and 2.2% per year for women. Mortality among white men decreased by 1.7% per year and for white women, .5% per year.

The study "suggests improved survival for older adults with heart failure or misdiagnosis of the underlying cause of death among adults with heart failure," according to the CDC narrative published in the Aug. 13 issue of *Mortality and Morbidity Weekly Report*.

Experts have varying theories on the causes. **Janet Croft**, PhD, cardiac epidemiologist for the CDC's cardiovascular health unit, offers four possible factors:

KEY POINTS

- Mortality attributed to heart failure in patients 65 and older declined an average of 1.1% per year from 1988 to 1995.
- Black men made the biggest improvements, with a decrease in death of 3% per year over the same period.
- Researchers say the biggest contributor to increased longevity is the use of angiotensin-converting enzyme inhibitors.
- Patients with all types of heart disease generally receive better treatment.

1. There is an increased use of angiotensin-converting enzyme (ACE) inhibitors.

2. Patients with high blood pressure are being treated with cholesterol lowering drugs, therefore they are not deteriorating to CHF.

3. Patients who have had myocardial infarctions (MIs) are managing their heart disease better and, therefore, are not developing CHF.

4. There could be changes in the means of reporting on death certificates.

The bottom line, Croft says, "Physicians need to be familiar with clinical guidelines in treating heart failure."

Most heart patients (78%) are likely to see a family practitioner, general practitioner, or internist, she adds, and statistics show those physicians are less likely to prescribe ACE inhibitors than cardiologists.

"Obviously cardiologists know about ACE inhibitors and their value," she says. "Perhaps the message hasn't gotten down to the family practitioners, general practitioners, and internists."

But with 4.9 million Americans living with CHF, 400,000 new cases diagnosed each year, and 20% of heart attack victims expected to be disabled by CHF within six years of their MIs, Croft challenges physicians to contain the disease.

An American Heart Association (AHA) spokesman says the outlook is improving for CHF patients in view of new methods of identifying those at high risk, better treatment of patients with MIs, and the availability of more effective drug treatments.

Croft concedes the declining death rate from CHF could be connected to changes in reporting methods. "We always have to consider that." Plus, the declining death rate among black men may be due, in part, to physicians coding more accurately, she adds.

But Croft says she disagrees with the theory

that lifestyle changes may account for the reduced mortality. "CDC data show no improvement in exercise or diet, although there has been some decline in smoking."

K. Lance Gould, MD, professor of medicine at the University of Texas Medical School's division of cardiology in Houston, says he couldn't disagree more.

Gould, author of *Heal Your Heart: How You Can Prevent or Reverse Heart Disease*, says Americans are doing a good job of reducing risk factors through "better diets and less smoking," although "there are still large numbers of overweight people."

Drastic eating changes are needed

He particularly castigates the food industry for its marketing strategies that contribute to obesity. "Go to Europe, and you'll see that [in this country], portions are twice the size," Gould says. He urges physicians not only to encourage low-fat diets for their patients, but also to encourage patients to consume low-carbohydrate, low-calorie diets.

He says heart failure is a "complicated social issue" among black men and attributes the declining CHF death rate to "greater awareness of the risk factors and a greater determination among black men to eat right and stay lean." Gould adds that physicians need to engage in "better risk factor management, including the use of cholesterol-lowering drugs."

He challenges health care professionals to pay more attention to cholesterol levels, which he believes are "grossly undertreated," and adds that data show 50% of all bypass patients are not on cholesterol-lowering drugs. "That's crazy," Gould states.

Alan Wasserman, MD, chairman of the Department of Medicine at George Washington University in Washington, DC, says he believes longevity is directly tied to more effective medical therapy. "The use of ACE inhibitors has revolutionized treatment in the last three or four

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years,” he says. “We really got the word out that everyone with poor left ventricular function should be on ACE inhibitors.”

He echoes the “need for primary care physicians to make an impact” by providing aggressive therapy for CHF patients. Most common therapies — diuretics, digoxin, and ACE inhibitors — can be managed by primary care physicians, Wasserman says, “but there are advanced therapies that can be applied, like beta blockers that need to be used carefully and slowly.”

“Most generalists are not comfortable with that, so they need to realize when patients need other therapies and they need to refer,” he concludes.

