CONCURRENT SESSIONS

Thursday April 11, 2002
11:15 a.m.–12:15 p.m.

3 The Importance of Lifestyle Changes in Lowering Cholesterol and Treating the Metabolic Syndrome

Margo A. Denke, M.D., University of Texas Southwestern Medical Center at Dallas

The Third Report of the Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (ATP III) went beyond LDL cholesterol levels when it identified a secondary target of therapy: the metabolic syndrome. This identification has drawn attention to a new category of patients at high risk for disease that was not always identified by the traditional risk factor counting/scoring approach. The metabolic syndrome identifies individuals with risk factor clustering: each risk factor may not be sufficient in magnitude to trigger cut point counting, but the clustering of risk factors increases the likelihood of disease. ATP III defines the metabolic syndrome as the presence of three or more of the five metabolic factors listed below. When the metabolic syndrome is present, it is likely that additional, difficult-to-measure risk factors are also present, including an anti-inflammatory state, a pro-coagulant state, and insulin resistance.

Clinical Identification of the Metabolic Syndrome: Presence of > Three Factors

Defining Risk Factor	Criteria for Metabolic Syndrome
Abdominal Obesity by Waist Circumference	> 40" in men > 35" in women
Higher Fasting Triglycerides	> 150 mg/dL
Lower HDL	< 40 mg/dL for men < 50 mg/dL for women
Higher Blood Pressure	> 130/ > 85 mmHg
Higher Fasting Blood Glucose	100 mg/dL

The metabolic syndrome is an important target for both primary and secondary prevention; lifestyle modification is the main ammunition. Extensive clinical trial evidence supports the benefits of weight reduction, increased physical activity, and a cholesterol-lowering diet in this population.

3 The Importance of Lifestyle Changes in Lowering Cholesterol and Treating the Metabolic Syndrome

Linda Van Horn, Ph.D., R.D, Department of Preventive Medicine, Northwestern University Medical School

Therapeutic Lifestyle Changes (TLC) are the recommended nonpharmacological prevention and treatment strategies provided by the National Cholesterol Education Program's Adult Treatment Panel (ATP) in their recently published third report (ATP III). Major features of TLC include changes in diet and physical activity to reduce low density lipoprotein-cholesterol (LDL-C) and address other risk factors. Specifically, the recommended diet involves (1) reducing saturated fat to less than 7% of total calories, dietary cholesterol to less than 200 mg per day, and total fat to 25–35% of total calories per day and (2) increasing total dietary fiber to 20–30 grams/day, with emphasis on soluble or viscous fiber-rich foods. Polyunsaturated and monounsaturated fat should comprise up to 10% and 20% of total calories, respectively. Physical activity should expend at least 200 kcal per day. Clinicians can take advantage of various dietary assessment approaches and behavioral strategies to facilitate patient adherence to these lifestyle interventions. Multidisciplinary input can be helpful to further reenforce and optimize the patient's ability to implement and maintain these new diet and lifestyle goals, resulting in reduced LDL-cholesterol and triglycerides, weight loss, and increased HDL-cholesterol long term. Avoidance or reduced dosage of pharmacological intervention can further be achieved.

6 Hypertension and Drug-Drug Interactions: Hormone Replacements and Over-the-Counter Medications

Barry L. Carter, Pharm.D., F.C.C.P., F.A.H.A., University of Iowa

Medication-related problems have been estimated to cost the health system $177 billion per year. Drug interactions are responsible for 6–10 percent of serious, life-threatening, and fatal adverse effects. However, many health professionals are not aware of the magnitude of risk associated with drug interactions. Using one drug interaction resource, we have found that there are more than 3,700 pairs of interactions with antihypertensive medications alone. Unfortunately, these resources underestimate interactions because they usually include only documented cases. Herbal interactions are rarely included.

Many medications that were once only available by prescription can now be purchased over-the-counter (OTC) without professional advice. Interactions can occur due to changes in pharmacokinetics, pharmacodynamics, absorption, or other mechanisms. Most drug interactions can be managed by careful monitoring and dosage adjustments of one or both offending drugs.

Aspirin and nonsteroidal anti-inflammatory drugs may worsen blood pressure control. One interaction that is commonly a concern is the interaction with oral decongestants such as pseudoephedrine (Sudafed). The data to support or refute these interactions will be discussed. Cimetidine (Tagamet) and perhaps other H2 blockers can impair the metabolism of many drugs, including antihypertensives. This interaction can lead to increased effects (and side effects) from the blood pressure medication. While this effect is not common in doses used OTC, many patients take higher doses.

There are several herbal therapies that can interact with antihypertensive medications. Ephedra can cause serious elevations in blood pressure, stroke, and arrhythmias. Other herbal therapies that will be discussed include ginger, licorice root, and yohimbine. One of the most inter-

esting food interactions occurs with grapefruit juice, which inhibits an enzyme responsible for intestinal metabolism and breakdown of many drugs. Routine ingestion of grapefruit juice can significantly increase blood levels of calcium channel blockers.

Finally, many women with hypertension will be receiving hormone replacements, calcium, and vitamin D. There are no serious interactions with antihypertensives, but some problems may still occur. Estrogens may increase blood pressure, necessitating the use of medication in a patient whose blood pressure was previously controlled with lifestyle modification. Thiazides can increase serum calcium, which could, theoretically, have additive effects with calcium supplementation and vitamin D. Unless a patient has significant comorbidity, this interaction is probably not significant.

We have studied the extent of selected OTC interactions in 1,312 patients who were over 30 years of age, eligible for a Medicaid program, and receiving an antihypertensive agent. Seventy-five percent of the patients were women. The number of patients with potential interactions with prescribed OTC agents were aspirin—122 (9.3%), calcium—2 (0.2%), ibuprofen—78 (5.9%), and naproxen—65 (5.0%). Since these drugs can be purchased without a prescription, it is likely that the number of patients who have potential interactions is much higher. Health care providers must be aware of the potentially serious problems associated with drug interactions, appropriately monitor therapy, and adjust medications when necessary.

6 Hypertension in Women Through the Life Cycle

Sandra J. Taler, M.D., Mayo Clinic

High blood pressure is a major individual and public health issue because of its wide prevalence and associated complications. Women have a lower prevalence of hypertension in early and mid life, but prevalence rates and systolic blood pressures exceed those of men after age 60 to 70 years. Hypertension uniquely affects young and middle-aged women during pregnancy or use of oral contraceptive agents. Preconception counseling and close monitoring during pregnancy are essential for those at high risk. Blood pressure rises after menopause, suggesting that estrogen deficiency plays a role. Women have been relatively underrepresented in published clinical trials in hypertension. Gender differences in physiology and treatment benefits have been noted in several studies, raising concern about the generality of trial results. We will focus on recent developments in the prevention and management of hypertension in women through the life cycle, including a review of available information regarding gender differences and similarities from treatment trials that have included women. While further studies are needed, current evidence suggests that women benefit significantly from treatment to normalize blood pressure.

13 Success in Tobacco Control Shows That We Can Reduce All Cardiovascular Disease Risk Behaviors

Terry F. Pechacek, Ph.D., Office on Smoking and Health, Centers for Disease Control and Prevention

Large-scale cardiovascular disease (CVD) prevention trials have had a major influence on the planning of population-based approaches to comprehensive tobacco control. The early work on cardiovascular epidemiology emphasized the importance of addressing the social and cultural aspects of the individual behaviors that increase cardiovascular disease risk. Community trials to prevent cardiovascular disease in the 1970s recognized the importance of the social and cultural environment in modifying risk behaviors, but at first the smoking cessation techniques were still primarily individually focused. However, as the intervention experience grew, communitywide CVD prevention trials adopted more population-based intervention approaches, including more elaborate media interventions, smoking cessation contests, and policy interventions. Unfortunately, only modest smoking cessation results were observed in the CVD prevention trials. Additionally, the Community Intervention Trials for Smoking Cessation (COMMIT) did not show any impact on the planned trial target population of heavy smokers (> 25 cigarettes per day).

This pattern of results on smoking as well as other risk behaviors in the communitywide CVD prevention trials has caused many to question the efficacy of this approach to CVD prevention. However, in tobacco control, the American Stop Smoking Intervention Study (ASSIST) and excise-tax funded programs in California and Massachusetts used the experience from the earlier communitywide trials to develop an intervention model for statewide tobacco control that more strongly emphasized the importance of policy and media interventions to address the social and cultural aspects of smoking. With continued refinement, this intervention model has now produced significant declines in cigarette consumption rates not only in the 17 ASSIST States combined, but also in an increasing number of individual States with well-funded and comprehensive programs: California, Massachusetts, Arizona, Oregon, Maine, and Florida.

While there are some broad differences between tobacco use and other CVD risk related behaviors, the fundamental question raised by the success in tobacco is, Why can't similar success be achieved with these other behaviors if we invested similar levels in comprehensive statewide programs for other CVD risk related behaviors? The basic policy and media intervention models for other CVD risk related behaviors were defined in the communitywide CVD prevention trials. Therefore, it is concluded that the success of the statewide tobacco control program model offers many examples for the development of similar statewide programs to reduce other CVD risk related behaviors.

21 Cardiovascular Morbidity of Obesity in Youth

Samuel S. Gidding, M.D., Thomas Jefferson University

The obesity epidemic is associated with significant premature cardiovascular morbidity. Pathologic studies have shown obesity is associated with premature atherosclerosis. This effect is mediated by the association of overweight with dyslipidemia, hypertension, and increased left ventricular mass. Increased insulin levels and insulin resistance explain much of this association. In turn, insulin resistance has been associated with the increasing incidence of type II diabetes mellitus in adolescence and young adults. Cor pulmonale secondary to sleep disorders is another potentially significant cardiovascular effect. Minorities, particularly African Americans, Hispanics, and Native Americans, have increased obesity prevalence and comorbidities. Many affected adolescents and young adults have multiple risk factors sufficiently severe to require medical therapy. Physicians not accustomed to cardiovascular risk evaluation may underestimate the prevalence of treatable medical conditions.

21 Effective Interventions: Myth or Reality?

Thomas N. Robinson, M.D., M.P.H., Stanford University

Dramatic increases in obesity worldwide have resulted in a rush to develop and disseminate obesity prevention programs. Available evidence suggests that behaviors associated with increased risk of obesity and obesity-associated morbidities are acquired early in life. All of these risk factors are influenced by individual behavior, and it is likely that their modification can improve the overall community level of health. There are compelling reasons for specifically targeting children and adolescents with clinical and population-based prevention efforts. Unfortunately, most past attempts to prevent obesity have produced only modest results. Traditional health education approaches have been relatively unsuccessful. However, a number of successful interventions are available to serve as models for public health dissemination and to help guide research and development of more effective future programs. These have included interventions in clinical, school, and community settings. Characteristics and results of these successful interventions will be reviewed. As a group, they suggest that increased attention to theory and behavioral principles will lead to more effective prevention programs for child and adolescent obesity.

21 School and Community-Based Programs To Prevent Child and Adolescent Obesity

Mary Story, Ph.D., R.D., University of Minnesota

Effective interventions for preventing obesity are likely to be those directed at both energy expenditure and energy intake. The prevention of obesity hinges on helping young people and their families develop healthy lifestyles and creating supportive environments in which to promote healthful eating and physical activity. The challenge of helping young people adopt healthy eating and physical activity patterns to achieve and maintain healthy weights will require multifaceted, community-wide efforts directed in multiple settings. Complementary strategies focusing on individual and/or family behavior change and environmental and policy interventions are needed. This presentation will focus on community and school opportunities in which to implement obesity prevention efforts. Examples will be presented from three multicomponent studies—Pathways, GEMS, and New Moves. Pathways was a multicenter, school-based intervention aimed at reducing the alarming increase in the prevalence of obesity in American Indian children. Designed as a randomized trial, involving about 2,000 third grade children in 41 schools (21 intervention schools and 20 control schools) in seven different American Indian communities, the primary objective of the Pathways intervention was to implement a culturally appropriate, school-based obesity prevention program. It consisted of four components: physical activity, food service, classroom curriculum, and family involvement. New Moves is a school-based intervention designed to help overweight girls adopt healthy physical activity and eating behaviors, develop a positive self-esteem, avoid unhealthy weight control behaviors, and help them function in a society geared to value thinness. New Moves was offered to overweight females for credit during school hours five days a week for 14 weeks as an alternative to the regular physical education program. The program included physical activity, nutritional guidance, and social support. The purpose of GEMS (Girls Health Enrichment Multi-site Study) was to develop and evaluate a community- and family-based behavioral intervention to promote healthful eating and physical activity behaviors in 8- to 10-year-old African American girls to reduce their risk for obesity. The setting of the University of Minnesota field site was after school, two afternoons a week. A description of these programs and lessons learned in developing, implementing, and evaluating obesity prevention programs for multiethnic youth will be discussed.

23 Outreach and Education to Latino Communities: Models That Work

Hector Balcazar, Ph.D., School of Public Health, University of North Texas Health Science Center

To help reduce health disparities in the area of cardiovascular disease (CVD) in Latinos, we need outreach and education models that work. In 1994, the National Heart, Lung, and Blood Institute's (NHLBI's) Salud para su Corazon (SPSC) (Health for Your Heart), began the development of a heart health community-based outreach and prevention model program aimed at increasing knowledge about cardiovascular disease risk factors and heart-healthy behaviors among Latinos. SPSC has triggered a public health movement that has made heart health a central focus for Latino individuals, families, neighborhoods, community-based organizations, and other traditional and nontraditional partners. Since its inception,

SPSC has developed a comprehensive heart health community-based outreach program that includes several effective strategies of health education, community capacity, and preventive interventions to individual families using lay health workers. The SPSC initiative has evolved to encompass several unique programs, including SPSC-NCLR and SPSC-North Texas. In 2001, the SPSC-North Texas program was named one of six NHLBI-supported CVD Enhanced Dissemination and Utilization Centers (EDUCs). As part of a network of partners working in high-risk populations at the community level, the EDUC's goals are to increase the quality and years of healthy life and eliminate cardiovascular health disparities. In this presentation, I report the models that guided the strategic planning, intervention, and evaluation activities of SPSC-NCLR and of SPSC-North Texas initiatives, as comprehensive outreach and dissemination programs. Additionally, I present the results of the first-year implementation of the SPSC initiatives (NCLR and North Texas) in participating Latino communities from different regions of the United States.

23 Using Theory-Based Models To Reach Latinos

Amelie G. Ramirez, Dr.P.H., Baylor College of Medicine

The rapid growth and diversity of the Latino population, combined with the fact that cardiovascular disease is the leading cause of death in this population, make it imperative that we employ effectively designed, developed, and implemented prevention programs tailored to Latino communities. The National Hispanic Leadership Initiative on Cancer (NHLIC): En Acción, initiated in 1992, applied a theory-based model and state-of-the-art cancer prevention and control strategies tailored to diverse Latino populations. The NHLIC: En Acción model, incorporating social cognitive learning theory (modeling behavior and social reinforcement), dual-link communications (mass media and interpersonal contact), and behavioral journalism, has been applied and replicated in sites around the country. Components of the model using social learning theory and multipronged communication also have been employed in subsequent programs. For example, the Redes En Acción initiative has utilized role modeling to promote its research, training, and awareness goals. Most recently, a Redes En Acción mass media campaign promoting clinical trial awareness and participation among Latinos was developed, tested, and implemented in markets throughout the United States. Another program called Sin Fumar, which was aimed at smoking prevention and cessation among Latino teens, engaged a strategy of peer networking. Students were recruited and organized to distribute behavioral journalism materials and provide social reinforcement for imitation of models. In addition, the program engaged in both mass and interpersonal communications to promote its objectives. These programs represent examples of effective community education initiatives aimed at moving Latino audiences to positive action.

24 Promoting Environments for Risk Factor Change

Gregory N. Connolly, D.M.D., M.P.H., Tobacco Control Program, Massachusetts Department of Public Health

In 1992, the residents of Massachusetts voted to raise the State cigarette excise tax $0.25 (U.S.) and allocate a portion of the revenue to a comprehensive tobacco control program. The campaign promoted local policies banning public smoking and tobacco sales to minors. An aggressive mass-media campaign was launched as well as school health education activities. Forty peer leadership programs were funded statewide. Free treatment for nicotine addiction, including pharmacotherapy, was offered to smokers as well as Quitline and Internet counseling.

From 1993 to 2000, adult-smoking rates fell from 22.6% to 17.9%. Daily smoking rates fell to 14%. The number of cigarettes smoked per day fell from 19.5 to 15.2 cigarettes. Per capita consumption fell from 126 packs in 1990 to 76 packs per capita by 2000, a 40% decline, three times the U.S. average. Youth smoking rates also fell from 35% to 26%, a 25% drop.

