# Coronary Heart Disease in the United States

*Based on a presentation by Grant D. Lawless, MD*

***Presentation Summary***

The clinical and financial consequences of coronary heart disease in the United States are tremendous. Mortality from cardiovascular disease, which kills 50% of all Americans, equals mortality from the next eight leading causes combined. Myocardial infarction is the leading cause of death among men and women; most infarctions occur with no warning or previous symptoms. Risk factors are outlined with emphasis on prevalent modifiable risk factors. Coronary heart disease is the chief driver of healthcare costs. The financial burden on managed care organizations will increase as Americans age and a large number of Medicare patients shift from traditional indemnity healthcare plans to managed care plans. In 1996, only 11.2% of Medicare patients were enrolled in managed care plans, but a tremendous shift is expected as the population ages and federal funds for Medicare decrease. Evidence-based medicine will play a crucial role in helping managed care organizations deal with the influx of older patients at high risk. By basing treatment decisions and choices of therapeutic agents on clinical outcomes, managed care organizations can provide cost-effective healthcare and realize a substantial potential for savings by reducing the risk for myocardial infarction.

Coronary heart disease (CHD) has enormous mortality and economic implications in the United States, according to Grant D. Lawless, MD, Vice President of Medical and Pharmacy Affairs for Highmark BlueCross and BlueShield. Eighty-five percent of the people who die from CHD are older than 65 years.[1] As Americans age, managed care organizations will have more older patients, because employers will have more retirees in their plans and Medicare will shift its burden to the private sector. Men are at greater risk for CHD at certain times of their lives, but overall, men and women die of CHD at equal rates.[1] Mortality is higher among African-Americans than it is among white Americans—4.7% higher for African-American men and 24.3% higher for African-American women.[1]

More than one in five Americans has some form of cardiovascular disease, according to the second and third National Health and Nutrition Examination Surveys, NHANES II and NHANES III.[1] The mortality rate from CHD equals that of the next eight leading causes of death combined.[1] More than 13.5 million Americans have a history of CHD, angina pectoris, or both, and 1.5 million have new or recurrent myocardial infarctions (MIs) each year (NHANES II).[1] Most MIs (48% among men and 63%

among women) occur with no warning or previous symptoms (NHANES II).[1] Eighty percent of patients younger than 65 years die of their first MI (NHANES II).[1]

Almost half of those deaths occur within 1 hour of onset (NHANES II).[1] Twenty-seven percent of the men and 44% of the women die within 1 year of an acute event (NHANES II).[1] "We have not focused well enough on prevention," said Dr. Lawless.

## The Economic Consequences of Coronary Heart Disease

Coronary heart disease was the chief driver of healthcare costs in 1996,[1] and it will continue to hold that distinction, according to Dr. Lawless. The American Heart Association estimated the 1996 cost of all cardiovascular diseases in the United States to be $259.1 billion.[1] The financial burden specifically from CHD was $90.9 billion (Table 1),[1] which Dr. Lawless believes is an underestimate of the actual cost for home health and other medical durables, drugs, and lost productivity from morbidity/mortality.

The $1.3 billion estimated for home health and other medical durables should probably be doubled or tripled, according to Dr. Lawless, because of lack of effective measurement methods. Dr. Lawless predicts that the $2.7 billion spent on drugs in 1996 will grow 20% to 25% every year. Factors leading to this increase include a national annual growth rate of 17% to 18% in drug expenditures,[3] that approximately 50% of all healthcare dollars spent on patients older than 65 years stems from cardiac and cardiac-associated events,[4] and increasing numbers of older patients moving into Medicare HMOs, which provide full or nearly full coverage for drugs.

Cost of lost productivity is estimated to be $43.4 billion and has the potential to be twice that number, according to Dr. Lawless, because employers do not understand the loss of employee productivity. "Right now we have kind of a disconnection between payment for medical coverage and productivity losses," said Dr. Lawless. "Once employers begin to understand the connection, medical care will be viewed as a cost benefit in terms of supporting productivity and not a negative in terms of drawing profits away from productivity. I hope that changeover happens in a reasonable amount of time, because a lot of our employers are overemphasizing cutting costs, and they are going to wind up paying on that eventually." Other estimated costs for 1996 were $6.8 billion for the services of physicians and other healthcare professionals and $36.7 billion for hospitals and nursing homes.