For more information, contact Janet Croft, PhD, Cardiac Epidemiologist, Centers for Disease Control and Prevention, Atlanta. Telephone: (770) 488-5528. ■

New predictor for sudden death from heart failure

Low heart rate variability means high risk

American heart failure experts are cautiously optimistic that a simple test may be a powerful new tool to recognize congestive heart failure patients at high risk of death within a year and to give physicians an opportunity to provide the intensive treatment that may save their lives.

The effectiveness of the 24-hour heart rate variability test (HRV) in identifying patients at high risk of death within a year was studied by British researchers and reported in the Oct. 13 issue of the journal *Circulation*. (See related story on methods, p. 84.)

The results: CHF patients with a low variability rate were at ten times the risk of death as those with high swings in heart rate.

In fact, of 433 patients in the study, ages 18 to 80, all with congestive heart failure for at least three months, half of those with low heart rate variability died during the study follow-up period (+/-482 days), and of those with normal variability rates, only 5.5% died during the study.

Those patients whose HRVs were between the extremes had an annual death rate of 12.7%.

At this point, says **David A. Meyerson, MD**, a national spokesman for the Dallas-based American Heart Association (AHA) and senior cardiologist at Johns Hopkins University in Baltimore, “It is an excellent research tool that we can use to help design interventions that will help people live longer with congestive heart failure.” The HRV test is already in limited use in the United States “as an investigative tool,” Meyerson says.

Should all CHF patients get HRV tests?

In a press release issued at the time the study was made public, lead author James Nolan, MD, of St. James’s University Hospital in Leeds, England, recommended HRV tests for all CHF patients.

Meyerson and his colleagues think it’s not yet time for the HRV test to be in routine use in the United States.

“But physicians can be aware that literature now exists and HRV is helpful in predicting who is at high risk,” Meyerson said. “We will all look forward to the next meetings of the AHA where interventions will have been developed that will minimize this variability and hopefully help predict who we can help do better.”

Lee Dykstra, MD, director of the congestive heart failure unit at the Kaiser Permanente Foundation Hospital in Bellflower, CA, thinks CHF patients who are reasonably healthy and can reasonably expect to survive another five years or so can benefit most from an early predictor like the HRV.

“If true, then this is a piece of information that is likely to help us focus our efforts on those patients who are likely to benefit. We

KEY POINTS

- The heart rate variability test can be an early and accurate predictor of high risk of death.
- Patients with low heart rate variability are at greatest risk.
- Early predictors give physicians an opportunity to prescribe more advanced therapy and possibly save lives.
- The American Heart Association says the current value of the test is as a research tool.

Methods to administer HRV test

British researchers studying the relationship between heart rate variability (HRV) and mortality in CHF patients needed data from ambulatory patients.

Information was gathered from 433 CHF patients of both sexes ages 18 to 80, with a mean age of 62.

Patients monitored by portable ECGs

Subjects wore miniature battery-operated tape recorder electrocardiograms (ECGs) (Tracker model from Reynolds Medical Ltd.) of a similar type to that employed in common clinical practice in the United States. They engaged in 24 hours of normal, unrestricted activity.

The recorder includes a crystal-generated time reference track that allows correction for recording and replay speed errors to within .5%, which researchers considered essential for an accurate measurement of HRV.

The 24-hour ambulatory ECGs were replayed through a Pathfinder arrhythmia analyzer (Reynolds Medical Ltd.) to document the presence of ventricular arrhythmias. U.S. experts say the key to charting HRV lies in the analysis of the left ventricular function.

Ambulatory ECGs less than 16 hours in duration or with less than 90% of recording suitable for analysis were excluded.

After initial analysis, the remaining normal-to-normal levels were measured and time-domain analysis of HRV was carried out. ■

have therapy that will help them, but until now we have not been able to identify who can benefit," he says.

"I couldn't tell you that I think we're going to improve outcomes by 5%, 10%, 20%. I really don't know, but I think it's the right thing to do," Dykstra says. "Whether it's going to help all that much, we'll have to wait and see."

Like many of his colleagues, Dykstra stresses the accomplishments of angiotensin-converting enzyme (ACE) inhibitors. "We are just coming out of the Dark Ages in congestive heart failure.

ACE inhibitors have reduced mortality by 30% in the past five years because they prevent the condition from worsening by lowering the blood pressure. And best of all, the more you take, the more benefits you get."