29 Estimates of the Costs of Varying Levels of Physical Activity to Medicare

Russell V. Luepker, M.D., M.S., Division of Epidemiology, University of Minnesota

The benefits of regular physical activity are well recognized; however, there are few studies of long-term cost implications of regular physical activity in otherwise healthy elderly individuals. The well characterized Cardiovascular Health Study (CHS) cohort was used to define baseline physical activity characteristics in comparison with 5-year Medicare expenditures.

The hypothesis asks whether individuals who are healthy at baseline have lower Medicare costs associated with higher levels of physical activity. Lower costs were observed in comparisons of those with no physical activity to those with low, moderate, or high intensity PA. The differences were substantial, amounting to over $6,000 lower direct costs to Medicare over 5 years. Similar results were observed for calorie expenditure (kcal), which combines intensity and duration, and for blocks walked. While the dollar differences were large, they failed to reach statistical significance. Comparisons of subgroups with prevalent cardiovascular disease or physical inability to exercise at baseline showed similar but more variable results in Medicare costs.

Studies of this nature can be influenced by the challenges of measuring habitual physical activity and self-selection of those who are subclinically ill to reduce their exercise levels.

There is evidence from this observational study that physical activity among older adults may have both positive benefits for their health and health care costs.

29 Estimates of the Costs of Varying Levels of Physical Activity to Medicare

David Siscovick, M.D., M.P.H., University of Washington

Few studies assess both the health and medical care cost outcomes of physical activity assessed late in life, despite mounting evidence linking physical activity with morbidity and mortality. Physical activity has benefits and risks related to cardiovascular and noncardiovascular diseases, physical functioning, and well-being. We hypothesized that health care costs, including those related to cardiovascular and noncardiovascular diseases, would be lower among physically active older adults. We examined this hypothesis in the Cardiovascular Health Study (CHS), a large, community-based, cohort study of determinants of heart disease and stroke in older adults. CHS participants were sampled from the Centers for Medicare & Medicaid Services (CMS) eligibility lists in 1989–1990 from four communities. An extensive baseline examination assessed risk factors, subclinical cardiovascular disease, functional status, physical activity, and other variables. The cohort was followed for incident cardiovascular disease and mortality. Health care costs were estimated from files provided by the CMS. In this presentation, we clarify the questions addressed in this research and the approach taken in both the design and data analysis to address various threats to the validity and generalizability of the study findings. These include issues related to the measurement of physical activity, confounding from prior morbidity, and effect modification from other risk factors and subclinical disease.

43 eHealth Tools for Provider-Patient Communication: What's New and on the Horizon?

Tom R. Eng, V.M.D., M.P.H., EvaluMetrix LLC

eHealth is the use of emerging information and communication technology to improve or enable health and health care. Quality provider-patient communication is critical to the prevention and treatment of, and rehabilitation from, cardiovascular disease. Technology solutions can enhance provider-patient communication by making provider-patient communication more effective at the point of care and by extending communication beyond the confines of the 15-minute office visit. Currently, health care providers typically use the Internet and other networks to e-mail, conduct research, facilitate administrative transactions (e.g., electronic billing), maintain patient documentation (e.g., electronic health record), and access continuing education and training. Despite apparent consumer demand, online provider-patient communication remains relatively uncommon. The availability of clinical eHealth tools at the point of care and integration of tools with clinical workflow are major considerations for clinicians. Applications that are deployed through wireless computing devices (e.g., PDAs, tablet PCs, laptops) and are designed to fit workflow patterns will be important attributes of usable eHealth solutions in clinical settings. Emerging technologies that may play a major role in future eHealth development efforts include non-PC Internet devices, wireless broadband, microelectromechanical systems, nanotechnology, and genomics. Examples of applications that are based on these technologies will be discussed.

43 American Heart Association: Making the Internet Connection Using E-power to Empower

Dennis Lee Milne, M.B.A., American Heart Association

While traffic and reach of commercial health content sites are growing, 79% of consumers nevertheless express reservations about the trustworthiness of existing online health content. Consumers' frustration with and distrust of commercial sites are hindering health care engagement online. These circumstances unlock opportunities for Web site platforms that leverage physicians and health associations as trusted brands. Consumers seek online resources that offer credible sources of information.

Medical and health associations and MD portals are best positioned to power individual Web sites that offer high-quality content and patient communications platforms.

Physicians report the following Web needs:

More tools to help their patients

- Credible and sound health information for their patients
- Higher quality condition, treatment information, and followup care
- Ability to send compliance messages to their patients
- Extension of care and quality of the "7-minute office visit"

The American Heart Association (AHA) is responding to these trends. Learn about new and planned Internet applications that capitalize on AHA's credibility plus provide innovative technology as a means to empower patients with information for risk factor management and management of cardiovascular disease and stroke.

45 Health Web Sites and Your Patients: What's a Health Care Provider To Do?

Cynthia Baur, Ph.D., U.S. Department of Health and Human Services

With surveys showing that 100 million adults use the Internet each month to search for health information, patients' focus on Web resources can seem overwhelming. The image of patients showing up at office visits with armfuls of Internet printouts has become a familiar one, and consumer research reinforces the point: a majority of individuals report that they would switch health care providers to have access to robust e-Health services and information. Patients want e-mail, support groups, and a variety of reliable online health information resources to supplement and enrich traditional office visits. Health care providers, on the other hand, are often concerned

about the quality of online health resources and the amount of time needed to respond to e-mails and help patients separate the wheat from the chaff. This presentation will discuss the issues related to the quality of health information on the Web, discuss guidelines that providers can use, and identify some of the best online consumer health resources currently available. The goal is to provide health care providers with specific suggestions of how to use Web health resources to enhance their interactions with patients.

45 Designing and Evaluating Health Web Sites for Older Adults

Ann Elizabeth Benbow, Ph.D., SPRY Foundation

This presentation describes a guide produced by the SPRY Foundation with support from the National Institutes of Health and other Federal and private agencies. The guide, which is based upon SPRY's research into older adult learning strategies, provides practical guidance for Web site designers on how to improve the design of their health Web sites for adults. The intent of the guide is to ensure that older adults are able to find cardiovascular and other health information easily on reliable Web sites.

The presentation will also provide information on a new SPRY guide to reliable health Web sites for older adults and caregivers. The guide gives older adults advice on what to look for in evaluating a health Web site for its reliability. The guide, also developed with funding from NIH and other Federal and private agencies, is available in both English and Spanish.

52 Preventing Cardiovascular Events in People With Type 2 Diabetes—The State of the Evidence

Hertzel C. Gerstein, M.D., M.Sc., McMaster University

Diabetes (DM) independently raises cardiovascular (CV) risk 2–4 fold. Risk factor modification trials are either ongoing or finished.

(a) Glucose: CV risk rises with HbA1c. However, in the United Kingdom Prospective Diabetes Study (UKPDS), glucose lowering with either insulin or sulfonylureas reduced myocardial infarction (MI) by a nonsignificant amount of 16% (P = 0.052). However, in overweight people, there was a 39% RRR of MI with metformin (P = 0.0023)—an effect not seen with other therapies. Thus, glucose lowering may have CV benefits and, most importantly, has no CV harms. Several trials are now underway to better assess this.

(b) Blood Pressure (BP): Up to 70% of adults with type 2 DM have hypertension, and BP is a CV risk factor. BP lowering with diuretics, ACE inhibitors, beta blockers, or calcium channel blockers decreases CV risk.

(c) ACE Inhibitors: Ramipril's protective effect in DM was tested in the HOPE (Heart Outcomes Prevention Evaluation) Study. It reduced CV events by 25%, independently of a BP effect. Thus, ACE inhibition reduces CV events.

(d) Beta Blockers: After an MI, people with DM derive similar benefits to those with no DM.

(e) Lipid Lowering: Although no DM trials have been completed, analyses of major trials in the general population support a similar CV benefit of lipid lowering in people with DM.

(f) Aspirin and Smoking Cessation: Subgroup analyses of the benefits of aspirin and smoking cessation in people with DM suggest that they are of similar effectiveness as in those with no DM.

52 Lifestyle Changes for Diabetes Prevention and Control

Karen Lee Margolis, M.D., M.P.H., Hennepin County Medical Center

People with type 2 diabetes mellitus die of cardiovascular disease (CVD) at rates 2–4 times higher than nondiabetic patients with similar demographic characteristics. Furthermore, recent epidemiologic studies have shown that the CVD relationship extends below diabetic glucose thresholds. As the prevalence of obesity, impaired glucose tolerance (IGT), and diabetes rises in the United States, this will pose an even more urgent public health challenge. This talk will review the results of recent studies of lifestyle interventions for diabetes prevention, as well as evidence for the role of lifestyle changes in diabetes control. The Finnish Diabetes Prevention Study randomly assigned 522 middle-aged, overweight men and women with IGT to either an intervention group or a control group. The intervention group received individualized counseling to reduce weight and fat intake and to increase fiber intake and physical activity. The risk of diabetes was reduced by 60% (95% CI 30% to 70%) over 4 years of followup in the intervention group compared to the control group, and the reduction in incidence of diabetes was directly associated with changes in lifestyle. The Diabetes Prevention Program enrolled 3,234 U.S. residents with IGT and randomly assigned them to receive a similar lifestyle intervention, metformin or placebo. The study was stopped 1 year early, when the participants in the lifestyle intervention arm had a 58% reduction (95% CI 48% to 66%) in the incidence of diabetes compared to the placebo group. A smaller Chinese study also found reduced diabetes incidence in IGT with lifestyle intervention.

56 Overcoming Gender-Based Obstacles to Mobilizing Women's Communities

Nancy Loving, WomenHeart: the National Coalition for Women with Heart Disease

A panel of three women heart patients will explore socioeconomic, psychosocial, and cultural obstacles to delivering effective health communications to various segments of women. Specifically, the panel will examine the lack of knowledge among women and their health care providers about the presentation of heart disease in women, as well as values and beliefs that neutralize health messages. In addition, psychosocial barriers, such

as social isolation and violence, will be explored as factors affecting women's ability to receive and act on health messages. The larger cultural environment in which health messages compete will also be examined in relation to mass marketing advertising targeting women from the tobacco, fast food, and diet industries. Health communicators need to reach out to women with more supportive and pragmatic messages that are less judgmental and blaming and make greater use of community media outlets, church bulletins, and women's social networks.

A3 Disease Management Initiatives for CHF and CABG Patients

Pati Bliss, Humana/ChoiceCare

Humana/ChoiceCare's CHF disease management program focused on interventions for New York Heart Classification III and IV members who are identified through an ambulatory or inpatient claim. These patients are referred to a cardiac care registered nurse who establishes a personal contact with the members via the telephone. The nurse also has a home health visit take place, as needed, to assess the member. Discussions between the nurse and patient address clinical and behavioral issues, such as smoking, high blood pressure, sodium intake, weight monitoring, lack of exercise, and medication compliance. CorSolutions, the provider of the program, utilizes a comprehensive disease management system called MULTIFITSM, which was developed at the Stanford University Department of Cardiac Rehabilitation. The program is supported by disease-specific protocols, patient education materials, and behavioral modification tools. This multifaceted approach empowers members to better manage their heart condition.

The program is designed to:

- Reduce hospitalizations
- Increase the prevalence of ACE inhibitor and beta blocker use
- Decrease sodium intake
- Decrease the prevalence of smoking
- Improve quality of life

From 1997 to 2000:

- Hospital costs were reduced 33 percent
- Ambulatory costs were reduced 6 percent
- Drug costs increased 31 percent
- ER costs remained stable

Overall members have improved clinical outcomes, and PMPM costs decreased by 10 percent, even with the increased drug costs. The increased drug costs are associated with increases in compliance and drug prices.

A3 Relapse Prevention Techniques for Cardiovascular Disease Risk Reduction

Margaret Holmes-Rovner, College of Human Medicine, Michigan State University, Jodi Holtrop, Shelley Reinhold, Camille Proden

Secondary prevention has been shown to be successful in reducing the chances of a coronary event among patients with acute myocardial infarction (AMI). We developed a telephone counseling intervention with AMI patients based on a successful relapse prevention model smoking cessation program. The Heart After Hospital Recovery Program (HARP) adapts the approach for use with multiple risk behaviors, including smoking, physical activity, diet, and compliance with medications. The intervention is a six contact brief intervention delivered over the telephone by trained nurses. The intervention utilizes motivational interviewing, decisional balance, and relapse prevention to encourage patient decisionmaking toward behavioral change and to improve success with change. Patients determine the behaviors to change and set weekly goals with feedback and coaching from the nurses. Pilot data from the first 50 patients in a large 2-community trial in Michigan will be presented. Patients in the intervention group are identified in the hospital and are followed up by telephone in the first 6 weeks following hospitalization. Outcomes reported are (1) stage of change at baseline and postcounseling, (2) goals set by patients and rates of "rational noncompliance," (3) coping strategies patients report to be most helpful in coping with slips/urges to slip, and (4) rates of patient-initiated discussion with the physician at followup.

Thursday April 11, 2002
4:30 p.m.–5:30 p.m.

1 Intensive LDL Lowering in the Prevention of Cardiovascular Disease

Scott M. Grundy, M.D., Ph.D., University of Texas Southwestern Medical Center

The National Cholesterol Education Program (NCEP) recently released its third Adult Treatment Panel (ATP III) guidelines report on treatment of high serum cholesterol in American adults. This report has been endorsed by the American Heart Association, the American College of Cardiology, the American Medical Association, and other major health organizations in the United States. It is an evidence-based report that reviewed existing literature on the relationship of elevated serum cholesterol and risk for coronary heart disease (CHD). Featured in the report is a review of recent clinical trials of cholesterol-lowering therapy. ATP III identified elevated LDL cholesterol as the primary target of cholesterol-lowering therapy. It also attempted to integrate treatment of high LDL cholesterol with global risk assessment. Highest priority for therapy was given to patients at high-risk for future CHD events. High-risk patients include those with established CHD (history of myocardial infarction, unstable angina, stable angina pectoris, coronary artery procedures, and documented myocardial ischemia). Other high-risk patients are those without established CHD but with a 10-year risk > 20%. These patients are called *CHD risk equivalents*. They include those with other forms of atherosclerotic disease (peripheral arterial disease, abdominal aortic aneurysm, and carotid artery disease), diabetes mellitus, and 10-year

risk greater than 20% by Framingham risk scoring. ATP III set an LDL-cholesterol goal of < 100 mg/dL for patients at high risk. A second category of risk includes patients with 2+ risk factors (intermediate risk). The LDL-cholesterol goal for patients with 2+ risk factors is < 130 mg/dL. Institution of therapies, particularly drug therapies, in this category depends to some extent on absolute risk assessment. Another group of intermediate-risk patients that received special attention was those with the metabolic syndrome. Here LDL-lowering therapy is combined with other therapeutic lifestyle changes (e.g., weight reduction and increased exercise). Finally, LDL cholesterol was identified as a target of therapy in persons in whom high LDL cholesterol is the only risk factor present. The aim of treatment in these subjects is to reduce long-term risk for CHD.

1 The Evidence Base To Support Aggressive Lipid Lowering in Coronary Heart Disease (CHD) and CHD Equivalent Patients

Richard C. Pasternak, M.D., F.A.C.C., Preventive Cardiology, Massachusetts General Hospital, Harvard University

Beginning with the 4S Trial published in 1994, and up to the most recently presented Heart Protection Study, a series of carefully performed, large, clinical endpoint trials has confirmed that lipid lowering reduces coronary heart disease risk. Trials have included lower risk patients (primary prevention) and higher risk patients (coronary heart disease and coronary heart disease risk equivalent patients). In different populations and in virtually all important subgroups analyzed, clinical outcomes have improved. The majority of the trials employed statin therapy to test the hypothesis that LDL lowering was the principal mechanism leading to improved outcomes. Other agents, alone or in combination with statins, have also proven to be effective. Clinical trials and large observational studies have supported earlier and more aggressive initiation of therapy. Finally, outcomes beyond "hard CHD events" (MI or cardiac deaths) have also been shown to improve with lipid therapy. These outcomes include a lower rate of ischemic stroke, less progression to congestive heart failure, and a decreased need for revascularization procedures. Thus, lipid lowering takes its rightful place in the array of proven therapies and strategies to lower CHD risk.

5 The Public Health Challenge of High Normal Blood Pressure

Lawrence John Appel, M.D., The Johns Hopkins Medical Institutions

Elevated blood pressure (BP) is a common, powerful, and independent risk factor for cardiovascular diseases (CVD) and kidney disease. The risk relationships are progressive and graded such that the risk of these diseases rises progressively throughout the range of BP. More specifically, persons with a BP that lies between optimal (BP < 120/80 mmHg) and hypertensive (BP > 140/90 mmHg) have an intermediate risk of BP-related complications, which exceeds that of individuals with optimal BP. Because of the age-related rise in BP, persons in this intermediate BP range (120–139/80–90 mmHg) are also at risk for developing hypertension. Overall, roughly one third of the U.S. adult population has a BP in this intermediate range.