**Table 1.** Scope of Problem: Economic Consequences in 1996

- Cost of all cardiovascular diseases in US estimated at $259.1 billion
- Financial burden of CHD: $90.9 billion
  - $1.3 billion for home health and other medical durables
  - $2.7 billion for drugs
  - $6.8 billion for physicians and other professionals
  - $36.7 billion for hospitals and nursing homes
  - $43.4 billion for lost productivity from morbidity and mortality
- CHD is the chief driver of healthcare costs

American Heart Association Heart and Stroke Facts: 1997 Statistical Update

## Populations at Risk

Age, sex, and family history are nonmodifiable risk factors for CHD. Men older than 45 years and women older than 55 years or younger women who have premature menopause without estrogen replacement therapy[1] are at risk. Men 65 to 69 years of age, the typical managed care organization retiree population, have twice as many MIs as women the same age.[1] Family history of premature MI, sudden death, or hypercholesterolemia is another nonmodifiable risk factor.

Employers, physicians, and managed care organizations have not paid enough

attention to dealing with modifiable risk factors through wellness and prevention programs. "My feeling is that prevention will be included in payment mechanisms and in National Committee for Quality Assurance quality measures as we go forward. I'm amazed it hasn't happened already," said Dr. Lawless. "Coverage of more preventive care will be something all of us will get great value out of."

***Inactivity increases risk for CHD 1.5 to 2.4 times, yet 60% of the adults who exercise do not do enough to achieve cardiovascular benefits.***

Modifiable risk factors include smoking, obesity, hypertension, physical inactivity, diabetes, elevated low-density lipoprotein cholesterol (LDL-C) (>240 mg/dL), and low high-density lipoprotein cholesterol (HDL-C) (<35 mg/dL). Dr. Lawless believes that the American target of 200 mg/dL for total cholesterol is too high. This belief is based on results of international studies and a study by Burkett, who found that at a total cholesterol of 160 mg/dL, people are at neutral cardiac risk.[5] "The United States on average has a higher average cholesterol. I think we are all targeted toward our own national average as opposed to an appropriate medical average. I think as a nation we ought to target a lower amount," said Dr. Lawless.

Three modifiable risk factors are prevalent in the United States: hypercholesterolemia, hypertension, and diabetes. Six percent of adults have hypercholesterolemia,[3] and 3% of the population has diabetes.[6] These conditions affect many of these people for much of their covered lives.

Only 42% of adults with hypercholesterolemia are aware of the condition.[7] Of the 27% who are aware who are actually treated, only 35% are compliant.[7] "We really have a very low payoff in terms of getting value from the products that are available," said Dr. Lawless. Young Americans also are at risk: 36% of people younger than 19 years have cholesterol levels equivalent to 200 mg/dL in adults[1] and are "on the high road to having high cholesterol."

Although the number of smokers has decreased, 28% of men, 23% of women, and 9% of adolescents still smoke.[1] Fifty percent of adults are exposed to smoke at home or work, which increases their risk for death from CHD by as much as 30%.[1]

Inactivity increases risk for CHD 1.5 to 2.4 times, yet 60% of the adults who exercise do not do enough to achieve cardiovascular benefits.[1] Twenty-five percent of adults do not exercise at all.[1] Adolescents are less active than their parents, increasing their risk for later problems from lack of exercise. Of the 62 million adults who are 20% above their desirable body weight, 33% of men and 41% of women are inactive.[1] "It's one of our problems as a country. We buy running shoes and running clothes and athletic equipment but don't actually use them. It's a matter of human nature, and it's a very tall obstacle. That's why a lot of us are looking at the easy way out—drug therapy."

### Implications for Managed Care Organizations

In a typical health maintenance organization (HMO) with 100,000 adult members, 6000 have hypercholesterolemia and are at risk for MI. One-third of the people at risk have a history of CHD, and two-thirds have not had a prior MI (NHANES II). Of the 6000 patients at risk for MI, many are not receiving therapy and are at risk for MI-induced sudden death. One-third of the MIs result in death, often only after costly interventions. The 5-year cost of acute MI has been estimated at $50,000 per patient.[8] "I don't think we're properly recognizing that risk," said Dr. Lawless, who noted that these figures probably underestimate the problem, because HMO members are aging (Table 2).

"One of the most dynamic factors that will shape healthcare for all of us is the number of older patients who are going to shift to private HMOs," said Dr. Lawless. As patients move from indemnity to managed care environments, the average age of patients in managed care plans will rise. Dr. Lawless pointed out that at Highmark BlueCross and BlueShield, the average patient age has increased 10 years in the last 5 years. He maintains that this demographic shift will result in HMOs tracking patients for long periods of time, possibly for most of their lives. The increased financial burden of managing CHD and MI can be reduced by means of focusing on primary prevention now. "It's incumbent on us that we pay the extra nickel now. Our payoff will be later."