He says there is a "general feeling" among American cardiologists that many patients on ACE inhibitors would do better with higher dosages. "General practitioners, family practitioners, and internists may not be as aggressive in this as they should be."

"I sympathize with the primary care physicians that they have to worry about cholesterol screening, cancer, blood pressure, and remember everything else and try to do some education, all in the course of a 15-minute visit," Dykstra added.

Test can help 40% of patients

Nolan estimates that the early predictor HRV test can benefit 40% of CHF patients with extra treatment. His study is an evaluation of results of the UK-Heart (Heart-Failure Evaluation and Assessment of Risk Trial) that showed that patients with a low HRV following a heart attack had a lower chance of survival.

"Our aim was to recruit a wide spectrum of ambulant outpatients with mild to moderate symptoms treated with optimal contemporary drug therapy and characterized according to simple, widely available clinical techniques," Nolan wrote.

Patients from four hospitals were analyzed between December 1993 and April 1995. All subjects had diagnosed CHF, and those with confounding factors or comorbid diseases such as diabetes, chronic renal failure, history of alcohol abuse, clinical evidence of autonomic neuropathy or a recent myocardial infarction, and a variety of other cardiac factors were eliminated.

Baseline data were collected for each patient, including chest X-rays, electrocardiograms, left ventricular functions, and cardiothoracic ratios. Electrolytic concentrations and renal and liver functions were also measured. In addition, left ventricular ejection fraction and fractional shortening indices were calculated according to standard formulas.

The majority of patients (76%) were diagnosed with ischemic heart disease and were being treated with diuretics (97%) and ACE inhibitors (82%).

All patients were registered with the UK

national death reporting system, which notified researchers of all deaths. Death certificates, autopsy findings, and hospital and physician records were reviewed by independent researchers at the University of Edinburgh in Scotland.

Better understanding of death

Nolan concluded, "Our data relating to mode of death are based on relatively small numbers of events, and many deaths in heart failure patients are difficult to classify. The results should therefore

be viewed with caution, but they do provide insights into the relationship between autonomic activity and mode of death in CHF."

Finally, the study states, "Data in relation to mode of death suggest that 24-hour ambulatory ECG may be useful in guiding the prescription of additional therapy for patients with symptomatic CHF who are already established on a diuretic and ACE inhibitor."

For more information, contact: David Meyerson, MD, Johns Hopkins University, Baltimore. Telephone: (410) 750-5555. ■

CHF study finds gaps in diagnosis, treatment

Discharge instructions fall short as well

A study of CHF patients recently completed by the Missouri Patient Care Review Foundation (MPCRF) in Jefferson City indicates that physicians don't always provide the best diagnoses and don't always adequately treat the disease.

The foundation's Regional CHF Cooperative Project looked at whether patients were receiving left ventricular function assessments and whether they were put on angiotensin-converting enzyme (ACE) inhibitors to improve left ventricular diastolic dysfunction, according to **Carl Bynum, DO, MPH**, principal clinical coordinator. MPCRF contracts with the federal Health Care Financing Administration (HCFA) to monitor quality of care for Medicare beneficiaries.

Looking beyond the symptoms

The study revealed that the assessment is "not routinely done," Bynum says. "Lots of times physicians are evaluating and making a diagnosis based on symptoms. To accurately diagnose [left ventricular diastolic dysfunction] you have to evaluate the function of the heart. It's important because it determines what medication the patient should be placed on."

The assessment of cardiac function was performed in 72% of the cases studied, Bynum says, and most of the patients deemed ideal to be put on ACE inhibitors were given that treatment. That means the study did not consider patients who were allergic to ACE inhibitors or had some other

reason for not taking the medication, he adds.

"Of ideal patients, 80% were put on ACE inhibitors," Bynum notes. "That's not too bad, but there are still another 20% that had the potential of being on the medication."

The foundation is working with the hospitals involved in the study to implement plans to educate their physicians and to change their processes, he says. "This is an important aspect of the overall treatment of these patients, and we need to make sure there are processes in place to evaluate that."

Prepare patients thoroughly for discharge

Another aspect of the study looked at discharge planning for the patients, Bynum says. It found that 46% received instructions on medication, 27% received instructions on diet, and only 10% were instructed on weight monitoring. "We looked at what was written in the chart, and for our purposes, if it wasn't written in the chart, it didn't happen," he adds.