The contemporary approach to preventing BP-related disease in this intermediate BP range is lifestyle modification, also termed nonpharmacologic therapy. Established nonpharmacologic therapies that lower BP are increased physical activity, decreased sodium and increased potassium intake, weight loss, moderation of alcohol intake, and an overall healthy diet, termed the DASH diet. In addition to lowering BP, these therapies might also blunt the age-related rise in BP.

The current challenge to health care providers, government officials, and private industry is to implement effective strategies that achieve and sustain successful lifestyle modification. These strategies should include traditional public health components that target broad populations as well as individual-based approaches that attempt behavioral change, often in high-risk persons. Changes in government regulations and in health care reimbursement policy should also have beneficial effects.

14 Indiana Tobacco Prevention and Cessation

Karla S. Sneegas, M.P.H., Indiana Tobacco Prevention and Cessation Agency

Indiana Tobacco Prevention and Cessation (ITPC) was created in 2000 by the Indiana General Assembly and Governor Frank O'Bannon. A 22 member executive board appointed by Governor O'Bannon oversees the annual $32.5 million budget and is responsible for hiring staff for ITPC. ITPC planning is based on the Centers for Disease Control and Prevention's Best Practices for Tobacco Control Programs.

In this session, Karla S. Sneegas of the ITPC Executive Board will explain how Indiana launched the program, lessons learned in granting monies to communities, planning for fiscal program accountability and evaluation, and launching statewide media and counter marketing activities.

20 Fetal Origins of Adult Cardiovascular Disease

Matthew William Gillman, M.D., S.M., Harvard Medical School

Evidence now supports the existence of inverse relations between birth weight and risk of cardiovascular disease later in life. Many questions remain, however, about the contributing roles of postnatal growth and development, underlying biological mechanisms, and the importance of the epidemiologic findings to public health.

Key issues facing this field include taking a life course approach to prevention of chronic disease, including use of appropriate analytical strategies. In this approach, it is essential to view social and economic factors individually

and as potential explanatory variables, not just to lump them together as "confounders."

Although studies of longitudinal fetal growth throughout gestation will be helpful, fetal growth per se is only a marker of many developmental processes. Programming of the fetus for later disease risk may involve subtle metabolic changes that may or may not disrupt overall growth of organs and systems. Along with a growing understanding of the interplay of parental and fetal genes, investigation of regulation of the entire fetal "nutrient supply line," especially the feto-placental unit, may yield the most promising leads.

Since etiologic factors are as yet unknown, it is premature to attempt estimation of the public health impact of fetal influences on adult chronic disease risk. Still, lower birth weight followed by obesity in childhood or adulthood appears to be a phenotype conferring a particularly high risk of cardiovascular disease. Efforts to prevent obesity, in the developing as well as the developed world, are crucial while further research ensues in this exciting area of inquiry.

20 Preventing a Future Epidemic of Cardiovascular Disease: Focus on Children

Brian W. McCrindle, M.D., The Hospital for Sick Children

In the face of increasing evidence of progressive atherosclerosis and trends of increasing risk factors in children and adolescents, health care providers are in a position to provide leadership in preventing a future epidemic of cardiovascular disease. There are several roles that health care providers may adopt. First is that of role model, through modeling healthy behaviors and leading by example. Second is the role of knowledgeable expert, through critically appraising the chain of evidence supporting cardiovascular risk reduction in youth. Third is the role of clinician, through incorporating preventive cardiology practices into clinical care. Fourth is the role of educator, through teaching and the development of educational resources for schools, families, and communities. Fifth is the role of advocate, through policy development relevant to health education and health systems, within schools, hospitals, communities, and governments. Each of these roles should be specifically tailored to the unique characteristics and needs of youth. Increased attention and effort at multiple levels is necessary if the epidemic of risk factors in youth is to be prevented from developing into an epidemic of cardiovascular disease in adults.

36 The Global Burden of Heart Disease and Stroke

Darwin R. Labarthe, M.D., Ph.D., National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention

The global dimensions of cardiovascular diseases (CVD) are increasingly recognized—both the magnitude and extent of the burden and the need and potential for prevention. Yet action to prevent CVD on even a national, much less a global, scale has lagged far behind this recognition. While several other forms of CVD contribute importantly to the burden in some regions of the world, coronary heart disease and stroke are dominant. The *Global Burden of Disease Study* identified these as the two leading causes of death worldwide in 1990 and projected their persistence in this rank in 2020. Data on incidence, case-fatality, and mortality from coronary heart disease and stroke have been presented from the WHO MONICA Project that represents chiefly Western industrialized countries, including several centers in the former nonmarket industrial economies. China was the only fully participating developing country. Further data from the countries of the former Soviet Union demonstrate marked changes in CVD mortality in recent years and cause heightened concern about epidemic CVD in this region. The World Bank has compiled estimates of mortality from disorders of the circulatory system on a global basis, as of the mid-1980s. These data indicate that absolute death rates for both coronary heart disease and stroke may be substantial in all major economic regions of the world, even where the proportionate mortality from these causes may be relatively low. The theory of "epidemiologic transition," which is based on trends in proportionate mortality, may seriously understate the importance of global preventive measures against CVD.

36 Global Perspectives on Heart Disease and Stroke

K. Srinath Reddy, M.D., All India Institute of Medical Sciences

The global burden of disease due to cardiovascular diseases (CVDs) is escalating, principally due to a sharp rise in the developing countries that are experiencing rapid health transition. Contributory causes include demographic shifts with altered population age profiles; lifestyle changes due to recent urbanization, delayed industrialization, and overpowering globalization; probable effects of foetal undernutrition on adult susceptibility to vascular disease; and possible gene-environment interactions influencing ethnic diversity. Altered diets and diminished physical activity are critical factors contributing to the acceleration of CVD epidemics, along with tobacco use. The pace of health transition, however, varies across developing regions with consequent variations in the relative burdens of the dominant CVDs. A comprehensive public health response must integrate policies and programmes that effectively impact the multiple determinants of these diseases and provide protection over the life span through primordial, primary, and secondary prevention.

These programs must recognize that (1) risk operates across a continuum for most variables; (2) many more events arise from the "moderate" middle of the distribution than from the "high-risk" tail; (3) risk is multiplicative when risk factors coexist, which they often do; (4) majority of CVD events arise in persons with modest elevations of multiple risk factors rather than in persons with marked elevation of a single risk factor; and (5) "compre-

hensive" or "absolute" CVD risk (which profiles the cumulative risk of multiple factors operating in a continuum) is the best guide for individual interventions, while "population-attributable risk" must direct mass interventions to maximize benefits from modest distributional shifts.

39 Innovative Cardiovascular Health Outreach and Educational Interventions in American Indian/Alaska Native Communities

Frank L. GrayShield, M.P.H., National Heart, Lung, and Blood Institute, National Institutes of Health

Heart disease is the leading cause of death in adult American Indian and Alaska Native (AI/AN)communities. More AI/AN over 45 years of age die of heart disease than any other disease. High blood pressure is increasing in native populations. Recent data from the Department of Health and Human Services (DHHS) Office of Women's Health revealed that AI/AN women are least likely to have a blood pressure screening (27%) compared to Caucasian women (80%). In 1998, the National Heart, Lung, and Blood Institute (NHLBI) funded three cardiovascular disease (CVD) assessment projects in AI/AN communities. The Native American Management Services, Inc., carried out the contract. The purpose of the project was to conduct formative research to better understand the specific heart-health needs and opportunities to implement community-based interventions to reduce CVD-related health disparities in these communities. The communities are Ponca Tribe of Oklahoma with 2,500 members; Pueblo of Laguna in New Mexico with about 4,000 members; and Bristol Bay with 32 villages in southwestern Alaska. The assessment phase was completed in June 2000. In October 2000, phase II, the followup CVD project to implement community education and outreach, was implemented. The purpose is to involve the tribal communities in heart-health activities that are culturally relevant and to promote increased awareness of CVD health and risk-reducing strategies. To accomplish this, the three tribes submitted proposals to implement heart-healthy cardiovascular health (CVH) education and outreach projects in their communities. The projects were funded and began implementation activities in October 2001. The overall strategy for NHLBI and IHS has been to involve the tribes at the beginning for planning and implementation of the 3-year CVH projects. NHLBI, IHS, and the tribes are partners in developing culturally appropriate CVH education and outreach approaches and strategies for use by all tribes. This CVH project will be completed in FY 2004.

39 Cardiovascular Health in Native American Communities

Larry Murillo, M.S., M.P.H., Eagle Bear Associates

This 20-minute presentation will outline the basis for a 10-year obesity prevention plan in a hospital setting while providing services to Native Americans in Tuba City, AZ. The goals and objectives were primarily related to cardiovascular activities. The strategy includes components related to employee wellness program, environmental changes, cultural nutrition, medical services, culture-based health promotion, cultural marketing, and policy. The overall public health approach will be mentioned as well as a few of the accomplishments and community barrier that needed to be overcome. There will be mention of a few native-owned businesses that can help develop cardiovascular programs for native communities and recommendations for those considering a new program.

44 Sixty Minutes to Success in Using CDCynergy for Communication Planning

Susan Lockhart, Ph.D., Centers for Disease Control and Prevention

CDCynergy is a CD–ROM-based tool for planning health communication interventions within a public health framework. The basic edition of CDCynergy was updated in 2001 by the CDC Office of Communication and then tailored for specific health issues and populations. This 60-minute session will provide an overview of the Cardiovascular Health (CVH) Edition of CDCynergy 2001 that was developed by the CDC Cardiovascular Health Branch. The two presenters will discuss the background and purpose of the tool and its CVH-specific case examples, resources, and references. They will then demonstrate how to access the tool's many useful features and how to navigate through its six strategic planning phases. Information will be provided on lessons learned from the product development process, training opportunities, and distribution plans. All session participants will receive copies of the tool, as well as a packet of supplemental resource materials.

48 Mechanisms of Cardiovascular Disease in Obstructive Sleep Apnea

Virend K. Somers, M.D., Ph.D., Mayo Clinic

Approximately 15 million adult Americans have obstructive sleep apnea (OSA). Patients with OSA may be at heightened risk for cardiac and vascular disease. A number of mechanisms may contribute to this increased susceptibility.

Low oxygen at night activates the chemoreflexes, which elicit marked increases in sympathetic activity and blood pressure. Even during daytime wakefulness, in patients with OSA who are free of any other known cardiac or vascular disease and have no other disorders besides sleep apnea, heart rate is faster, the ability of the heart rate to change from one heart beat to the next is markedly blunted, and blood pressure fluctuates excessively.

Nighttime hypoxia in OSA patients is also associated with increased endothelin, a potent vasoconstrictor that can increase blood pressure for a number of hours. Endothelin is produced by the endothelial cells, a single layer of cells lining the blood vessels. These cells also produce nitric oxide, which causes vasodilation. Patients with sleep apnea also have a diminished ability to pro-

duce nitric oxide. Abnormalities in other important control mechanisms, such as very high leptin levels in OSA patients, may further contribute to both weight gain and cardiovascular dysfunction.

There is a disruption of the normal mechanisms that regulate heart rate and blood pressure in patients with OSA, even though these patients may not have any other coexisting disease conditions. Disruption of these protective mechanisms may result in increased long-term cardiovascular risk.

A9 The Baltimore City Cardiovascular Health Partnership: An African American Community-Focused Public Health Education and Outreach Initiative

Lenee N. Simon, M.P.H., National Heart, Lung, and Blood Institute, National Institutes of Health

The purpose of the Baltimore City Cardiovascular Health Partnership is to implement an intense public health education and outreach initiative to improve the cardiovascular health of African Americans in Baltimore City who are at high risk for cardiovascular disease. The initiative consists of a populationwide public education campaign targeted at all African American residents of Baltimore City and an intensive outreach and education program for African American residents of Baltimore City public housing developments. The strategies for implementing this initiative are (1) partnership development to identify committed partners to jointly develop an action plan, (2) community needs assessment to identify the unique needs and issues impacting Baltimore communities, (3) public education activities and product development to increase awareness about cardiovascular disease and promote heart-healthy lifestyles, (4) recruiting/training community health workers to become role models for change in cardiovascular health behavior, and (5) performance evaluation to monitor process and assess outcomes of our efforts. To date, the Baltimore City Cardiovascular Health Partnership has brought together four key institutions to spearhead the initiative: the Housing Authority of Baltimore City; the Public Health Program at Morgan State University; the Maryland State Office of the Department of Housing and Urban Development; and the National Heart, Lung, and Blood Institute. The first step in developing the action plan for the partnership was a strategy development workshop, held on September 24, 2001, in Baltimore's Inner Harbor. Participants included residents, community leaders, community and health care service providers, and other key representatives of Baltimore City's African American constituency.

A9 Feasibility and Effectiveness of a Blood Pressure-Lowering Program Among African American Couples: The CHASE Pilot Study

Lori Carter-Edwards, Ph.D., Rho, Inc.

CHASE, Churches improving Health through Auxiliary and Spousal Education, was a pilot study designed to assess the feasibility and effectiveness of a church-based, nutrition education program among African American couples. At least one spouse had mild hypertension or high normal blood pressure (systolic blood pressure [SBP] 120–159 mmHg or diastolic blood pressure [DBP] 80–95 mmHg, regardless of antihypertensive medication use). Twenty-six couples participated from four churches (two intervention and two control). Auxiliary members recruited at each church were responsible for educating the couples. Intervention churches received 4-week auxiliary training, food demonstrations, and educational manuals; control churches received educational manuals only. Couples' clinical, behavioral, and social factors were measured at baseline (visit 1), 4 weeks later (visit 2), and 4 months from baseline (visit 3). The mean change in blood pressure (mmHg) from baseline to visit 3 was greater for the intervention (INT) than for the control (CTL) couples (SBP: INT = -5.72, CTL = -1.44, $p = 0.34$; DBP: INT = -4.28, CTL = -1.92, $p = 0.37$). The mean change in weight (lbs) was also greater in the intervention than in the control couples (INT = -2.36; CTL = -0.13, $p = 0.30$). The lessons learned from this study are that (1) church-based, blood pressure-lowering programs for African American auxiliary members and at-risk spouses should include intense, hands-on training and (2) couples' participation in these types of programs is affected by time management issues, auxiliary structure and involvement, and couples' perceived importance of health and support. These results demonstrate the feasibility of an interpersonal, community-level intervention and suggest that such a program may have positive effects on blood pressure control.

A9 Promotores: Energizing Local Communities for Heart Health

Yanira Cruz, Center for Health Promotion, National Council of La Raza

Launched by the National Heart, Lung, and Blood Institute, the Salud para su Corazón (SPSC) Initiative, in partnership with the National Council of La Raza (NCLR) and the Metropolitan Life Foundation, expanded the program nationally through a promotoras-based (lay health educators) approach. This approach reflects traditional ways through which health information is disseminated and social networks are strengthened in Latino communities. The first phase initiated with formative evaluation to assess the use of heart health education materials by community-based organizations (CBOs) and networks affiliated with NCLR and to determine whether CBOs had promotores programs. Findings revealed that 97 percent of the surveyed CBOs had a health focus, and 67 percent of those had lay health educators as part of their health education efforts. Based on the assessment, CBOs were selected to implement communitywide, promotores-based cardiovascular health outreach and education using SPSC materials. This workshop will discuss the process and outcomes of implementing culturally appropriate heart health programs and will highlight methods

to evaluate the effectiveness of the program. Preliminary findings indicate increased awareness and knowledge related to heart disease and a high level of satisfaction with the educational materials and forms of disseminating the information. Promotores are very successful in helping families engage in heart-healthy lifestyles through education, followup, and support.

A13 Community Approaches to Cardiovascular Health: Extending the Franklin Model

N. Burgess Record, M.D., Western Maine Center for Heart Health

Purpose: The purpose of this study was to revise the 25-year, highly successful Franklin Cardiovascular Health Program as a model for other communities.

Methods: Supported by a 3-year (1999–2001) grant from the U.S. Public Health Service, we developed and implemented SCORE for Health, a coordinated community approach to reducing health and economic burdens of cardiovascular disease in our rural Maine county.

Results: We developed guideline-based protocols, curricula, tools, and easy-to-read educational materials, packaged in self-contained ScoreKits. We developed and implemented an ACCESS-based software system, Franklin ScoreKeeper, which helped shape, track, report, and evaluate the process of risk identification and control across time and multiple community settings: school, worksite, hospital, and physician practice. We successfully deployed this approach and software system in most primary care practices in our region. We brought these services to many area worksites, which are hungry for ways to improve employee health and control health care costs. Our approach has caught the attention of Maine's political, business, and health care leaders, including several large employers and health care systems with which we are currently working to implement SCORE for Health and ScoreKeeper. The program has been fully integrated into the departmental structure of Franklin Memorial Hospital.

