

## Practical Disease Management as a Solution to the Undertreatment Problem

*Based on a presentation by Richard C. Pasternak, MD*

### **Presentation Summary**

Recent information reveals that as few as 25% of the people who could benefit from lipid-lowering treatment are actually receiving it. Many of these neglected patients may be those with established CHD. A well-designed disease management approach could ameliorate such dismal rates. Disease management is a population-based strategy that involves feedback and continual measurements of the effects of interventions. The traditional approach to disease management of a CHD patient was that the patient would come to the physician's office complaining of chest pain, undergo a stress test that suggested some compromise of the coronary arteries, and then undergo cardiac catheterization.

If the test revealed blockage, the patient often underwent revascularization with percutaneous transluminal coronary angioplasty and was then either symptom-free or not. The "outcome" was determined by the appearance of the vessel on angiography. There was often no formal measurement of true clinical outcome, cost, or patient satisfaction. The new paradigm for coronary disease management might involve many factors such as tasks, outcomes, and patient-oriented issues. These issues can be addressed and assessed in the prehospital, hospitalization, outpatient, and follow-up phases. Delivery of care is changing, and outcomes being measured are changing as well.

Clinical trials have shown that lipid-lowering therapy with the HMG-CoA reductase inhibitors (statins) reduce the incidence of coronary events, revascularization, coronary deaths, and overall mortality. However, patients enrolled in clinical trials get the best care, while most patients in the real world with elevated cholesterol and other risk factors for CHD are undertreated, said Richard C. Pasternak, MD, Associate Professor of Medicine in the Department of Medicine at Harvard Medical School; and Director of Preven-

tive Cardiology and Cardiac Rehabilitation at Massachusetts General Hospital in Boston.

Data from the Division of Health Examination Statistics at the National Center for Health Statistics suggest approximately 12.7 million adult Americans could be candidates for lipid-lowering drug therapy.<sup>1</sup> This includes people with established coronary heart disease, other types of atherosclerotic disease, multiple risk factors, or elevated low-density lipoprotein cholesterol. This survey also estimated that only 25%

of the 6 million patients with coronary heart disease—the group for which treatment should be most aggressive—are being treated with lipid-lowering drugs.

*It is unlikely that risk-lowering strategies will save money, but they are cost effective in comparison with other interventions.*

### Studies Show Undertreatment

In one trial, only 16.7% of patients who came to the cardiac catheterization lab with documented CHD and documented hyperlipidemia were treated for their lipid abnormalities with diet or drugs during hospitalization.<sup>2</sup> One month following diagnostic testing, only 25% were receiving treatment. Twelve to 24 months after catheterization, still only a third of these patients were treated.

A study from the University of California at Davis<sup>3</sup> showed that only 15% of CHD patients with hypercholesterolemia had this information noted on their charts. Of this group, only 25% were treated for elevated lipid levels during hospitalization. A smaller percentage were being treated at time of discharge.

Dr. Pasternak told listeners that a study conducted by him and Massachusetts General Hospital colleagues showed that only 17% of patients presenting with unstable angina had lipoprotein profiles measured during the course of hospitalization.<sup>4</sup> Cardiologists at the Beth Israel Hospital in Boston had only 30% of CHD patients on lipid-lowering therapy,<sup>5</sup> said Dr. Pasternak. However, 100% of their hypertensive patients were taking antihypertensive drugs.

### Compliance Issues

Compliance is related to several factors. A marketing survey demonstrated that 1 year after being prescribed lipid-lowering therapy, only 55% of patients remained on the drug. One to 2 years

later, 26% were still taking their pills. After 2 years, only 15% percent were compliant. [Data from Marketing Research Counselors Inc., 1993].

“Compliance in recent major clinical trials of lipid-lowering therapy approached 90% over the 5-year duration of the trials. Obviously, a 15% compliance rate will not achieve the results seen in those trials,” Dr. Pasternak commented.