Post-discharge monitoring is an important part of preventing complications from CHF, Bynum points out. "For patients to recognize that they might be retaining fluid, that they need to call the physician or make some changes" is crucial, he says.

Hospitals that fell short in this area might want to develop a preprinted form or take some other action to alert nurses and physicians to the importance of discharge planning, he suggests.

MPCRF continues to analyze data from the study, which was initiated by the Kansas City regional office of HCFA with final outcomes due in December. The study involved eight states, but the percentages cited apply only to the Missouri patients. ■

CHF program cuts costs 61%, admissions 57%

Regular telephone contact improves quality of life

A two-year study of nearly 5,000 CHF patients enrolled in a disease management program found a 57.5% drop in hospital admissions for all diagnoses and a 61.1% reduction in inpatient health care costs.

The patients, all members of the Louisville, KY-based Humana Inc. health plan, also saw a 58% drop in hospital days and a 48.9% decrease in emergency department visits as a result of participating in the program from Cardiac Solutions of Buffalo Grove, IL. Other results included a 34% drop in sodium intake for patients on the program a year or more and an 8% increase in functional status in the first year of the program as measured by the Duke Activity Status Index.

“There is no question that we are taking better care of our congestive heart failure patients,” says **Richard Vance**, MD, Humana’s vice president for population health improvement. “We believe the results of this program provide the blueprint for care of CHF patients nationwide in the future.”

The key to the success of Cardiac Solutions’ program, which was developed under the name MULTIFIT by researchers at Stanford University, is managing the patient, not just the disease, says **Cornelia Tilney**, vice president of marketing for Cardiac Solutions’ parent company, Ralin Medical Inc. Claims data show that when you look at patients who have had a prior hospitalization with a primary diagnosis of CHF, 50% to 60% of the inpatient costs are for non-CHF conditions, she says. Cardiac Solutions can bring the costs down 70% for CHF, and 40% to 50% for other costs.

Cardiac Solutions employs cardiac nurses with at least five years of experience — the average is

KEY POINTS

- The Cardiac Solutions congestive heart failure program reduced admissions by 57.5%, inpatient costs by 61.1%, hospital days by 58%, and emergency department visits by 48.9% in a two-year study of nearly 5,000 Humana patients in Louisville, KY.
- The program relies heavily on frequent nursing contact in person and by telephone with patients to make sure they comply with doctors’ orders and know how to identify early warning signs.
- Nurse disease managers provide the sometimes missing link between established treatment guidelines and implementation on the patient level.

10 years — in five regional offices to help patients manage their symptoms at home through regular telephone contact. The program begins with a home visit from one of Cardiac Solutions’ contracted home health agencies that assesses the patient’s physical and psychosocial status, diet, and medication compliance.

Patients receive a workbook with a simple format that teaches them how to manage their disease. Nurses go over the information chapter by chapter with them on the telephone. The nurses follow a scripted format for the calls, asking a series of questions and entering the responses into a database as they go. Patients may also call the nursing center themselves if they need immediate help.

“The nurses work to develop a relationship with the patient,” Tilney says. “The same nurse will call the patient each time, and they send short biographies and photos of themselves to help the patients feel comfortable. They also send postcards with congratulations when the patients reach certain milestones. They are not only a highly competent clinical resource but also a motivator, coach, and cheerleader.”

The protocols of the program are based on national guidelines from the Agency for Health Care Policy and Research in Rockville, MD, and the American Heart Association in Dallas.

These guidelines often fail in clinical practice, MULTIFIT’s developers say, because no one has the specific responsibility of making sure they’re implemented and because of logistical

“The nurses work to develop a relationship with the patient. The same nurse will call the patient each time, and they send short biographies and photos of themselves to help the patients feel comfortable.”

problems, including little time for individual patient-physician contact.

In this program, the nurses follow protocols on lab management, medication management, lifestyle, and symptoms. If the patient has a cough, for example, the protocol helps the nurse determine whether it's from the medication or perhaps a respiratory infection and what action to take. If the situation appears urgent, the nurse will send the patient to the physician immediately.