Conclusions: Woven into the fabric of health and health care in our region, SCORE for Health represents a model for the primary prevention of cardiovascular disease and the melding of public health and medical approaches to health improvement. Franklin ScoreKeeper provides a software tool to facilitate continuous individual improvement in risk factor status across time and place.

A13 The MI-HEART Project: A Computer-Tailored Approach To Reduce Prehospital Delay in Patients at High Risk for Acute Myocardial Infarction

Rita Kukafka, Dr.P.H., M.A., C.H.E.S., Columbia University, Yves Lussier, James J. Cimino

Purpose: The MI-HEART project is examining ways in which a clinical information system can help favorably influence the appropriateness and rapidity of decision-making in patients suffering from symptoms of acute myocardial infarction (AMI). Our hypothesis is that educational strategies tailored to information from a patient's medical record will exert a favorable influence on measurable parameters.

Methods: The project uses patient-specific information from an electronic medical record to produce educational materials. Using a cognitive model developed for the purpose of this study, we designed a questionnaire to measure a variety of factors that influence decisionmaking in patients suffering from AMI symptoms. This questionnaire collects data on variables specified in our model and not contained in the patient's record. The educational content for this intervention is linked directly to this cognitive model and is tailored to the parameters measured at baseline for each participant in the study. Patients are randomly assigned to one of three groups; two groups are Web-based and compare tailored and nontailored levels of technology; the control receives paper-based, nontailored education.

Results: Preliminary results focus on descriptive analysis of users and changes in variables associated with decisionmaking. Data show that users are notably well educated with high income and are technology enabled. They rate high on measures of self-efficacy; however, few rated high in response efficacy (they did not believe that calling 911 would improve outcomes).

Conclusions: Our findings support the need to focus education on patient delay in responding to AMI symptoms and recognize technology-based interventions as important to reaching a targeted group in need of this education.

A13 HeartLinks Clinical Trial

Barbara H. Southard, Health Management Consultants of Virginia, Inc., Douglas R. Southard, Ph.D., M.P.H., PA-C

HeartLinks is an Internet-based disease management program aimed at the secondary prevention of heart disease. It is intended as a therapy extension for the 20 percent of patients receiving traditional cardiac rehabilitation services and a therapeutic alternative for the 80 percent of patients not receiving traditional services. HeartLinks was developed by Health Management Consultants of Virginia, with funding from the Agency for Healthcare Research and Quality. HeartLinks includes Web interfaces for patients, case managers, consultants, physicians, and support persons. Nurse case managers review participants' data and physician recommendations to set lifestyle modification goals and to individualize educational and behavioral modification content using resources within the program and on the Internet. Participants self-monitor weight, exercise, and other clinical parameters using online graphs and communicate with their case manager via secure e-mail paths within the HeartLinks software.

Clinical effectiveness is currently being evaluated in a 6-month clinical trial involving 104 heart disease patients

randomized into two groups, one receiving usual care (UC) and the other receiving special intervention (SI). Premeasures and postmeasures include weight, blood pressure, lipids, blood glucose, and hemoglobin A1c as well as online assessments of exercise, angina, dietary fat, quality of life, smoking, and depression. With approximately 40 percent of the data collected, preliminary analysis using repeated measures ANOVA revealed a weight loss of 4.9 lbs in the SI group, while the UC group has experienced a 0.7 lbs weight gain ($p = 0.01$). Data collection will be completed in January 2002, and full data analysis will be available during the conference presentation.

A13 Individualized Exercise Instruction and the Use of Internet Technology To Promote Increased Physical Activity

Susan A. Keller, B.S.N., M.S., George Washington University

Background: Despite the negative correlation between coronary heart disease (CHD) and physical inactivity, more than 60 percent of adults do not meet the recommended amount of daily physical activity, and 25 percent are not active at all. Future technology is expected to produce an even more sedentary society. Common barriers to being physically active, such as not having the knowledge, skills, and motivation to participate, are easily reconciled by participating in structured, individualized exercise sessions with subsequent followup. Internet technology allows the aforementioned to be possible with a minimal amount of time and cost.

Objectives: Study objectives were to (1) determine whether two 60-minute individualized exercise sessions were effective in increasing an individual's level of physical activity over a 6-week period, (2) test whether reporting exercise behavior via e-mail to an exercise coordinator (intervention group), who provided clues to action to facilitate regular exercise, was more effective in increasing physical activity than independently tracking exercise with a pen and paper log (control group), and (3) determine if there was a difference between the intervention and control groups for weeks 1–3 and weeks 4–6.

Methods: This randomized, intervention study tested the effects of individualized exercise instruction, measured in minutes and days exercised per week, during a 6-week study period. Theories utilized for the study included motivational interviewing techniques and constructs (self-efficacy and stages of change) from the transtheroretical model. Prequestionnaire and postquestionnaire measurements included the SF–36 Quality of Life Survey and the exercise subscale of the Health Promoting Lifestyle Profile (HPLP). All subjects participated in two exercise sessions (lasting 60 minutes or less) within a 3-day period. After the second exercise session, subjects were randomized into the intervention or control group, and exercise behavior was tracked for a 6-week period as described above.

Results: The percent change score in premeasurements and postmeasurements was greater in the intervention group than in the control group for both the SF–36 and HPLP Survey. The mean of exercise minutes for the intervention group (754) was greater than the control group (352) and was statistically significant ($p = 0.47$). The mean of days exercised for the intervention group (20.20) was greater than the control group (11.40); however, the difference was not statistically significant ($p = 0.06$). In comparing the two groups for weeks 1–3 and weeks 4–6, there was no statistical difference between either minutes or days exercised for weeks 1–3; however, there was a statistical difference between the two groups for weeks 4–6 ($p = 0.012$ for minutes exercised, and $p = 0.019$ for days exercised).

Conclusion: This study verified that two individualized exercise sessions, whether or not followup is provided, are effective in increasing an individual's level of physical activity, as there was no statistical difference between the intervention group and the control group for either minutes or days exercised for weeks 1–3. The study also confirmed that followup, even in the form of an e-mail, is effective, as the intervention group in this study had a statistically significant increase in minutes exercised during the 6-week study period.

A15 The Motivation of an Isolated Worksite To Eat Smart and Move Smart

Terri Sory, Salt Lake Valley Health Department

Statement of Purpose: The purpose of this study was to pilot a stage-based social marketing program in an effort to increase readiness to change and increase physical activity and nutritional attitudes and behaviors.

Methods: Questionnaires were sent to 300 Salt Lake County employees to determine readiness to change. Using social marketing methods, participants were selected to engage in focus groups to establish what they wanted from a health promotion program focused on physical activity and nutrition. Based on the results of the focus groups, an 8-week pilot program was designed and implemented in a clinical worksite setting that had not previously participated in health promotion activities.

Results: Forty people started this program with 20 finishing. The average participant progressed from the preparation stage to the action stage in regard to eating a combination of four or more fruits and vegetables per day. Vegetable consumption increased from 5–6 times per week to 14 times per week. Fruit consumption increased from 5–6 times per week to 21 times a week. Moderate physical activity increased from 2 days per week to 3, and strenuous activity increased from 1 day per week to 3.

Conclusions: A stage-based social marketing program can progress an individual's readiness to change and can increase physical activity and nutritional attitudes and behaviors.

A15 Creating Heart-Healthy Worksite and School Programs

Sarah G. Narkewicz, Bowse Health Trust

Rutland County has the second highest cardiovascular disease death rate in Vermont, 162.3 deaths/100,000. The Bowse Health Trust wants to change this health status statistic. In 1999, the Health Trust hired a consultant to assess the county's needs in respect to cardiovascular disease and to develop a proposal for a program that will have a positive impact on cardiovascular disease. It was determined that a comprehensive worksite program was needed. In 2000, the Bowse Health Trust approved $280,000 in funding to support the first 3 years of a Cardiovascular Worksite Wellness Program. In the first year of the program, 5 worksites had environmental assessments, and more than 500 employees had heart risk appraisals. This information created the baseline from which worksite programs are developed and outcomes are tracked. The participating worksites are private industrial companies that operate 24 hours a day. The baseline data show that more than 50 percent of the workforce uses tobacco, 63 percent do not exercise, and more than 40 percent have total cholesterol over 200. Initial programs have included smoking cessation, healthy vending machine options, the use of "digiwalkers" to track walking, and an incentive health program. Followup heart risk appraisals are now being performed. A communitywide component of this program is a walking program that was launched by a weeklong event in June 2001. More than 4,500 persons participated in this event.

A second program developed and funded for $7,500 by the Bowse Health Trust is a pilot heart disease prevention program in a rural K–8 grade school that has 150 students. The aim of the program is to reduce body mass index (BMI) and to increase physical activity. In 2001, baseline data showed that 59 percent of the fifth graders and 42 percent of the seventh graders were obese. After one semester, there was a 27 percent decrease in BMI, and 71 percent of the students decreased their time in the mile run. The program included school nutrition, health education, lifetime sports, and a community physical activity program. A second semester of this program is being planned. After which, a manual and application for funding will be developed and offered to other schools.

A15 Evaluating a Workplace Exercise Behavior Intervention and Subsequent Changes in the Exercise Behavior of Working Adults

Jeffrey S. Hallam, Ph.D., A.A.H.B., Center for Health Promotion, The University of Mississippi, Rick Petosa

Some worksite health promotion programs incorporate behavioral theories into interventions in an attempt to increase rates of health behavior change. However, no theory-based interventions utilize process evaluation procedures to determine the degree of change in theoretical constructs produced by the intervention. The purpose of this study was to examine the construct validity of an intervention designed to impact selected social cognitive theory (SCT) variables linked to adult exercise behavior. Sixty-eight participants completed four observations at baseline, 6 weeks, 6 months, and 12 months. To determine how much change in selected SCT variables was produced by an instructional intervention composed of four 60-minute sessions delivered over a 2-week period, process evaluation procedures were used. All instruments had established validity and reliability. A repeated measures analysis revealed significant increases in the use of self-regulation skills, outcome-expectancy values, and self-efficacy for the treatment group. No significant increases were detected for the comparison group on any study variables. Exercise behavior data showed a significant difference at 12 months between the treatment and comparison groups, significant increases within the treatment group, and significant decreases within the comparison group. The study revealed the intervention effective in increasing self-regulation techniques and fostering the development of favorable outcome-expectancy values and self-efficacy. Subsequently, significant increases in exercise behavior were shown at 6 weeks and were maintained across 12 months for the treatment group. Construct validity of the treatment is a valuable method for precision refinement of interventions designed to impact the theoretical constructs targeted by exercise promotion programs and subsequently increase and maintain exercise behavior.

A15 Benefit of a Worksite-Based Cardiovascular Risk Reduction Program on Employee Heath Care Claims

Neil F. Gordon, INTERxVENT USA, Inc., Sheldon Warman, Susan Pickel, George C. Faircloth

It is estimated that cardiovascular diseases and stroke will cost the United States $298.2 billion in 2001. Clearly, there is an urgent need to reduce avoidable death, disability, and financial expenditure by increasing access to clinically effective cardiovascular risk reduction interventions. In this study, we investigated the effect of a worksite-based cardiovascular risk reduction program (INTERxVENT) on employee health care claims. INTERxVENT was implemented at the company under investigation in January 2000. Health care claims data of 3,062 employees who were employed by the company on February 1, 1999, and who were still employed by the company on July 31, 2000, were analyzed. Of these employees, 636 (21 percent) participated in INTERxVENT between February 1, 2000, and July 31, 2000. A comparison was made of the average health care claims per employee for February 1, 1999, through July 31, 1999, versus February 1, 2000, through July 31, 2000, for the 636 employees who participated and the 2,426 employees who did not participate in INTERxVENT. When comparing the 1999 to the 2000 data, the average 6-month health care claims per employee increased by 10.3 percent ($1,072.91 versus $1,183.54) for the non-INTERxVENT participants and decreased by 14.3 percent ($997.65 versus $855.18) for the INTERxVENT par-

ticipants. These findings have important ramifications for United States employers in terms of the curtailment of rapidly escalating health care expenditures.

Friday April 12, 2002
9:15 a.m.–10:15 a.m.

2 Evaluation and Management of High Cholesterol in High-Risk Primary Prevention

Luther T. Clark, M.D., State University of New York, Neil J. Stone, M.D.

In this session, we will review the approach to risk assessment and management of hypercholeserolemia in individuals without clinically manifest CHD or CHD risk equivalents. Representative case scenarios will be integrated into the presentations. Risk assessment is a two-step process. First, the number of major, independent risk factors is counted. Second, for persons with multiple (> 2) risk factors, 10-year risk assessment is carried out with Framingham scoring to identify individuals whose short-term (10-year) risk warrants consideration of intensive treatment. Estimation of the 10-year CHD risk allows better targeting of intensive treatment for those individuals who will benefit from it. The major risk factors other than LDL used for initial risk factor counting include cigarette smoking, hypertension, low HDL cholesterol, family history of premature CHD, and age. The risk factors used in Framingham scoring include age, total cholesterol, HDL cholesterol, blood pressure, and smoking. Although risk for CHD is influenced by other factors not included among the major, independent risk factors and those used for Framingham risk scoring (life-habit risk factors and emerging risk factors), these do not categorically modify LDL cholesterol goals but may be useful in modulating clinical judgment when making therapeutic decisions.

Therapy involves setting goals and treating according to the Adult Treatment Panel III Guidelines. A series of three cases will be presented that illustrate the importance of using not only LDL-C as the primary goal, but also considering the metabolic syndrome and (if triglycerides are 200 mg/dL or high despite attaining the LDL-C goal) getting non-HDL-C to goal.

11 Childhood Origins of Adult Cardiovascular Disease

Bonita Falkner, M.D., Thomas Jefferson University

Recent adverse trends in health behaviors suggest that youth of today may be at greater risk for cardiovascular diseases compared to prior generations. The rising rates of obesity and tobacco use among today's children, particularly among minority children, predict a rise in incidence and earlier onset of diabetes mellitus, hypertension, myocardial infarction, peripheral vascular disease, and stroke. In addition to a marked increase in obesity prevalence, dietary patterns are unfavorable, and physical activity has declined among the young. These epidemiologic observations of adverse health behaviors are associated with upward shifts in disease prevalence. The prevalence of type 2 diabetes mellitus in adolescence has increased by tenfold in the last two decades. Longitudinal studies have documented the relationship, beginning in youth, between atherosclerosis and excess weight, tobacco use, higher blood pressure, and dyslipidemia. The dysmetabolic syndrome, characterized by a clustering of risk factors generally diagnosed in later adulthood, is now recognizable in youth. Together, the prevailing evidence supports a reorientation of both health care delivery by physicians and public health programs toward children and adolescents. Many children have not only one, but multiple risk factors that require evaluation and treatment. Moreover, the efforts by physicians to contain and modify risk factors emerging in the young need to be enhanced by effective public programs.

11 Trends in Cardiovascular Risk Factors for Children and Adolescents in the United States

Katherine M. Flegal, Ph.D., M.P.H., National Center for Health Statistics, Centers for Disease Control and Prevention

Even though cardiovascular risk is low in children, many cardiovascular risk factors begin to develop in childhood and adolescence; thus examination of these trends in childhood and adolescence is important. One of the best documented trends is that of overweight in children, defined as a body mass index above the 95th percentile of the 2000 CDC Growth Charts for the United States. National survey data using measured heights and weights show that the prevalence of overweight in children and adolescence was relatively stable at around 5 percent (by definition) in national surveys from 1963 through 1980 but then increased to 11 percent in the 1988–1994 National Health and Nutrition Examination Survey (NHANES) III, similar to trends among adults. Initial results from the 1999 NHANES indicate that an estimated 13 percent of children aged 6–11 years and 14 percent of adolescents aged 12–19 years are overweight, representing a further 2 to 3 percent increase. Trends in other cardiovascular risk factors are less well defined. Serum cholesterol levels in children as well as in adults dropped between the 1960s and the 1988–1994 NHANES III. Blood pressure trends in children also present a more complex picture. The implication of these trends for future cardiovascular risk needs to be assessed carefully.

18 The Impact of Depression and Its Treatment on Cardiovascular Disease in Older Adults

Bruce L. Rollman, M.D., M.P.H., University of Pittsburgh

Growing evidence indicates a link between depression and morbidity and mortality from cardiovascular disease (CVD). Data from a selection of key studies will be presented to demonstrate this evidence and to acquaint the

audience with biologically plausible mechanisms that may explain these findings. Lastly, results from recent interventions that focused on the secondary prevention of CVD through efforts to reduce depressive symptomatology will be presented.