### Cost Effectiveness

It is unlikely that risk-lowering strategies will save money, but they are cost effective in comparison with other interventions. The acceptable cost effectiveness threshold in the US, that is, the cost per quality-adjusted year of life saved, is about \$30,000 to \$50,000. Common interventions have a wide range of cost per quality-adjusted year of life saved (eg, dialysis is estimated at \$30,000; a nurse-managed smoking cessation program is put at \$220; and cardiac rehabilitation programs are estimated at \$5,600). The amount estimated for lipid lowering therapy varies according to patient: the cost per quality-adjusted year of life saved would be less expensive for the high-risk patient, and somewhat more expensive for the low-risk patient.<sup>6</sup> The cost effectiveness of simvastatin in 4S was demonstrated to be \$7,800 to \$15,000 per year of life saved.<sup>7</sup>

### Disease Management

Healthcare providers are under pressure to develop disease management systems for healthcare delivery. The pressure comes from the managed care industry and is based on the premise that these systems will deliver more efficient care and improve outcomes at a lower cost. Disease management is a population-based strategy that involves feedback and continual measurements of the effects of interventions. Disease management is also based on understanding and learning from variations in practice (Table 1).

“Anytime there is a large variation in practice it means physicians are uncer-

tain about what the best practice might be," said Dr. Pasternak.

The traditional approach to disease management of a CHD patient was that the patient would come to the physician's office complaining of chest pain, undergo a stress test that suggested some compromise of the coronary arteries, then undergo cardiac catheterization (Figure 1). If the test revealed blockage, the patient often underwent revascularization with PTCA and was then either symptom-free or not. The "outcome" was determined by the appearance of the vessel on angiography. There was often no formal measurement of true clinical outcome, cost, or patient satisfaction, and physicians usually had no idea how their own practice compared against others. The new paradigm for coronary disease management might involve many factors such as tasks, outcomes, and patient-oriented issues (Table 2). These issues can be addressed and assessed in the prehospital, hospitalization, outpatient, and follow-up phases. Delivery of care is changing and outcomes being measured are changing as well.

Components of disease management strategies include assessing parameters, developing centers of excellence, integrating results of clinical trials, and developing automated systems, Dr. Pasternak said. Adequate disease management strategies are informed by not just the percent of restenosis or LDL-C lowering but more importantly, by results of epidemiologic and clinical trials.

### Critical Pathways

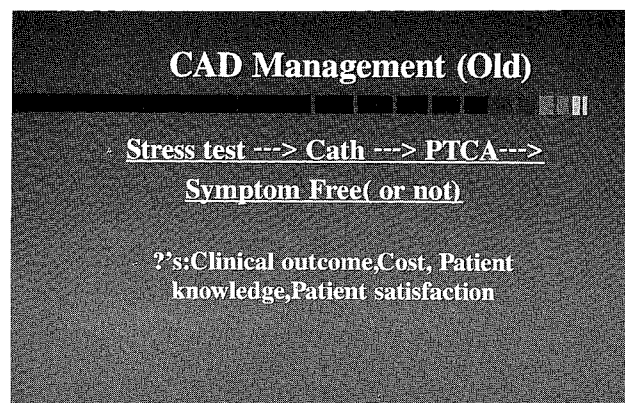
A key component of disease management is often the development of "critical pathways." This process entails looking at all the factors involved in caring for hospitalized patients. At Massachusetts General Hospital, Dr. Pasternak and his colleagues have developed six critical pathways. These were developed by a multidisciplinary team that discussed timelines and a specific intervention line for aspects of each disease in managing a hospitalized patient.