If guidelines and treatments don't match, the nurse will point out the differences and ask the physician whether any changes should be made. Besides providing a check-and-balance system, this approach also takes some pressure off the physician, Tilney says. For example, one area the nurses focus on is the use of angiotensin-converting enzyme (ACE) inhibitors, which sometimes are not prescribed at optimal doses suggested by national guidelines. In a 1997 study on MULTIFIT published in the *American Journal of Cardiology*, the number of patients who received target doses of the ACE inhibitor lisinopril increased by 82%.

Phone calls reap good results

The results of the phone conversations are reported to both the physician and the patient, along with results of written questionnaires the patients complete periodically. Seeing their progress on paper is a good motivator for patients, Tilney says. If patients know someone is keeping track of their sodium intake, for example, they're much more likely to watch their diets.

When Cardiac Solutions began the CHF program, all contact was face-to-face. But when the company got the national Humana contract, the frequent home visits became logistically impossible. So they tried the telephone idea and found that the results were just as successful. "We found that when we have patients on the phone, we have their undivided attention," Tilney says. "When you're in the home, the patient may be distracted by the TV or the cat or the phone ringing."

Vance says the program combines the efficiency of telephone contact with the personal touch of as-needed home visits. "It's more practical than having every contact be a visit from a home health nurse. With those nurses, their car time is downtime unless you have sophisticated technology in place. This way, we're using their time more efficiently."

Cardiac Solutions' ability to reconfigure the program to meet Humana's needs is one of the keys to its success. "The changes were done in collaboration with us, and that allowed us to get buy-in from our physicians," Vance says. "Their disease managers have earned the trust of our physicians as well as our patients. Both the patients and the physicians feel comfortable calling the nurses. This model is showing the way that disease management can restructure health care."

For more information on the Cardiac Solutions program, contact the company at 4371A Abbott Court, Buffalo Grove, IL 60089. Telephone: (800) 343-6311. ■

Do comorbidities sabotage CHF management efforts?

Ditch single solutions for integrated approach

Your new enrollee is a 67-year-old woman who lives alone three years after the death of her husband. Her medical history, spotted with emergency department visits and hospitalizations, suggests that her diabetes and CHF have been poorly managed. She is a lifelong smoker and has developed chronic obstructive pulmonary disease.

A candidate for three different disease management programs within your health plan, she complains that she's being overwhelmed with more patient education materials than she can deal with or comprehend. As a result, none of the interventions tailored for her are working well, and the redundant care she and others like her are receiving is driving your organization's costs through the roof.

As managed care organizations expand their disease management focus, such scenarios are growing increasingly common, says **Catherine Hoffman, ScD**, senior policy analyst at the Kaiser Family Foundation in Menlo Park, CA, and author of a recent study on the future of caring for the chronically ill. Indeed, chronic care managers are claiming now that comorbidities constitute the most troubling issue they face in light of an increasingly elderly patient population.

"We've got this tension between the need for more specialized care and also the need for more

general oversight of people with complex chronic conditions,” Hoffman says.

The disease management model is wonderful because it can maximize the care each health provider brings to patients, she says. “But counter to that is the fact that, with the aging of America, more of us are going to have chronic conditions. And since a good share of people with chronic conditions are going to have more than one, how can you really manage their care in these single disease solutions?” Hoffman asks.

Problems due to design flaws

In many ways, the problem of dealing with comorbidities has grown right along with disease management and stems largely from flaws in the design of early disease management programs, says **Gary Slatko**, MD, MBA, vice president of operations in the care management division at Glaxo Wellcome in Research Triangle Park, NC, a pharmaceutical company now seeking to expand its disease management offerings.

“The reality is that people don’t come with drug indications,” Slatko says. “They come with combinations of conditions. And the initial pharmaceutical industry approach to this challenge was to design programs around specific diseases in areas where they had products and treatment indications.”

Similarly, faced with the challenge of dealing with variations among and even within different delivery systems, disease management companies began marketing their programs as single disease solutions, says **Richard E. Ward**, MD, MBA, director of the Center for Clinical Effectiveness at Henry Ford Health System in Detroit. “Given the complexities they’ve had to deal with, you can hardly blame them for trying to come up with something that’s at least somewhat standardized,” he says.

Another obstacle to effective management of CHF comorbidities is the traditional multidisciplinary clinic model that’s still in place at many health systems, Ward contends. “It’s a tested method, and it’s certainly one that patients understand,” Ward says. “But sometimes it fails in dealing with the complexities of a patient’s case.”