19 Population Influences on Cardiovascular Health in Younger to Middle-Aged Adults

David C. Goff, Jr., M.D., Ph.D., Wake Forest University School of Medicine

Cardiovascular disease (CVD) mortality decreased in the United States from the 1960s through the early 1990s; however, mortality trends have flattened or worsened (especially for stroke) during the 1990s. In this presentation, we will explore the potential role of population influences on cardiovascular health (CVH) in young and middle-aged adults. Specifically, we will examine changes in population distributions of risk factors and some potential population-wide influences on these risk factors. We will discuss the potential for regaining the downward trends in CVD through population approaches addressing risk factors. We will discuss the role of health professionals in this effort. Evidence will be presented documenting that blood pressure and cholesterol levels are not increasing as rapidly with aging as in the past. Evidence will be reviewed that supports the contention that changes in food consumption may have contributed to these beneficial changes in human aging. Evidence will be presented documenting that cigarette smoking prevalence has decreased and that tobacco control policies have contributed to this decline. Opportunities for health professionals to contribute to reinforcing these gains will be discussed. Evidence will be presented documenting that body fatness is increasing more rapidly with aging than in the past. Physical activity levels are low, and trends are flat. Diabetes prevalence is increasing. Evidence will be reviewed that supports the contention that changes in food consumption and environmental barriers to physical activity may have contributed to these adverse changes in human aging. Opportunities for health professionals to contribute to addressing these challenges will be discussed. Improving CVH among younger to middle-aged adults cannot rely exclusively on risk factor detection and treatment. Health professionals should become actively involved in efforts to influence policies that affect CVH, including tobacco control, food production and the food industry, transportation and community development.

19 Can Communities Promote Cardiovascular Health in Adults?

Thomas A. Pearson, M.D., Ph.D., M.P.H., University of Rochester School of Medicine

The decline in cardiovascular disease (CVD) mortality during the last 40 years provides evidence for a role of public health in CVD control. Conventional wisdom suggests that efforts should be directed at important risk factors or risk behaviors, in settings where the population lives and works, by providing essential public health services. Major population risk behaviors of diet, sedentary lifestyle, and tobacco use, as well as the use of screening services for detection of hypertension and hyperlipidemia and the early recognition of symptomatic disease, provide a range of targets for public health action. Whole communities as well as community organizations, such as schools, religious organizations, health care facilities, and worksites, serve as venues for intervention. The tools for use in these community settings are the essential public health functions: Surveillance, education and media, organizations and partnerships, assurance of personal health services, and policy and legislation. Increasingly, large population units (States, Nations) are used as the unit of intervention—the so-called "top-down" approach. In contrast, the "bottom-up" approach organizes groups with common goals (true communities?), identifies partners and resources at the local level, makes changes to the proximal environment, provides local health services, and uses local media and educational programs. Examples of such bottom-up approaches will be drawn from two rural community intervention programs in upstate New York and in northern Sweden. CVD control programs likely require a mixture of top-down and bottom-up approaches, especially in those communities traditionally slow to adopt new ideas and technologies

30 Assessing the Impact of Cardiovascular Disease on the Functional Status of Medicare Managed Care Enrollees

Samuel C. Haffer, Ph.D., Medicare Health Outcomes Survey, Centers for Medicare & Medicaid Services, Arlene S. Bierman, M.D., M.S.

As the largest health insurance provider to the aged, the Centers for Medicare & Medicaid Services is vitally concerned with:

1. Assessing the impact of cardiovascular disease (CVD) on the functional status of beneficiaries
2. Exploring the differential impacts of CVD across socioeconomic strata
3. Improving the quality of care provided to beneficiaries who have been diagnosed with CVD

In this session, we will use the Cohort One Performance Measurement Data Set from the Medicare Managed Care Health Outcomes Survey (HOS) to explore the impact of CVD on the functional status of the Medicare Managed Care enrollees. The HOS, which has the SF–36 as its core measure, provides data from over 71,000 respondents who completed both the 1998 baseline survey and the 2000 followup survey. These data allow us to compare the functional status of the most vulnerable subpopulations of Medicare beneficiaries in managed care by evaluating changes in case-mix adjusted SF–36 scores over time.

41 Overcoming Poor Health Literacy: How Can Health Care Providers Help?

Terry C. Davis, Ph.D., Louisiana State University Health Sciences Center, Ruth M. Parker, M.D.

Patients' health literacy is increasingly recognized as a critical factor affecting health communication and outcomes. We will review evidence documenting the high prevalence of inadequate health literacy in America and the impact of patients' health literacy on health and health care and will offer practical guidelines to improve health communication about cardiovascular disease (CVD).

According to the National Adult Literacy Survey (NALS), considered to be the most accurate portrait of literacy in America, about one in five adults may lack the necessary skills to function adequately in our society. As patients, such individuals are at a disadvantage in their capacity to obtain, process, and understand CVD information and services needed to make appropriate health care decisions. The problem is exasperated by the greater prevalence of low health literacy among the elderly, who bear a greater burden of CVD. Patients with poor health literacy have a complex array of communication difficulties that limit their understanding about prevention and risk, affect early detection, and impair communication about treatment and informed consent. These individuals may also be disadvantaged in their ability to access and navigate the health care system, make appropriate health decisions, and act on health information.

Understanding factors that contribute to miscommunication is important in solving problems posed by low health literacy. More research is needed to identify successful methods for educating and communicating with patients who have CVD and limited health literacy. Based on our experience, we conclude with practical communication aides that can help clinicians and health services researchers bridge the communication gap created by low health literacy.

46 Social Marketing: What's New, What Works

Elaine Bratic Arkin, Health Communications Consultant

This session will examine what works and what's new based on a model integrated communication campaign (market research, advertising, earned media, grassroots events, partnerships, and evaluation) created by The Robert Wood Johnson Foundation. Find out how market research can turn assumptions upside down! The techniques used and the lessons learned from this award-winning national campaign can be applied at the community as well as national level.

46 Social Marketing: What's New, What Works

Robert Hornik, M.D., Annenberg School of Communication, University of Pennsylvania

There are apparent contradictions in the evidence about public health communication. There are some programs (e.g., COMMIT, Minnesota Heart Health, perhaps Stanford) that did not show changes in their primary outcomes. Other programs (sometimes with less strong evaluation designs) show much more substantial effects (e.g., Kentucky Anti-drug, Swiss AIDS, California Tobacco, the Healthcom programs, COMMIT for moderate smokers, the National High Blood Pressure Education Program). The presentation argues that these contradictory results may be explained by differences in the effective exposure to messages that programs achieved. High exposure may matter because it affects learning and availability of messages when users are ready for them, provides implicit social legitimation, affects the likelihood of social diffusion, and increases policy attention and the likelihood of institutional change. The implications of the argument are twofold: get exposure (buy it, beg for it, advocate for it, make news), and evaluate communication programs respecting how the process of getting exposure works. There is often a contradiction between "ideal" evaluation designs and how good communication programs must operate, and then alternative evaluation designs must be considered.

47 Using Data To Promote Cardiovascular Health: One State's Experience

Sara L. Huston, Ph.D., North Carolina Division of Public Health

While Healthy People 2010 is a national initiative, success may be driven in large part by State and local efforts. Unfortunately, many of the data sources used for monitoring progress toward Healthy People 2010 are only available at the national level. This presentation will illustrate the challenges and successes of one State, North Carolina (NC), in obtaining and using cardiovascular health-related data at the State and local level. NC's first efforts to document the burden of cardiovascular disease in the State only began in 1995. Through this exercise, we discovered major gaps in our knowledge of cardiovascular disease in the State. Working with organizations both internal and external to the State health department to analyze existing data and collect new data when needed, we have pieced together information to begin filling the gaps in our knowledge. This presentation will highlight two efforts—one focused upon stroke and the other focused upon local-level risk factor data. Use of county-level stroke mortality data in NC has been effective in creating a sense of urgency around stroke and targeting programs to certain areas of the State. Obtaining local-level risk factor data has been difficult; only recently have we been able to provide risk factor data for some NC counties to use in their cardiovascular health programs. Obtaining and using State- and local-level data can be challenging, but these efforts can provide State and local cardiovascular health programs with invaluable information to communicate urgency, target programs, and monitor progress.

47 Using Data To Promote Cardiovascular Health: Tracking the Healthy People 2010 Objectives

Richard J. Klein, M.P.H., National Center for Health Statistics, Centers for Disease Control and Prevention

The 16 Healthy People 2010 heart disease and stroke objectives address the prevention of premature deaths and illness, as well as the reduction of risk factors and improvements in early detection, treatment, and care. This paper provides an overview of the current tracking data and data issues related to the Healthy People heart disease and stroke focus area, including the transition from Healthy People 2000 to Healthy People 2010. Plans for generating data for some of the developmental objectives (objectives that lack baseline data) in this area will be discussed. Of particular interest are the diverse data systems used to monitor the objectives and methodology related to the tracking of individual objectives, including the change from ICD–9 to ICD–10 and changes in the procedure for adjusting for difference in age distributions.

53 The Rapid Early Action for Coronary Treatment (REACT) Study: Lessons Learned

John R. Finnegan, Jr., Ph.D., University of Minnesota

The Rapid Early Action for Coronary Treatment (REACT) Study was an NHLBI-funded community trial to test the effects of a multistrategy community campaign in reducing patient delay in seeking care for heart attack symptoms. The study included 20 communities in 10 States randomized to receive an 18-month campaign (intervention) or delayed access to intervention materials (reference). While general population surveys provided evidence of increased public awareness and knowledge of program messages, patient delay from symptom onset to hospital arrival at baseline (median, 140 minutes) was identical in the intervention and reference communities at followup. Delay time decreased in intervention communities by -4.7% per year (95% confidence interval [CI], -8.6% to -0.6%), but the change did not differ significantly from that observed in reference communities (-6.8% per year; 95% CI, -14.5% to 1.6%; P = 0.54). EMS use by the primary study population increased significantly in intervention communities compared with reference communities, with a net effect of 20% (95% CI, 7%–34%; P < 0.005). Results are discussed by way of lessons learned affecting future interventions in secular trends, messages, organizational context, audiences, and media systems.

53 Educating the Public About Heart Attacks: A Science-Based Campaign

Terry Long, National Heart, Lung, and Blood Institute

Each year, about 1.1 million Americans suffer a heart attack, and about 460,000 of those heart attacks are fatal. Only one in five heart attack victims gets to the hospital fast enough to benefit fully from artery-opening treatments, which can save heart muscle and lives. A key reason for this is patient delay. Research shows that most heart attack patients wait 2 or more hours before seeking emergency care, and some wait a day or more. The National Heart, Lung, and Blood Institute (NHLBI) has joined with partner organizations to launch "Act in Time to Heart Attack Signs," a campaign to increase Americans' awareness of the signs of a heart attack and the need for a fast response. The campaign is based on the lessons learned and the materials developed as part of Rapid Early Action for Coronary Treatment (REACT), an NHLBI-funded research program. This presentation covers the evolution of the national campaign from its origins as a research study, emphasizing the development of partnerships with voluntary and professional organizations to help ensure broad and sustained use of campaign messages and materials. In addition, the campaign's "call to action" for health professionals is covered, including the T.I.M.E. method for counseling patients about heart attack risk and how to make a survival plan.

57 Understanding Misdiagnosis of Female Patients

Nancy Loving, WomenHeart: the National Coalition for Women with Heart Disease

A panel of three women heart attack survivors will describe being misdiagnosed and receiving improper care within the health care system. Their own lack of awareness of the presentation of heart disease in women, as well as the ignorance of their physicians and emergency room staff, contributed to their situation. Common misperceptions and stereotypes about heart disease will be explored as well as the lack of medical research into the causes, presentation, and treatment of heart disease in women. Exclusion of women from clinical trials is cited as an ongoing problem. Results of a WomenHeart patient telephone survey will also be described. Women need to be educated about their signs and symptoms of heart disease, and health care providers need to be better educated and held more accountable for their decisions.

58 Costs of Treating Hypertension—They Can Be Controlled

Marvin Moser, M.D., F.A.C.P., F.A.C.C., Yale University School of Medicine

Prevention of the complications of hypertension has proved to be one of the most successful medical achievements in the United States in the past 30 years. To date, management has not involved the use of expensive technology, but more physicians are advocating a different approach with more procedures; this may not be necessary for better care.

Some suggest that the answer to inadequate control is the use of more expensive procedures. Procedures such as echocardiograms, ambulatory blood pressure monitoring (ABPM), and physiologic testing are being encouraged by some physicians and industry to determine the type of medicine that should be used. Yet, based on recent trial evidence, physicians should be able to regu-

late or change medication and achieve goal pressures without this type of monitoring.

Other factors include the cost of (1) medication, (2) "labeling" before a definitive diagnosis is made, (3) continuing lifestyle modifications too long with possible organ system involvement if blood pressure is not lowered, (4) medication switching, (5) not treating to goal blood pressures while incurring the cost of treatment, and (6) underdeveloped pharmacoeconomic models.

Abandoning the simple approach to the management of hypertension in favor of imposed expensive technologies will drive up the cost of care. While there are some instances in which newer technologies may be helpful, their use should be limited to special situations, despite pressure to use them. Procedures must be carefully evaluated in terms of outcome, not only in centers that are advocating their use, but also in the real world of practice.

A7 Community Screening for Atrial Fibrillation: Effectiveness of Pulse Self-Examination on Awareness and Behavior

Frederick E. Munschauer, M.D., Research Center for Stroke and Heart Disease

Objectives: Screening high-risk populations for atrial fibrillation (AF) may be effective in primary stroke prevention. An irregular pulse (IP) is a surrogate indicator for AF. We postulated that community groups with older demographics could be taught to self-examine their radial pulse for the presence of an IP, retain the awareness of an IP as a surrogate stroke risk factor, and behave appropriately if an IP was suspected. Specific awareness objectives were to (1) understand that an IP may indicate a higher risk for stroke and requires medical assessment and (2) retain the awareness for at least 30–60 days. Specific behavioral objectives were to determine what percentage of participants (1) could find and then characterize the rhythm of their pulse, (2) achieved the behavioral goal of monitoring pulse rhythm over time, and (3) acted appropriately on detection of an IP.

Results: We conducted 277 nurse-led, standardized, validated community group education sessions in 10 U.S. cities involving a total of 6,203 attendees. Of these, 4,667 (mean age 70) consented to participate. Of the participants, 82 percent were able to find their radial pulse, and 91.5 percent characterized the rhythm (very irregular, 0.9 percent; irregular, 10.8 percent; regular, 80.1 percent; unable to determine, 8.2 percent). A previously unrecognized IP was discovered by 1.7 percent of participants during the sessions, while nurse clinicians detected 2.1 percent. To determine if the teaching was durable and what actions were taken as a result of the program, telephone followups at 30–60 days (mean 56 days) were obtained on 1,715 (61.2 percent). At the end of the sessions, 93 percent of participants identified an IP as a potential risk factor for a stroke. At followup, 88.9 percent retained the message. Additionally, 1,197 (70.4 percent) had taken their pulse since the program, with 9 (0.8 percent) discovering a new IP since the program. Of those that discovered a new IP during or after the session, 64.6 percent sought medical assessment.

Conclusion: Community education programs focusing on pulse self-examination are effective in improving durable awareness of an IP as a surrogate indicator of AF-associated stroke risk. Pulse self-examination with rhythm characterization can be incorporated into community education and screening programs for stroke prevention.

A7 Disparities in Cardiac Referrals

Frances B. Wimbush, College of Nursing, Wayne State University

Clinical observation and previous research have documented a difference in referral for cardiac services (CS), such as angiography, percutanious transluminal cardiac angioplasty (PTCA), surgery, and rehabilitation, based on physician practice and client race, gender, or place of residence. Research-based literature documents that there is a difference in communication patterns when there are perceived differences in demographic factors between the client and the health care provider. This perceived difference affects the referral patterns of the health care providers and the use of services by clients. This study was designed to examine patterns of referral and participation in invasive cardiac procedures and rehabilitation postdischarge following a cardiac event. The guiding concept of the study was access to care.

The study used a prospective, descriptive-correlational design to examine client characteristics. A total of 223 subjects were contacted. Study subjects (N = 55) included clients aged 18 to 80. The Use of Cardiac Services Questionnaire consisted of seven sections examining clients' perception of their health status, source of care, hospitalizations, cardiac hospitalizations, attitudes about medical care, social support, and demographics.

Surprisingly, none of the subjects were referred to cardiac rehabilitation, even though all were eligible. Results of the study showed that there was a significant relationship between referral for CS, race, and place of residence (African-American and urban participants were not referred at the $p \leq 0.001$ level). Other significant findings related to nonreferral included psychosocial aspects such as distrust ($p = 0.003$), perceived prejudice ($p = 0.001$), expressed barriers ($p = 0.001$), self-rating of health ($p = 0.004$), and satisfaction with their physician ($p = 0.019$). The implications for clinical practice and future research will be discussed.

A7 Gender and Racial Disparities in Post-AMI Mortality and Treatment

Andrew Yacht, Boston University School of Medicine, Christine Chaisson, Karen Freund, Lindsey Bramwell, Arlene S. Ash, Ph.D.