Today only 11.2% of Medicare patients are enrolled in managed care plans.[9] Dr. Lawless predicts that this percentage will increase dramatically as more Americans age and the government shifts the burden onto the private sector. The states with the largest Medicare populations in managed care are California (39%), Florida (19.5%), and Pennsylvania (11.9%).[9]

Many factors are driving the shift of Medicare patients from traditional indemnity plans to managed care. Patients who stay in the publicly held side of Medicare find that their monthly out-of-pocket Medicaid costs combined with Medigap expenses, approximately $400 a month, can be almost as high as the entire cost of private coverage. These patients find Medicare HMOs, which have lower out-of-pocket expenses and better coverage, especially pharmacy coverage, a more attractive alternative. Many HMOs currently have annual pharmacy caps of $1500 or $2500, which are likely to be changed to unlimited pharmacy caps over the next few years. This will draw even more Medicare patients into HMOs.

A very high risk for CHD can be assumed for Medicare patients who shift to managed care. The financial burden of treating these patients will be tremendous, as shown in Table 2. "In my Medicare HMO, it is clearly my number one cost area," said Dr. Lawless. "Under my traditional HMO, it's a growing area, as my age increases. And in my Medicaid HMO, it actually has had a significant financial impact as well."

**Table 2.** Implications for Managed Care Organizations: Treatment Decisions

- Financial burden of managing CHD and MI poses sizable risk for managed care organizations
- Limited resources drive decisions about whom to treat, when to treat, and the best medications to use
- Many managed care organizations focus on modifiable risk factors, particularly lowering LDL-C
  - Valid markers for screening patients at risk
  - Not optimal in treatment decisions for patients without symptoms
- LDL-C–lowering goals were based on epidemiologic data and limited trial results
- Decision about which HMG-CoA reductase inhibitor to use for prevention of MI should be based on evidence-based medicine, not on surrogate markers

With new knowledge about CHD emerging almost daily, care of these patients will be a challenge. "I think it really requires a magnitude kind of change in terms of thinking about events. I know a number of us are focusing in on cardiac problems as one of our major areas of disease management." The National Committee for Quality Assurance also is focusing on management of CHD.

Many managed care organizations focus on modifiable risk factors, especially lowering LDL-C. This is a valid marker for screening patients at risk, but it is not very effective in making treatment decisions for patients without symptoms. Current LDL-C goals may not be optimal; they are based on epidemiologic

data and limited trial results. Compliance also is a problem. With a compliance rate of one in three for lipid-lowering therapies, compliance programs must be initiated. Much remains to be learned about 3-hydroxy-3-methylglutaryl coenzyme A (HMG Co-A) reductase inhibitors, which are exhibiting some interesting dynamics, according to Dr. Lawless.

## Evidence-Based Medicine

Dr. Lawless advocates the practice of evidence-based medicine, which focuses on patients and seeks to understand their medical needs and lifestyles. "You have to deal with the human nature of patients," said Dr. Lawless. "You also have to look at how patients deal with the pharmacy products they are taking in real life, not just in hypothetical studies."

Evidence-based medicine enables managed care organizations to optimize outcomes. Basing treatment decisions on outcomes is cost effective and provides better healthcare for patients. Evidence-based medicine provides a better understanding of the complex processes of MI. Selection of therapeutic agents is based on proved clinical outcomes in reducing MI and well-documented safety and tolerability. Quality of care for patients with hypercholesterolemia and at risk for MI is improved. Reducing risk for MI represents substantial potential savings. "As we approach our patients and patient care, we have to be very realistic in the expectations that we have, and we have to look at the multitude of factors and the complexity of patient care management when we think about creating regimens of care," said Dr. Lawless.

## Conclusions

The clinical and economic consequences of CHD, already staggering, will continue to grow as the American population ages. Increased focus on primary prevention and wellness programs to change behavior regarding modifiable risk factors is necessary. The payoff for primary prevention efforts will become evident as more patients shift into managed care. Evidence-based medicine provides a cost-effective method for managed care organizations to deal with the influx of older patients at higher risk.

## FACULTY QUESTION-AND-ANSWER SESSION

***Question: In Europe, our colleagues are looking at diabetes and cardiovascular disease as a public health problem. Will we have help in a public health venue in the United States?***

*Answer (Dr. Lawless):* Most of the increase in longevity in this country has come from public health. Medical initiatives have improved quality of life, not quantity of life. I think public health is a reasonable approach. That was my comment earlier about us not being aggressive enough in our goals.

***Question: Could HMOs offer discounts for cholesterol screenings and treatments?***

*Answer (Dr. Lawless):* That's an excellent idea. We give discounts on life and auto insurance for safe behavior. I don't see why we can't give a premium based on wellness parameters such as hypertension, cholesterol, smoking, and weight. I believe that eventually we will have those kinds of things.

## ··· REFERENCES ···

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