For example, a clinic model might be a good choice for some cardiac patients, whose health landscapes are dominated by their heart condition. “But if you’ve got a number of subtler conditions, you can’t use a method like that without

running the risk of some confusion as far as who’s really coordinating care and carrying out all the integrative tasks,” he maintains.

Even so, Ward notes that many medical specialists, including allergists, cardiologists, and rheumatologists continue to view the establishment of a disease-specific clinic as “the ultimate for their field. From their perspective, it revolves around them and their specialties and their specialties’ patients.” At the same time, primary care providers often view primary care clinics as “the center of everything,” he says. “Well, the real world involves some of both.”

Ward says that a more effective approach is to view care in the context of an integrated network where, for example, an allergist has some organizing influence over a patient’s care but doesn’t take full responsibility for the patient. Similarly, the primary care physician and case manager have case finding and integrative responsibilities “but without having to view things completely in the context of a send-out, receive-back model,” he says.

Ward adds that any sort of effective integration of care among disease managers within different disciplines will necessarily rely on an information system infrastructure capable of supporting a variety of different interventions. “Without the development of information technologies that cut across diseases, there’s never going to be any coordination across these disease entities,” Ward says. “And that’s been conspicuously absent from the market.”

“The hope would be that if, in fact, people with comorbidities hooked up with disease management groups for each of their diagnoses, there would be extremely well-integrated information and communication systems in place,” says Hoffman. “But we have no history in the United States of being able to do that in health care. We just don’t. We don’t even have good communication between doctors’ offices and the hospitals they serve.”

Focus on subprocesses

A second possible solution for the management of patients with comorbid conditions is to conceptualize the process of disease management as a large number of smaller subprocesses, says **Patrice Spath**, ART, consultant in health care quality and resource management at Brown-Spath & Associates in Forest Grove, OR.

“If the services that are offered relate to a

particular part of the management of a disease rather than the whole thing, then you make it easier for someone else to take that integrative role and say, 'I want a piece of this, a piece of this, and a piece of that,'" says Ward. But, he cautions, it's important not to take that advice too far. "Otherwise, you're just going back to the whole situation disease management was trying to get away from, where there wasn't any integration across the disease spectrum. It's just a balancing act."

For more information about dealing with comorbidities, contact:

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Mixing tech and touch saves \$427 a month

Combining telemedicine with human intervention

Many managed health care plans fall short when it comes to managing chronic illness, states a recent National Committee for Quality Assurance report. Outsourcing may provide an answer to that need.

By combining telemedicine with human intervention, HiLIFE, a San Francisco company, has created a system that intervenes before patients get out of balance. "The LifeMasters-supported self-care system reduces chronic disease admissions and saves money and lives by changing patient behavior," says **David E. Goodman**, MD, the company's founder.

A group of patients at Brown & Toland

Medical Center in San Francisco participated recently in a pilot study of the LifeMasters program. They had New York Heart Association Class 3 and 4 CHF and were identified as high utilizers — multiple emergency department (ED) visits or hospitalizations during 1996.

In addition to reporting high satisfaction and compliance for both patients and physicians, there was a 66% reduction in ED claims, a 59% reduction in bed days, and an 83% reduction in skilled nursing facility admissions.

"For the pilot program, we were able to save the facility an average of \$427 per enrolled patient per month," says Goodman. "The system cost about half that." System pricing is reduced dramatically when the patients' disease states are less severe. It also varies based on the individual patient's needs and the size of the hospital's contract.

Managing care instead of just providing it

Doctors need to receive timely and actionable information about their patients, HMOs require a method to track outcomes, and patients are best off when they become involved in their own care, says **Christobel Selecky**, CEO of HiLIFE. "We leverage the human component in much the same way as banks use ATMs to teach us to be our own tellers," she says. "This system teaches patients to be their own case managers. Patients feel in control, yet doctors are getting the information they need to make course corrections in the treatment plans."

The technology enables physicians to manage care instead of just providing it, she says. Doctors are given the tools they need to manage large populations of patients in a way that satisfies patients and ensures good quality of care. Patients are given the tools they need to take responsibility for their own health. "With chronically ill patients, that's critical because much of their success depends upon their own behavior," says Selecky.