Disparity studies from the 1980s and early 1990s consistently found worse post-AMI survival for women than men; although in Medicare populations, the difference

was largely explained by their older age. Also, Blacks were less likely than Whites to undergo revascularization, and women less likely than men. Using Medicare fee-for-service administrative files, we examined whether earlier reports of disparities in care had been followed by changed provider behaviors.

We compared 1-year mortality and rates of revascularization within 90 days of admission among all 306,175 1999 Medicare AMI admissions (49.6 percent female, 88.9 percent white, 7.4 percent black) among White females (WF), White males (WM), Black females (BF), and Black males (BM). We also adjusted these comparisons for age and comorbidity (using the Charlson score based on diagnoses from the AMI admission plus inpatient and outpatient bills from the preceding year).

	1-Year Mortality	Revascularization
White female	1	1
White male	1.00 (0.99, 1.02)	1.13 (1.10, 1.15)
Black female	1.14 (1.10, 1.18)	0.68 (0.64, 0.72)
Black male	1.13 (1.08, 1.18)	0.67 (0.64, 0.72)

Raw rates of mortality were 35.8 percent, 31.4 percent, 38.3 percent, and 32.6 percent, respectively for WF, WM, BF, and BM; analogous revascularization rates were 13.4 percent, 17.7 percent, 10.1 percent, and 11.9 percent). Risk-adjusted mortality odds ratios (ORs) differed by race but not sex, while revascularization ORs were higher for men than women and for Whites than Blacks.

OR (95 Percent Confidence Interval)

We expected reports of disparities in revascularization procedures to lead to equity. However, Blacks are still far less likely than Whites to be revascularized.

A14 Reducing Health Care Costs in Older Women With Heart Disease: The Women Take PRIDE Self-Management Program

Julia A. Dodge, M.S., R.N., The University of Michigan, John R.C. Wheeler, Nancy K. Janz, Noreen M. Clark

There is an increasing interest among researchers and health care providers in the potential for disease self-management education to reduce health care costs. Because of the high prevalence and burden of heart disease, the development of programs focused on heart conditions is of particular importance. This research presents the effects of an intervention—Women Take PRIDE (WTP)—focusing on self-regulation and physical activity on subsequent health care use. Five hundred seventy ambulatory older women with heart disease were randomly assigned to receive either the WTP intervention or "usual care" (control). Health care use data were collected from participants' hospital billing records over a 36-month period. Findings indicated that women receiving the intervention had 46 percent fewer inpatient days and 49 percent fewer hospital inpatient charges than the control group women in the year following completion of the program. For hospitalizations specifically due to a heart condition, intervention women had significantly fewer admissions, inpatient days, and costs. There was no significant relationship between program participation and use of the emergency room. Health care cost-saving estimates are more than 20 times the direct costs of delivering the WTP program. These results suggest that health plans may benefit from covering the cost of self-management programs.

A14 Cardiovascular Risk Factors Among Women in Mississippi in the 1990s

Clifton C. Addison, Jackson Heart Study

Background: Among women, coronary heart disease is the leading cause of death. This study sought to assess whether health risk behaviors among women in Mississippi increased, decreased, or remained the same during the 1990s. Most of the excess mortality can be accounted for by the four well-established risk factors that are under investigation in this study. The health risks that were examined are (a) tobacco smoking, (b) dietary practices, (c) overweight, and (d) physical activity.

Methods: The Behavior Risk Factor Surveillance Survey (BRFSS) was the instrument used for examining the risk factor practices of Mississippi women during the 1990s. The BRFSS was initiated by the Centers for Disease Control and Prevention (CDC) in the late 1980s for the purpose of providing pertinent lifestyle risk behavior information.

Results: White Mississippi women did better with physical activity, consumption of fruits and vegetables, and tobacco smoking. Physical activity improved among women overall in the 18–44 age group, but declined among women between the ages of 45–54. Women aged 18–65 increased their consumption of fruits and vegetables, and the 24–44 age group began to decrease their cigarette smoking practices. African American women also did better in their consumption of fruits and vegetables and tobacco smoking. Both African American women and white women showed some improvement in the numbers diagnosed with diabetes. Women of all ages showed increases in weight gain.

Conclusion: Increased body weight is associated with a number of cardiovascular abnormalities, and the prevalence of overweight among Mississippi women increased between 1992 and 1999. Decreasing obesity should be a major public priority, since it is well documented that obesity is associated with several chronic diseases. A considerable gap remains between recommended dietary patterns and what the majority of Mississippi women actually eat. Good nutrition is essential for maintaining good health, and it should be strongly advocated to all Mississippi residents and people in general.

A14 Hypertension and Risk Reduction: Perceptions of African American Women

Mary S. Webb, Ph.D., R.N., College of Nursing, University of South Florida, Mary Lou VanCott

The purpose of this study was to describe African American women's perceptions of hypertension and risk reduction. The study was guided by the theory of self-regulation, which describes the individual as an active problem solver, generating mental representations of disease threats and selecting and performing rational threat management procedures. Understanding how individuals perceive a health threat is essential for the implementation of successful health-promotive behaviors.

Five focus groups were conducted with 47 women. A semistructured interview was used to elicit subjects' perceptions of the threat and management of hypertension. Data was analyzed using domain and thematic analyses. Themes that have emerged include (1) perception of hypertension risk, (2) causal attribution, (3) obstacles to hypertension, and (4) need for community-based interventions.

Subjects were generally knowledgeable about hypertension, but concern was expressed over lack of awareness and sense of vulnerability among many women and families. The most salient belief concerning causality was the influence of pervasive stress that African American women typically experience. Lack of access to health care and financial restraints were identified as obstacles. A strong need for community-based interventions that are culturally appropriate was voiced. Findings from this study are being used to develop and test a community-based intervention for African American women.

A14 Integrating the 2000 Victoria Declaration on Women, Heart Diseases, and Stroke Into Strategies for Healthy People 2010

Elinor Wilson, Ph.D., Heart and Stroke Foundation of Canada

In the United States, heart disease is the leading cause of death for all people. Stroke is the third leading cause of death. Internationally, the 1999 WHO Health Report indicates that there were approximately 16.7 million cardiovascular deaths for all ages, an estimated 8 million men and 8.7 million women. Despite gains in treatment and preventive efforts to reduce disease, heart disease and stroke continue to be major causes of disability and significant contributors to health care costs nationally and internationally. The overarching goals of Healthy People 2010—to increase quality and years of healthy life and to eliminate health disparities—are of particular importance when focusing on cardiovascular disease and women. The promotion of heart health and the prevention of heart disease can only be accomplished with attention to the realities of women's various roles within society, the family, the workplace, and the community. Health disparity issues, such as gender, income, education, and geographic location, must be addressed to improve women's cardiovascular health and quality of life. The International Victoria Declaration on Women and Heart Health 2000 calls upon individuals and organizations who have an impact on the health and heart health of women to marshal their efforts and invest resources in the prevention and management of heart diseases and stroke. This presentation will address the science, policy, and action recommendations of the Women's Heart Health Declaration and the importance and necessity of their implementation with the strategies developed for Healthy People 2010.

Friday April 12, 2002
4:45 p.m.–5:45 p.m.

7 Using Interactive Technologies for Physical Activity Promotion

Bess H. Marcus, Ph.D., Behavioral Medicine, Brown Medical School

Physical activity is an important component of both primary and secondary prevention of coronary heart disease (CHD; Miller & Fletcher, 1998). A recent meta-analysis indicated that physical activity participation is associated with reduced risk of CHD (Williams, 2001). Despite this reduction in risk, approximately 75 percent of the U.S. population do not engage in regular physical activity (CDC, 2001). Consequently, interventions that reach a large segment of the population are needed. The purpose of this presentation is to review the literature examining mediated interventions (e.g., print materials, telecommunications, information technology, and mass media), which have the potential to reach the large proportion of sedentary Americans. Research indicates that individually tailored print materials and telephone-based interventions are effective in promoting physical activity. There is less evidence that mass media (i.e., television commercials, brochures) are effective, perhaps because they are not tailored to the individual. Finally, there is preliminary evidence that Internet-based interventions are effective for increasing physical activity. However, large randomized controlled trials are needed that compare this newer technology to mediated interventions previously shown to be effective. Future studies should examine the public health impact of these mediated interventions for physical activity.

7 Providing and Promoting Physical Activity in Children and Youth

Russell Robert Pate, Ph.D., University of South Carolina

During childhood and adolescence, physical activity levels decline with increasing age and tend to be lower in girls than boys. By high school age, more than one-third of U.S. youth fail to meet public health guidelines for participation in vigorous physical activity. Physical activity in young persons is known to be associated with an array of demographic, physiological, psychosocial, and environmental factors. Of these variables, the social environmental factors appear to be particularly important.

Intervention research targeting increased physical activity in children and youth has been conducted in school, community, home, and clinical settings. To date, most of the large-scale studies have examined school-based interventions. Those studies reporting significant intervention effects have tended to use strategies emphasizing increased physical activity while children are in instructional or programmatic settings, such as physical education classes. Strategies emphasizing cognitive learning, in general, have not produced significant intervention effects. The literature on community interventions to promote physical activity in young persons is very limited, as is the body of knowledge on clinically based interventions. It has been shown that parents can have an important influence on physical activity in overweight youth participating in counseling programs, but parent-directed interventions have not been successful in other settings. Future research should aim to identify successful strategies for increasing physical activity in young persons through interventions in community and home settings and through comprehensive interventions that link school, community, and home environments. This research should be designed to identify the factors that mediate and moderate the effects of interventions on physical activity.

7 Increasing Physical Activity in Women From Low Income, Multiethnic Populations

Deborah Rohm Young, Ph.D., University of Maryland

Low income and minority women are at disproportionate risk for cardiovascular diseases compared with white women and those of higher socioeconomic status. National surveys consistently show that they are also more likely to be sedentary, although regular physical activity reduces cardiovascular disease risk. Increasing physical activity in these populations can reduce mortality, improve quality of life, and have a substantial public health impact. To date, there have been few interventions that have been designed specifically for low income and minority women. Results to date have been mixed. Interpretation of results also has been hampered by nonexperimental study designs, use of nonstandard physical activity instruments, interventions designed without a theoretical framework, and high participant loss-to-followup. However, some interventions have reported on strategies that show promise for increasing physical activity in minority women. This presentation will highlight interventions conducted to date, discuss implications of results, and make recommendations regarding promising intervention approaches.

9 Empowering High-Risk Communities To Incorporate the Heart of Hearts N' Parks

Karen A. Donato, S.M., R.D., National Heart, Lung, and Blood Institute, National Institutes of Health

Hearts N' Parks is a national, community-based program cosponsored by the National Heart, Lung, and Blood Institute (NHLBI) Obesity Education Initiative and the National Recreation and Park Association (NRPA). Hearts N' Parks aims to reduce the growing trend of overweight and obesity and the subsequent risk of coronary heart disease in the United States by encouraging Americans of all ages to aim for a healthy weight, follow a heart-healthy eating plan, and engage in regular physical activity. In 2001, Hearts N' Parks expanded nationally to include 50 Magnet Center sites located in 10 States (Arizona, Florida, Georgia, Illinois, Indiana/Ohio, Maryland, Michigan, Missouri, New Mexico, and Nevada). States were selected based on the highest risk for cardiovascular disease, special populations served, and park and recreation agency interest and program capability. The Marine Corps serves as an additional Magnet Center, with six bases designated as sites. Each of the Magnet Center sites has agreed to a 3-year commitment that includes the following responsibilities: attend trainings, administer the pretest and posttest measures to personnel and participants, provide NHLBI and NRPA with an analysis of this information, evaluate the program's sustainability and growth annually by tracking specific markers related to the 5P's of Hearts N' Parks; report progress annually, utilize an extranet to communicate with other sites, serve as trainers for other sites interested in Hearts N' Parks, and expand heart-healthy programming efforts each year. Additional partners in the program include the American Dietetic Association and State health departments. The presentation will cover the rationale for the program, lessons learned from the pilot, and efforts to expand nationally into high-risk communities.

9 A Walk in the Park for Cardiovascular Health

Ellen O'Sullivan, Ph.D., School of Public Health, Southern Connecticut University

The lessons learned from the North Carolina pilot of Hearts N' Parks, along with the successes and challenges experienced by the individual community sites, resulted in a community mobilization process. This process serves as the "empowerment" map for the Magnet Centers. With a strong emphasis upon both the "community" and "mobilization," the Hearts N' Parks process provides action-oriented tasks and techniques within a conceptual framework of the 5Ps. The 5P framework consists of People, Program, Public Visibility, Partnering, and Performance Indicators. Each of these emphasis areas is supported with examples of success stories from the pilots, facts related to cardiovascular health (CVH) and the change process, excerpts from existing resources and FAQs. The action agendas for individual communities are subsequently developed around suggested check lists that provide the impetus for three different phases of the process. While the process itself may not be a "walk in the park," the early activities suggest that those "walks in the parks" are the more visible results of partnerships and programs with potential for supporting heart-healthy behaviors and lifestyles.

15 Troponin: Challenges and Caveats of MI Redefinition

Robert H. Christenson, Ph.D., University of Maryland School of Medicine

Myocardial necrosis is identifiable under the microscope approximately 4 to 6 hours after the acute ischemic event. Definitive MI diagnosis in the live patient, however, is much more challenging. Historically, WHO developed clinical MI criteria in the late 1970s that specified the presence of at least two of the following troika: clinical symptoms, characteristic electrocardiogram findings (Q waves), and a typical rise and fall of cardiac enzymes. In the two decades since the WHO definition, there has been discovery of specific biochemical markers, including cardiac troponin T and cardiac troponin I. Immunoassays were developed for measuring troponin that allow for sensitive detection of small areas (< 1 gram) of cardiac necrosis. Troponin's sensitivity and tissue specificity led, in large part, to the redefinition of MI in a consensus document endorsed jointly by the ESC/ACC. This document designated troponin as the keystone for MI diagnosis. MI is (re)defined as blood troponin values exceeding the 99th percentile of a reference control population on at least one occasion in the 24 hours after the index event, with at least one of the following: ischemic symptoms, development of pathologic Q waves, ST elevation or depression, or coronary intervention. It is estimated that this more sensitive redefinition will increase the incidence of MI by 15 to 35 percent. Also, many other challenges and caveats will result from the new MI definition, including complexities in the nature of troponin release, the lack of assay standardization, and the inability of most assays to precisely measure troponin concentrations near the 99th percentile of the reference control population.

15 The New Definition of a Heart Attack: Clinical and Educational Challenges

Kathleen A. Dracup, R.N., D.N.Sc., University of California, San Francisco

Scientists and clinicians have been successful at improving the morbidity and mortality of patients experiencing a myocardial infarction (MI) once they arrive at the hospital. However, attempts to improve patients' response to symptoms have met with limited success. Despite having adequate knowledge to understand and recognize symptoms and risk factors, patients still delay long periods of time before seeking care. Leventhal's self-regulatory model of illness behavior has served as the theoretical framework for several studies attempting to understand the phenomena of delay. It emphasizes cognitive and emotional factors that influence actions for coping with a health threat. Ambiguous symptoms can contribute to patient confusion, and several factors have been identified as increasing and decreasing delay. Mass media education campaigns to reduce patient delay have been largely unsuccessful. The largest of these, the REACT study, did not reduce delay; however, the use of 911 increased between the intervention and control communities. National Heart, Lung, and Blood Institute (NHLBI) recommendations for educating patients include focusing on high-risk patients and providing information, addressing emotional issues and social factors. A new National Institutes of Health-funded study is being conducted that is based on the NHLBI recommendations. However, it is clear that knowledge does not lead to behavioral change, and a reassessment of this problem is required. Patients still regard an MI as an acute event. In order to address the continuing problem with delay, it is suggested that we consider a paradigm shift in terms of characterizing MIs; that is, emphasizing the chronicity of the disease rather than the acute event.

26 Evidence-Based Approaches to Physical Activity for Older Adults

Thomas R. Prohaska, Ph.D., School of Public Health, University of Illinois at Chicago

Objective: A systematic review of current literature on outcomes of exercise for older adults (age 60+) was conducted for the purposes of generating evidence-based recommendations for older adults with and without specific chronic illnesses. Discussions with an expert panel on exercise in older adults and potential consumers of the evidence-based recommendations (physicians community groups) have identified the need to tailor the evidence-based recommendations based on the needs of those using the recommendations.

Method: A systematic review of published literature between 1980 and 2000 on the outcomes of physical activity/exercise has resulted in a data set of 2,300 papers and an annotation of over 500 studies. This presentation focuses on annotated studies and evidence tables pertaining to the role of exercise in older adults for cardiovascular health.