Using critical pathways, one can look at outcomes, such as length of stay in hospital, cost, and patient satisfaction, and relate these outcomes to specific aspects of management. While all path-

**Table 1.** Disease Management Principles

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| Evaluate short-term costs and long-term savings            |
| Appreciate and use "low-tech education.                    |
| Use a multifactorial approach                              |
| Standardize procedures and practice: Use those guidelines! |
| Coordinate facilities and plans.                           |

**Figure 1.** The Traditional Approach to Heart Disease Management



**Table 2.** The New Approach to Heart Disease Management

| <b>CAD Management (New)</b> |                          |                                      |  |
|-----------------------------|--------------------------|--------------------------------------|--|
|                             | Outpatient/<br>Pre-Admit | Hospital                             | Outpatient/<br>Follow-up                 |
| Tasks                       | Pre-admit tests, triage  | Guidelines, Crit. Pathways Education | Risk Factor Management                   |
| Outcomes                    | Access                   | Length of Stay, Complications        | Compliance, Risk Factor Change           |
| Patient                     | Risk Factor ID           | Discharge Plan                       | Satisfaction, Disease Burden, Commitment |

ways, including the CABG pathway and the MI pathway, have decreased length of stay at least slightly at Massachusetts General Hospital, greater changes were evident in patient/physician education, cost savings, and patient satisfaction. Data are not yet available on critical clinical outcomes, said Dr. Pasternak.

### **Innovative Programs**

Several innovative programs have been developed to address the multidimensional needs of CHD disease management. Perhaps the most successful is the MULTI-FIT program designed by Robert DeBusk, MD, and Nancy Houston-Miller, RN, at Stanford University.<sup>8</sup> Like many other new systems, this is a nurse case-managed, physician-supervised program.

The primary contact is between the nurse and the patient, via phone, mail, and occasionally, office visit. The nurse feeds information from the patient to the doctor and is the liaison with the laboratory. This model can have a profound impact in intermediate outcomes, such as smoking cessation, LDL-C reductions, and improved functional capacity.

Dr. Pasternak also spoke about automated disease management systems. One such program was developed by Thomas Pearson, MD, in Cooperstown, New York.<sup>9</sup> Data on cholesterol measurements coming into a laboratory computer were matched with demographic data on patients, and if a patient's demographics showed higher-than-average risk and total cholesterol level was over 200 mg/dL, the primary care physician was automatically sent a postcard notifying him or her about this potential abnormality. This automated system produced favorable results in terms of a dramatic increase in the number of patients who visited their physicians' offices for screening and in the numbers of patients who received educational materials and advice from primary care physicians. Almost 100% more patients underwent specific dietary counseling for elevated LDL-C levels as a result of this program.

"In this case, an automated, simple, narrow disease management package showed impact fairly quickly," Dr. Pasternak told listeners.

The Myocardial Infarction Cholesterol Awareness (MICA) project was initiated to teach Massachusetts General Hospital residents, house staff, and attending physicians about cholesterol management. MICA mounted an educational program consisting of lectures, posted reminders on patient floors, and resident and team discussions. Weekly reminders were posted about measuring cholesterol levels. The next phase was a compliance assessment, followed by the implementation of guidelines, with repeat assessment to be performed at a later date. As a result of MICA, 70% of CHD patients now have their LDL-C levels measured—a favorable comparison to the previous rate of 17%. However, Dr. Pasternak reported, no increase has been seen in the number of patients treated for hyperlipidemia as a result of these efforts.

"So once again, guidelines and education don't necessarily equate to changes in practices," emphasized Dr. Pasternak.

### **Conclusion**

Disease management programs have the potential to improve efficiency of healthcare delivery. A disease management program provides an opportunity to find systems solutions to healthcare problems. Systems solutions can reduce the pressure for perfection felt by physicians. Disease management provides an organizational framework for continuous quality improvements to refine medical decision making by exposing physicians to the full ramifications of decisions.

There are, however, some pitfalls of disease management programs, Dr. Pasternak warned. Programs are often based on faith alone. Indirect long-term effects may outweigh some of the direct effects that are measured and the benefits may be overestimated. Paradoxically, disease management programs

may lead to fragmentation of care if precautions are not taken.

"Outcomes data a few years from now will show whether disease management approaches really do make a difference, as we believe they will," concluded Dr. Pasternak.

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