"Patients with chronic disease don't understand a lot about their illnesses," says **Sandra Feaster**, RN, director of clinical services at HiLIFE. "We emphasize education. There are three important components to improve these patients' health status: nutrition, medication, and activity. For one thing, patients have to be instructed to read food labels."

People in self-care have a high recidivism rate, as do participants in weight-reduction programs. "Any chronic illness is discouraging," says Feaster. "We set up weekly phone appointments

with patients to discuss their problems and focus on their individual needs. People come into the program at different levels of ability and willingness to change. Our job is to define those levels and work with them to help them lead a healthier lifestyle.”

LifeMasters is based on these premises:

1. Between 25% and 40% of hospitalizations for chronic disease are preventable.

2. Controlling chronic disease depends on how well patients care for themselves and on the availability of timely information that allows physicians to intervene early.

This step toward re-engineering health care delivery could transform what is typically an impractical, labor-intensive function — keeping in touch with patients — into a manageable, cost-effective system that decreases resource utilization.

Most patients with chronic disease communicate with their physician during their monthly exams, but in the interim, conditions can deteriorate. Legs can swell and complaints of fatigue and dyspnea can develop in the case of CHF, for example; any of which can lead to hospitalization or worse. When asked, “Why didn’t you call the doctor?” often a patient will say, “I thought it would get better.”

To combat that lack of feedback, the SelfCare system monitors the patient’s condition continually. While in the program, patients wear pagers and are prompted at medication time. They call an automated telephone system daily and answer questions regarding salt intake, weight, or ankle edema. Their responses are transmitted to a computerized database and compared to thresholds set by the physician.

If a patient doesn’t call in, or if self-reported data cross the threshold, a nurse calls the patient as well as the physician and often manages to avert a medical emergency. ■

CLINICAL MANAGEMENT

Cardiothoracic ratio on CXR not valid predictor

Synopsis: Philbin and colleagues found that the chest X-ray (CXR) determination of cardiothoracic ratio is not a valid way of estimating ejection fraction (EF) or systolic vs. diastolic dysfunction.

Source: Philbin, et al., for the Digitalis Investigation Group. *Arch Intern Med* 1998; 158:501-506.

A differentiation between systolic and diastolic dysfunction is an important component of the diagnosis, prognosis, and treatment of CHF. The ability to use a common diagnostic test such as a CXR would be attractive to differentiate systolic and diastolic dysfunction.

Philbin and colleagues had the luxury of the Digitalis Investigation Group data. These *New England Journal of Medicine* data dealt with CHF and the use of digoxin. Also required in the study

were CXRs and some other measurement of EF such as radionuclide study, echocardiogram, and angiogram.

Philbin et al., took a look at all 7,476 of the patients who had entered the trial. A total of 254 patients were excluded on the basis of valvular disease, which can confuse the dilatation in CHF. Another 60 or so patients were excluded because of inadequate data.

The EF had been calculated in the remaining patients using radionuclide (66%), echocardiograph (29%), or angiogram (5.5%). The cardiothoracic ratio was measured in the conventional fashion. By comparing these two and statistically analyzing with correlative and categorical analysis, Philbin et al., were able to show a weak negative correlation. (What the researchers would have wanted was a strong negative correlation.)

Philbin et al., have shown that the CXR determination of cardiothoracic ratio is not a valid way of estimating EF or systolic vs. diastolic dysfunction. A more expansive test is needed.

Comment by Len Scarpinato, DO

Every primary care physician faces patients with a new onset of CHF. One of the more common tests ordered in this scenario is CXR. The residents are taught not to use this to make the diagnosis, but it certainly corroborates the clinical suspicion. Our eyes naturally drift to the size of the heart. It would be helpful if the size of the

heart would help us differentiate systolic and diastolic dysfunction. The reason we need this differentiation is because of the different therapeutic choices in these two syndromes. I must admit, it was attractive to estimate whether new onsets of CHF were from systolic or diastolic causes based on that CXR.

What I had always been taught in medical school is that there were significant respiratory variations and systolic and diastolic differences in size of the heart on CXR. There was no way to “gate” the timing of the CXR in systole or diastole sequential chest X-rays. Even if only 30 seconds apart, they could vary widely in the size of the myocardia.