Findings: Annotated studies are organized into two groups: studies that have inclusion criteria identifying older adults with cardiovascular disease and studies that have a broader older adult population without reference to specific chronic illnesses but have outcomes relevant to cardiovascular health (e.g., heart rate, hypertension). The evidence tables generated and recommendations presented are modeled by disease (cardiovascular disease) or by outcomes associated with cardiovascular health (e.g., heart rate, systolic blood pressure) in healthy older adults. The discussion focuses on the applicability of the recommendations for primary prevention versus secondary and tertiary prevention.

26 Evidence-Based Approaches to Physical Activity for Older Adults

Laurence Z. Rubenstein, M.D., M.P.H., University of California, Los Angeles

Objective: In this evidence report for the Centers for Medicare & Medicaid Services Healthy Aging Project, RAND reviewed controlled trials of exercise interventions for older

adults for their effects on selected outcomes of importance—function, strength, mobility, and fall prevention.

Methods: A systematic literature search of controlled trials of exercise interventions for older adults was screened, abstracted, and analyzed using meta-analytic and meta-regression techniques. Screening of 879 articles yielded 122 studies for the meta-analysis.

Findings: Although final analysis is in process, exercise programs appear to have significant beneficial effects on fall prevention, strength, mobility, and global functioning of older adults. Program components associated with greater impact are being analyzed. Policy implications will be discussed.

28 Medicare and Healthy Aging

Catherine Gordon, R.N., M.B.A., Health Promotion and Disease Prevention, Centers for Medicare and Medicaid Services

Medicare is now exploring how to incorporate new preventive approaches into its programs and policies. The speaker will discuss Medicare's challenges in incorporating health promotion interventions and how evidence is influencing Medicare and public policy. Medicare's new and pathbreaking demonstration projects (e.g., smoking cessation for seniors) will also be featured.

35 Mobilizing Communities To Eliminate Health Disparities

J. R. Gonzales, JRG Communications, Inc.

The purpose of this presentation is to provide participants with an awareness of the Hispanic community and its perceptions on health and to provide the skills for effectively reaching this community with health information.

Presentation Objectives:

1. Increase awareness of the issues surrounding the Hispanic community's perception toward health
2. Understand the importance of coalition building in conducting outreach to the Hispanic community
3. Understand the principles of effective community mobilization within the Hispanic community
4. Provide an overview of Hispanic population growth trends and demographic data on the community

The Hispanic community has not traditionally readily adopted or taken advantage of services for which they qualify. Many feel this is due to poor communication plans and a lack of trust with the offering organizations. Building a sense of trust with the community is paramount. To develop trust, cultivating appropriate partnerships is critical. The community opinion leaders and the gatekeepers must be identified and approached with information and included throughout the process.

Hispanics have only recently been the focus of major national public health efforts. While many initiatives now target Hispanic Americans with health information and services, only those that are relevant to the community will be successful. To develop culturally relevant programs for the community, organizers must be inclusive of Hispanics in meaningful roles throughout the entire planning, implementation, and evaluation process.

There are many attributes of the Hispanic community that suggest the community will be ready to adopt the concepts of a healthy lifestyle. Hispanics have a strong loyalty to family and its well-being, an immigrant Hispanic is at less risk than second and third generation Hispanic Americans, and the community spends a great deal of its disposable income on the family unit. Effective public health activities will take into account the positive attributes of the community, will be inclusive of the community, and will work closely with groups and organizations that represent the community's interests. This presentation will present and explore these principles.

Within the next 20 to 30 years, one out of four persons living in the United States will be Hispanic. Currently, one out of three Hispanics are dying of stroke and cardiovascular disease. Historically, there has been a huge disparity in providing adequate health care and education to the Hispanic community. During this session, strategies and a methodology for effectively reaching the Hispanic population will be discussed.

42 The Two-Way Street: A Guide To Help Health Care Professionals Improve Their Communication With Older Adults

Ann Elizabeth Benbow, Ph.D., SPRY Foundation

This presentation describes a new guide produced by the SPRY Foundation with support from the Retirement Research Foundation. The guide, which is based upon SPRY's research into older adult learning strategies, provides practical guidance for health care professionals on how to improve their communication techniques with older adult patients, customers, and residents. The intent of the guide is to ensure that older adults understand what their health care professionals (physicians, nurses, dentists, pharmacists, nursing assistants, assisted living staff, and others) have to convey about risk factors, diseases, prevention strategies, treatments, therapies, medications, and lifestyle changes. All of these areas are particularly important in promoting cardiovascular health in older adults.

The presentation will include an overview of the guide development and review process, plus selections from the guide that are particularly apropos in promoting cardiovascular health in older adults.

42 NIHSeniorHealth.gov: A Strategy To Increase Health Literacy in Older Adults

Roger Wayne Morrell, Ph.D., GeroTech Corporation

This paper focuses on the NIHSeniorHealth.gov Project that is jointly sponsored by the National Institute on Aging and the National Library of Medicine. The goal of the project is to provide accessible, current, and reliable

health information via the World Wide Web to older adults in order to increase health literacy.

The NIHSeniorHealth.gov Web site is unique in that it is the first Web site whose design is based on scientific findings from basic and applied research on cognition and aging, studies from human factors and aging, focus group and usability testing, and survey research. The Web site is designed to serve as a model for how age-related declines in vision, cognition, and motor skills can be taken into consideration during the construction of a Web site.

The presentation will begin with a brief overview of the theoretical constructs that guided the development of the Web site. Findings will then be outlined from the usability studies that were conducted on the original and revised versions of the site, in order to increase accessibility to health information for older adults. The presentation will conclude by summarizing how the Web can be used to increase health literacy on cardiovascular health issues in the elderly.

49 Closing the Coronary Heart Disease Treatment Gap

Kenneth A. LaBresh, M.D., MassPRO, A. Gray Ellrodt, M.D.

Current data indicate that a significant proportion of patients hospitalized with coronary heart disease leave the hospital without receiving those recommendations and therapies proven to save lives and reduce subsequent events. Get With the Guidelines is a program of the American Heart Association (AHA) designed to improve the use of the AHA/ACC Secondary Prevention Guidelines for Patients With Coronary and Other Vascular Disease by using the hospital as a capture point. The program assists hospitals in building systems to increase the use of guidelines-based interventions when patient are hospitalized for acute events or procedures. Through the use of an Internet-based patient management tool, hospitals can track their performance over time and compare their data to AHA benchmarks and national program performance. The tool provides reminders and guideline summaries customized for each patient. By completing the information prior to discharge, the patient management tool provides a safety net for each patient to optimize the use of evidence-based treatment and prevention strategies. Performance measures are compatible with CMS and JCAHO measures for acute MI and CHF. The New England pilot program and its subsequent launch in California have brought together coalitions of stakeholders to create a uniform approach to the implementation of evidence-based secondary prevention care. Data from a diverse group of hospitals demonstrate that the tools and strategies employed in Get With the Guidelines can substantially increase the use of the guidelines. It is estimated that when the program is fully implemented in the United States, more than 80,000 lives could be saved each year.

54 Improving the Quality of AMI Care: Lessons From the CMS National AMI Quality Improvement Project

Diana L. Ordin, M.D., M.P.H., Centers for Medicare and Medicaid Services, Harlan M. Krumholz, M.D.

The Centers for Medicare & Medicaid Services (CMS) has developed and implemented a national program to assess and improve quality of inpatient acute myocardial infarction (AMI) care for Medicare beneficiaries. The guideline-based measures of quality of care address aspirin and beta blockers on admission and discharge, the use of angiotensin-converting-enzyme (ACE) inhibitors for patients with heart failure, smoking cessation counseling, and time to initiation of reperfusion therapy. State-level baseline results demonstrated considerable opportunity for improvement, with significant differences in care by region of the country. CMS' State-level contractors, the Quality Improvement Organizations (QIOs, formerly Peer Review Organizations [PROs]), help hospitals measure their performance on these quality indicators. Preliminary remeasurement data, assessing State-level quality indicator rates after approximately 2 years of improvement efforts, appear to demonstrate progress in improving care.

This presentation will describe some of the findings and challenges of this project, focusing principally on:

- Developing measures to assess the quality of inpatient AMI care
- Progress in national standardization of AMI quality measures
- What the measurement results tell us about the quality of care
- What we have learned about improving quality of care
- The importance of partnerships to facilitate quality improvement

55 The Healthy People 2010 Cardiovascular Disease and Stroke Strategic Partnership

Emmeline J. Ochiai, J.D., M.P.H., U.S. Department of Health and Human Services, Gregory J. Morosco, Ph.D., M.P.H., Eugene Freund, M.D., M.S.P.H., Patricia Turner, Darwin Labarthe, M.D., Ph.D., Lynn A. Smaha, M.D., Ph.D.

In ongoing efforts to engage nongovernmental organizations as partners in improving the health of the Nation and speed progress toward the Healthy People 2010 goals, the U.S. Department of Health and Human Services (HHS) has entered into several innovative partnerships for action. One of these partnerships is between HHS and the American Heart Association (AHA) and American Stroke Association, a division of the AHA. The HHS-AHA Healthy People 2010 Heart Disease and Stroke Strategic Partnership combines scholarship, leadership, and partnership among public and private forces to improve the heart health and stroke health of the Nation.

This public-private partnership strives to magnify activities, implement Healthy People 2010, and improve the

health of the United States through focused initiatives that include population- and community-based public education and health promotion programs; activities to bring about policy, systemic, and environmental improvements in the Nation's cardiovascular health care delivery systems; research; media-based public awareness campaigns about the warning signs and symptoms of heart attack and stroke; promotion of professional education and training, including cohosting of national conferences and the dissemination of best practices; and joint efforts to provide consultation on cardiovascular issues for conferences and workshops.

A2 The Art of Congestive Heart Failure Management: Reducing Hospital Admissions

Deborah J. Crawford, R.N., M.S., C.N.S., Hillcrest Medical Center

Congestive heart failure (CHF) remains the number one diagnosis for hospital admissions for individuals over the age of 65. An organized approach to CHF management will reduce hospital admissions and length of stay as well as improve the usage of cardiovascular drugs.

The CHF CARE Center at Hillcrest Medical Center provides comprehensive heart failure management. During the first year, the CHF CARE Center reduced hospital admissions for patients enrolled in the center by 55 percent compared to other patients with CHF not in CHF CARE. Hospitalized CHF CARE Center patients had an average length of stay (ALOS) of 3.5 days compared to non-CHF CARE patients with an ALOS of 5 days.

CHF CARE Center has exceeded the national average for both ACE and beta blocker usage. In the 2 years of operation, CHF CARE has a 72 percent usage for ACE compared to the national average of 59 percent. CHF CARE Center's beta blocker usage is 65 percent compared to the 5–15 percent national average.

- Utilizing existing hospital resources and telemanagement, patients experience better control of heart failure symptoms and show improved compliance with guidelines.

A2 The Impact of a Congestive Heart Failure Condition Management Program on Patient Compliance With Dietary Sodium Restrictions

David Ray Walker, CorSolutions, Diane Soule, Richard P. Vance

Purpose: The objective of this presentation is to provide evidence that participants enrolled in a high-risk congestive heart failure (CHF) condition management program can reduce their intake of sodium and maintain this reduction over time, thereby reducing hospitalizations.

Methods: A food frequency questionnaire is completed every quarter to capture sodium intake levels. The average age of a participant is 73.3 years, and 52 percent are female (N = 11,454). The study compares the percentage of participants meeting the goal of 3,000 mg or less of sodium per day and their hospitalization rates using "time on program" cohort groups.

Results: The percentage of participants meeting the sodium goal was 77 percent for a 0- to 6-month cohort, 89 percent for a 7- to 12-month cohort, and 94 percent for a greater than 12-month cohort. The differences between cohort groups are statistically significant ($p < 0.001$). In addition, the three cohort groups have lower hospitalization rates as compared to industry benchmarks.

Conclusions: The results provide strong evidence that a CHF condition management program reduces sodium intake. The implication for health care delivery is that a condition management program based on behavioral modification is crucial in reducing dietary sodium levels and subsequent hospitalizations.

A2 Connectivity, Compliance, and Care: Creating a New Paradigm for Providers

Debora Simmons-Bennett, R.N., M.S.N., C.C.R.N., C.C.N.S., The Methodist DeBakey Heart Center/Methodist Visiting Nurses Association of Houston, Inc.

Congestive heart failure (CHF) remains a bleak scenario of declining health and a mortality rate of 50 percent within 5 years of diagnosis despite advances in pharmaceutical and therapy. The reasons for this poor picture are revealed in a review of the literature and research that yields the barriers to effective treatment strategies.

The major barriers to successful CHF management are:

- Complex treatment strategies—more side effects and dosage adjustments
- Patient adherence to medical regimen and self-care are poor and traceable to early lapses in education and reinforcement
- Cycles of acute dependency—CHF patients are among the most common in the ERD and highest volume DRG in Medicare
- Poor monitoring—the mortality rate among CHF patients in the year following an acute admission is 40 percent

Creating a vital link from the patient to the home has been the mission of the Visiting Nurses Association (VNA) and The Methodist Hospital (a regional tertiary care center). The traditional link of the registered nurse, however, has been difficult to extend due to shortages and reimbursement barrier.

The providers of the VNA and Methodist, however, realized that the solution lies in not one but several approaches to patient connectivity, compliance, and care that crossed traditional delivery methods. The result was a highly effective partnership between the acute and chronic care providers that utilized the team management of heart failure in a new way. The barriers to acceptance, barriers to the new technology, and barriers to success were found to be based in the providers—not the patients.

A2 The Impact of a Heart Failure Condition Management Program on Beta-Blockade Utilization

Miriam Cannon-Wagner, CorSolutions, David Walker, Diane Soule, Richard Vance

Purpose: The purpose of this study was to evaluate the effectiveness of a medication management (MM) decision support system to increase beta-blockade (BB) utilization in a heart failure (HF) condition management (CM) program.

Methods: All participants with systolic HF are evaluated for BB drug use at baseline. Evaluation criteria are based on practice guidelines incorporated into a decision support software system. Incorporated into this system is an MM process used to determine eligibility criteria for BB at admission and every 30 days thereafter. Eligibility includes confirmed systolic, NYHA Class II or III, target or maximally tolerated dose of vasodilator therapy and patients without contraindications to BB therapy. Eligible participants' physicians are contacted to facilitate BB therapy initiation. Frequent participant telephone contact and monitoring assist with ongoing compliance. Barriers to compliance are evaluated monthly to maintain utilization.

Results: The average age was 73.3 years, and 52.3 percent were female, with an average time on program of 11.2 months. Eligible cohort groups were evaluated at enrollment and at most recent measurement. The cohort groups consisted of participants who were in the program for 0–6 months (N = 391), 7–12 months (N = 584), or > 12 months (N = 1,199). BB utilization increased 4.3 percent, 6.8 percent, and 12.7 percent, respectively, for the 0–6, 7–12, and > 12-month cohort groups.

Conclusion: In a HF CM program with computerized decision support, 66.9 percent of eligible systolic HF participants received BB (as compared to the industry standard rate of 32 percent).

A12 Making Restaurants Smoke Free Through Voluntary Action

Rebecca Sue Hoffman, Mayo Clinic

Purpose: Despite the documented health hazards of environmental tobacco smoke and public preference for smoke-free restaurants, city and county governments have been reluctant to require restaurants to eliminate tobacco smoke. As interim action, we conducted a campaign to encourage restaurants in Olmsted County to voluntarily become smoke-free worksites.

Methods: After enumerating all restaurants in the county, the project leader personally educated restaurant owners and managers about the dangers of secondhand smoke and the business benefits of being smoke free. A population survey was conducted, published, and distributed in the county. Two brief (< 10 minutes) video CDs on the process and benefits of becoming smoke-free were produced and distributed. Smoke-free restaurants were publicly lauded at award ceremonies and were listed in the telephone book yellow pages and the Rochester Visitor.

Results: When the project was initiated on January 1, 1998, 33 of 205 (16 percent) restaurants were smoke-free worksites. As of September 12, 2001, the number of restaurants that met the definition of a smoke-free worksite had increased to 151 (74 percent).

Conclusions: Although statutory requirement may be preferable, campaigns of voluntary action can significantly decrease the number of sites where individuals are exposed to environmental tobacco smoke.

A12 Use of Tailored Health-Related Information Based on Stage of Change for Diet and Exercise in an Intervention To Reduce Cholesterol Levels in Patients With Cardiovascular Disease

Robert L. Crocker, WellPoint Health Networks, Maureen L. Mangotich, Jennifer S. Pitts

Background: Love Your Heart (LYH) is an innovative 12-month cardiovascular disease (CVD) secondary prevention program. Program goals include improvement in health behaviors and reduction in cholesterol levels for participants with high initial values. Program participants are stratified using the stage of change component of Prochaska's transtheoretical model, and cardiac nurses provide stage-appropriate telephonic counseling to high-risk individuals. Participants with lower clinical risk are mailed stage-appropriate information about healthy behaviors.