In an acute CHF episode with fluid overload, a diastolic dysfunction can look like a systolic dysfunction (even on echocardiogram). For that reason, I have cautioned my residents to wait several days before ordering an echocardiogram on a CHF patient. Order it acutely if absolutely necessary for other reasons — such as ruling out a valvular abnormality that might make an acute therapy necessary. I firmly believe that waiting just prior to discharge for that echocardiogram, or maybe even a week later, will give you a more accurate representation of the difference between diastolic and systolic dysfunction.

Philbin et al., have proved that the CXR cannot be used to tell the difference between systolic and diastolic dysfunction. The percentages of how they measured EFs are slightly different than my practice. I noted that they had almost twice as many radionuclide EF studies as echocardiogram EF studies.

Regardless, their study indicates that we do need to bump up to the more expensive test of either radionuclide, angiogram, or echocardiography to make that differentiation between systolic and diastolic dysfunction. Most clinicians had already known this and were already doing this in order to estimate EF. The “rough” look of the heart that we get from the CXR might give us a clue as how to initially treat a CHF patient as a systolic or diastolic dysfunction can be erroneous.

Primary care clinicians should not use the cardiothoracic ratio on CXR to help determine whether a patient’s etiology of CHF is from systolic or diastolic dysfunction.

Len Scarpinato, DO, is Associate Professor at the Medical College of Wisconsin and Program Director at Racine (WI) Family Practice. ■

Nesiritide shows benefit in patients with acute CHF

A study by University of Alabama at Birmingham (UAB) cardiologists shows that the investigational drug nesiritide improved the condition of patients with either moderate or severe acute CHF.

The study, presented at the recent American Heart Association Scientific Sessions in Dallas, showed that nesiritide, a genetically engineered form of the naturally occurring cardiac hormone BNP (b-type natriuretic peptide), alleviates the symptoms of CHF by dilating blood vessels, restoring salt and water balance, and improving heart function. BNP is produced naturally in increased amounts by the ventricles of the heart in response to heart failure.

“Nesiritide improved heart function in acute CHF patients exhibiting a wide range of disease severity,” says **Robert Bourge**, MD, lead author of

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Editorial Questions

For questions or comments, call **Milo Falcon** at (404) 262-5541.

the study and director of the UAB division of cardiovascular disease. "The new drug may, in many cases, replace the use of intravenous vasodilators, IV diuretics, and especially IV inotropic drugs, which can cause severe and sometimes fatal arrhythmias in up to 5% of patients."

In the study, 127 hospitalized patients, average age 59 and suffering from acute CHF, were given one of two dosing levels of nesiritide. For six hours, diuretic and vasoactive therapies were withheld while nesiritide was administered. During this time, investigators monitored changes in three key parameters used to assess CHF severity: pulmonary capillary wedge pressure (PCWP), cardiac index, and blood pressure. Results showed a dose-related improvement in both PCWP and cardiac index, while blood pressure decreased minimally among all groups.

In another study led by researchers at Beth Israel Deaconess Medical Center in Boston, nesiritide demonstrated clinical advantages over dobutamine, currently a prime choice in CHF treatment. ■

Alternative Medicine Alert now available

Patients with chronic diseases such as congestive heart failure are among some of the biggest users of alternative medicine therapies. Physicians and other health professionals need to know what alternative therapies their patients may be turning to, and what impact those therapies may be having on traditional treatment regimens.

American Health Consultants, the publishers of *CHF Disease Management*, have a new publication that offers you clinically sound information on alternative medicine and complementary therapies.

Alternative Medicine Alert is written by expert clinicians who review the science behind alternative medical therapies to give you insight into what does and doesn't work. Each monthly issue of *Alternative Medicine Alert* reviews popular and well-known therapies as well as some that do not make the front pages of the popular press. The clinician authors give concise advice on what practitioners need to know to discuss these issues with patients honestly and knowledgeably.

Don't be caught unaware when a patient asks

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CE objectives

After reading the December issue of *CHF Disease Management*, the continuing education participant will be able to do the following:

- List four possible factors for the decrease in mortality among CHF patients.
- Understand how a low variability rate impacts the mortality rate of CHF patients.
- Understand how regular telephone contact with patients can improve compliance and outcomes.
- List the reasons why the cardiothoracic ration on CXR should not be used to determine whether a patient's etiology of CHF is from systolic or diastolic dysfunction. ■