Methods: Members with CVD (n = 4,103) were surveyed prior to the implementation of the program, and they were surveyed 6 months and 12 months following program enrollment. Patient-reported laboratory values and information on stage of change for diet and exercise were collected. Responses were received from 36.5 percent of the members surveyed (n = 1,415), and 60.4 percent (n = 649) of the 1,074 members still enrolled after 6 months completed the second survey. Responses from the 12-month survey are pending.

Results: Participants with high cholesterol at baseline (> 200 mg/dL) experienced an 18.3 mg/dL average decrease in total cholesterol values after 6 months of program enrollment (from 222.8 to 204.5 mg/dL, p = 0.001). The strongest clinical changes were seen in the patients most motivated to change their health behaviors. By the time of the conference, these findings will have been updated to include 12-month, stage-specific cholesterol and health behavior outcomes. Details of the stage-specific interventions will also be discussed.

Conclusions: After 6 months, significant improvements were seen in the areas targeted by the LYH program for the subgroup of patients receiving telephonic counseling, so there is great potential for continuing improvements after 12 months.

A12 A Personalized Arterial Image Promotes a Heart-Healthy Lifestyle in Teenagers

Jacques D. Barth, Southern California Prevention and Research Center, Albert Sanchez, Maud M. Zonjee, Lingyan Zhang

Purpose: The purpose of this research was to study the impact of a personalized image of an artery on 13- to 17-year-old students of different ethnic backgrounds.

Methods: A Caucasian public- (n = 94), a Latino- (n = 118) and a private, health-conscious Adventist Academy (n = 33) were studied. A lipid profile, a dietary assessment, and a sonographic personalized image were provided. (Average student age, 15.3 years).

Results: The carotid intima media thickness (CIMT) as cardiovascular surrogate was significantly thicker in both Caucasian schools. The Latino school's CIMT was thinner average 522 microns versus 538 microns, though blood sugar levels (> 100 mg/dL) 8 percent, low HDL (< 40 mg/dL) 18 percent, and BMI (> 30 kg/m^2), 53 percent, were significantly higher.

Conclusions: In all three schools, a personalized picture changed dramatically the level of cardiovascular risk factors and adherence to a healthy lifestyle. Adult Latinos have a CIMT comparable to Caucasians. It may be inferred that diabetes prevention (prevalent among Latinos), in particular, may be prevented by a healthy lifestyle and should be pursued by the acceptable, noninvasive, low-cost method of a personalized picture using CIMT. In all three schools, young adults tended to accept their personal responsibility for a healthy artery. All three schools increased their physical activity status, ate significantly less junk food, and smoked less after 12 months ($p < 0.01$) assessment. The CIMT was well received by the students. Providing this tool on a broader scale may prevent cardiovascular risk factors to develop in symptomatic disease and may prevent, in particular in Latinos, the susceptibility for diabetes and cardiovascular complications to prevail. After all, a picture tells a thousand words.

A12 Smoke-Free Environment Policies in the Commonwealth of Virginia Among Worksites Employing 50 or More Workers: A Statewide Analysis

Mitchell A. Housenick, Virginia Polytechnic Institute and State University, Charles R. Baffi, Ph.D., Kerry Redican, Shirley Morgan

Objectives: This study assesses the prevalence of smoke-free environment policies in the Commonwealth of Virginia at worksites employing 50 or more workers.

Methods: Telephone surveys were conducted with 340 worksites drawn from a stratified random sample of 5 health regions. Differences between health regions were investigated based on policy development, implementation, and enforcement; unionized employees; policy effectiveness; and worksite information scales.

Results: Of the worksites reporting a smoke-free environment policy, 62 (37 percent) reported a decline in health care costs, 44 (26 percent) a decline in employee sick days, and 68 (40 percent) an increase in employee productivity. The northwest health region reported the highest prevalence (95 percent), as compared to the southwest health region reporting the lowest prevalence (36 percent). Ninety-eight (29 percent) of the participating worksites reported offering smoking cessation activities and resources to their employees.

Conclusion: Only 50 percent of the worksites in our sample reported a smoke-free environment policy, significantly below the estimated 75 percent by the Tobacco Use Control Program of the Virginia Department of Health and the national trend of approximately 80 percent. To increase the prevalence of smoke-free environment worksites, health promotion programs targeting policy development and enforcement, smoking cessation interventions, and educational campaigns must be developed and disseminated.

Saturday April 13, 2002
9:00 a.m.–10:00 a.m.

4 Why Does Blood Pressure Rise With Age, and Why Does This Matter?

Joseph L. Izzo, Jr., M.D., School of Medicine and Biomedical Sciences, State University of New York at Buffalo

A large amount of evidence exists in cohort studies, clinical trials, and basic studies that systolic rather than diastolic blood pressure (BP) is the principal public health concern in the syndrome of hypertension. The need for a paradigm shift from diastolic to systolic hypertension was articulated by the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC) in a May 2000 clinical advisory statement, which stated that systolic BP should become the major criterion for the diagnosis, staging, and therapeutic management of hypertension, particularly in middle-aged and older Americans.

The pathophysiology of systolic hypertension is related principally to age-related stiffening of the aorta and large "conduit" arteries. Stiff conduit arteries are the result of a degenerative process that includes increased elastin degradation and increased collagen deposition. Arterial stiffening results from the wear-and-tear caused by excessive pulsatile stress (wide pulse pressure) and may also be exacerbated by humoral influences, including inappropriate activation of the renin-angiotensin-aldosterone system, which increases BP and favors increased vascular collagen deposition and smooth muscle cell hypertrophy. Two principal hemodynamic mechanisms explain why pulse pressure increases with age: lack of aortic distensibility, which leads directly to higher systolic and lower diastolic pressures, and increased velocity of pulse wave

transmission in stiff arteries, which causes late systolic pressure augmentation by reflected pulse waves.

From an epidemiological perspective, data from the Framingham Heart Study and the Multiple Risk Factor Intervention Trial Follow-up Study have demonstrated that increased risk of coronary heart disease mortality is associated with *increased* systolic and *decreased* diastolic BP, each of which are independent risk predictors. Systolic BP is also more precise than diastolic in the prediction of risk of end-stage renal disease. Systolic hypertension is far more common than diastolic hypertension. In the Framingham population of hypertensives, about 1/6 continue to have diastolic BP values above 90 mmHg, whereas 2/3 have continuing systolic BP values above 140 mmHg.

The greater prevalence of systolic hypertension has a substantial effect on the classification and management of the hypertension population. JNC VI recommended that hypertension be managed according to the BP stage and that the higher category (systolic or diastolic hypertension) should define the stage for a given individual. Using the standard cutoff of 140/90 mmHg, systolic BP alone correctly directs therapy in over 95 percent of hypertensives, whereas diastolic BP alone correctly directs therapy about 68 percent of the time. Hypertension control rates are poorest in people over the age of 60, primarily as a result of inadequate systolic BP control. A major challenge remains in convincing practitioners and patients that systolic hypertension must be managed more aggressively with combination therapy to reach appropriate targets: 140/90 mmHg or less in uncomplicated individuals, 130/85 mmHg or less in diabetics, or 125/75 mmHg or less in patients with renal disease.

4 High Blood Pressure and Older People—What Matters

Norman M. Kaplan, M.D., University of Texas Southwestern Medical Center

As delineated in the initial part of this presentation, most people over age 60 are hypertensive, the majority having isolated systolic hypertension (ISH). Since ISH largely reflects atherosclerotic rigidity, it serves as a primary indicator of the risk for cardiovascular disease, in particular stroke.

Fortunately, multiple randomized placebo-controlled trials have documented major protection from stroke, congestive heart failure, and coronary disease by antihypertensive therapy in this vulnerable population. Diuretics and dihydropyridine calcium channel blockers have been the primary drugs in these trials. Most recently, the combination of an angiotensin converting enzyme inhibitor with a diuretic has been shown to protect against recurrent stroke. Additional data of comparative trials, in particular, ALLHAT, will further delineate the most effective drug therapy for hypertension in the elderly. Most likely the forms of therapy will be less critical than the reduction of blood pressure they provide. In addition, appropriate lifestyle changes, in particular regular physical activity and a moderate reduction of sodium intake, should be encouraged both to reduce blood pressure and to improve overall cardiovascular risk.

16 The Benefit of Prevention Through Prodromal Symptom Recognition in Patients With Acute Coronary Syndrome

Raymond D. Bahr, M.D., F.A.C.P., F.A.C.C, The Paul Dudley White Coronary Care System, Saint Agnes Hospital

There are two kinds of heart attacks. Heart attacks are known to present abruptly (50%) or intermittently (50%). The onset of heart damage in patients presenting with the abrupt form is easily recognized, and prognosis is related to the time it takes to reperfuse the occluded coronary vessel.

However, in patients with the intermittent onset, the prognosis in many cases is variable. When the intermittent chest symptoms become more painful and prolonged, the onset of the occlusion is thought to take place. These intermittent chest symptoms are associated with improved outcomes that are not always related to a reduction in time to treatment.

Furthermore, these prodromal chest symptoms may occur for hours to days prior to the acute myocardial infarction. Thus, this represents a golden opportunity for early intervention that may abort the threatening MI. Since this occurs in approximately 50% of patients with acute MI, early intervention may significantly reduce heart attack deaths in the United States.

This strategy to utilize prodromal symptom recognition is emerging from the progress that is being made with developing Chest Pain Centers (CPC) throughout the United States (1,500 CPCs). Observational service in these centers has been shown to reduce inappropriate hospital admissions by 80%, thereby opening the door to the community through an awareness program targeted at patients with these intermittent chest symptoms.

This specific awareness program has been given the name EHAC (Early Heart Attack Care) and is currently being promoted by Chest Pain Centers in the United States. This approach is expected to grow even more in the next year or so because of CMS' (HCFA) decision to reimburse observational services in CPCs as a cost-effective way to sort out patients with acute coronary syndrome. Thus, recognition and early treatment of patients with prodromal chest symptoms may turn out to be the "Rosetta Stone" of the heart attack hieroglyphic problem.

16 Prodromal Symptoms of Myocardial Infarction: Comparing Differences in Black and White Women

Jean C. McSweeney, Ph.D., R.N., F.A.H.A., University of Arkansas for Medical Sciences

Significance: Despite decades of research, cardiovascular disease remains the number one cause of death in men and women. One reason it has retained this ranking is

due to failure to recognize and treat prodromal symptoms of coronary heart disease. Prodromal symptoms are especially important to identify in women since they experience both higher morbidity and disability than men do and are more likely than men to die in the year after a myocardial infarction.

Purpose: The purpose of this study was to describe black and white women's most frequent prodromal symptoms associated with their MI.

Research Questions: (a) What are women's most frequently reported prodromal symptoms of MI? (b) Is there a difference in prodromal symptoms reported by black and white women? I conducted telephone interviews with women recruited from 12 sites nationwide 4–6 months after the MI using the McSweeney Acute and Prodromal Myocardial Infarction Symptom Survey. This instrument has a test-retest reliability of 0.84 ($p < 0.01$).

Results: The sample consisted of 647 women (72.3% White and 28% Black). Their ages ranged from 31–93, with a mean of 67 (SD = 12.14). One-third had less than a high school education. The median income was between $20,000 and $29,999. The most frequently reported prodromal symptoms were fatigue, shortness of breath, indigestion, and feeling anxious. Fatigue was the most frequently reported symptom by both black and white women. There was a statistically significant difference in 14 of the 33 prodromal symptoms reported by black and white women using a chi square test and alpha level of < 0.05.

25 Changing Practice/Changing Lives: Bureau of Primary Health Care Health Centers and the Cardiovascular Collaborative

Tricia L. Trinité, N.P., M.P.H., Bureau of Primary Health Care, Health Resources and Services Administration

Improving health outcomes for people with chronic illness requires changing primary care practices from a reactive mode that meets the immediate needs of patients as they seek help for acute problems to a prepared, proactive model of care that is patient centered. In 1999, the Bureau of Primary Health Care (BPHC) embarked on an innovative project to implement a chronic care model, in partnership with the Centers for Disease Control and Prevention and the Institute for Healthcare Improvement, in BPHC-supported clinics that provide primary care services to 10 million medically underserved people across the United States. Thirty-four BPHC-supported health centers currently participate in a yearlong learning collaborative and share a goal to delay or decrease the complications of cardiovascular disease. The Cardiovascular Collaborative is focused on the adoption of heart-healthy lifestyles, clinical control of high blood pressure, and compliance with secondary prevention guidelines in patients who already have disease. Health centers measure their progress toward improvement using nationally shared measures. More than 4,700 persons are currently entered in a cardiovascular information system that provides timely information to improve the care of individuals, in addition to reporting on the status of the population of patients with cardiovascular disease. 70% of more than 4,700 patients with cardiovascular disease have had at least two blood pressure checks in the last 12 months; the percent of patients with controlled blood pressure are higher than the national norm. Community level partnerships have been developed to support the efforts of patients to manage their health.

Learning Objectives:

1. Participants can describe the six elements of the chronic care model and the role of the improvement and learning model to generate positive change in practice.
2. Participants can name two of the three major elements that the BPHC used to establish external partnerships.
3. Participants can describe an approach to create a clinical primary care/public health partnership among the CDC, state cardiovascular programs and health centers.

34 Cardiovascular Disease and Women: Reducing Disparities, Increasing Awareness, Making the Move to Better Health

Ann M. Taubenheim, Ph.D., M.S.N., National Heart, Lung, and Blood Institute, National Institutes of Health

Despite the fact that cardiovascular disease (CVD) is the leading cause of death and illness in American women, most women are more concerned about developing breast cancer. They are not aware that heart attacks kill more than twice as many women as breast cancer. American women need an urgent wake-up call to overcome the widespread misconception that heart disease is primarily a man's disease. Moreover, there is a critical need to educate physicians about the importance of assessing all female patients for the major risk factors of CVD and counseling these patients about preventing or controlling risk factors.

The NHLBI has launched a new initiative to develop a national public awareness and outreach campaign targeted to women aged 40 to 60 to convey the message that heart disease is the number one killer of American women. The goal of this campaign is to "put a face on heart disease." It will seek to increase awareness and dispel misinformation, reach minority women, motivate national and community organizations to implement education initiatives that reach women where they live, shop, pray, and work, and improve the way health professionals detect and treat risk factors by helping them make better use of existing scientific and clinical information.

38 NHLBI's CVD Enhanced Dissemination and Utilization Centers: Taking Root in High-Risk Communities

Robinson Fulwood, Ph.D., M.S.P.H., National Heart, Lung, and Blood Institute, National Institutes of Health

Heart disease and stroke are the first and third leading causes of death for Americans. A recent examination of

the trends in cardiovascular disease (CVD) and associated risk factors showed that there is tremendous geographic variation in heart disease and stroke death rates and that certain racial/ethnic minority groups are disproportionately affected. In addition, data indicate that the decline in coronary heart disease (CHD) mortality appears to be slowing and that the decline in the stroke mortality rate appears to be leveling off. Furthermore, less than optimal control of high blood pressure (particularly in older Americans), recent increases in teenage smoking, and high levels of physical inactivity, coupled with high prevalence of overweight/obesity are causes for great concern and warrant immediate action. Because of these problems, the National Heart, Lung, and Blood Institute (NHLBI) has established a network of CVD Enhanced Dissemination and Utilization Centers (EDUCs) across the United States. The purpose of the EDUCs is to enhance the dissemination and utilization of science-based information to prevent and control CVD in high-risk communities. Each EDUC is implementing well-defined, focused, theory-based education intervention strategies to inform their high-risk communities of the public health burden of CVD. The EDUC initiative is part of NHLBI's continuing effort to address the two overarching goals of Healthy People 2010. This presentation will do the following:

- Describe the rationale for developing the EDUC program
- Outline the specific tenets of an EDUC
- Describe the specific strategies being employed and populations addressed
- Discuss initial results and specific evaluation techniques being used to determine success
- Share future directions of the EDUC program

38 The REACH 2010 Demonstration Program: Community-Driven Approaches To Eliminate the Burden of Cardiovascular Diseases Among Racial and Ethnic Populations

Imani Ma'at, Ed. D., National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention

Based on the epidemiology and overwhelming body of evidence that describes the disproportionate impact of cardiovascular disease (CVD) on communities of color, CVD is among the six health priority areas of the Federal Initiative to Eliminate Racial and Ethnic Health Disparities. The remaining five health priority areas in which racial and ethnic minorities experience serious disparities include infant mortality, deficits in breast and cervical cancer screening and management, diabetes, HIV infections, and child and adult immunizations. In response to the Federal initiative, the Centers for Disease Control and Prevention is now in the third year of a 5-year demonstration project entitled the Racial and Ethnic Approaches to Community Health (REACH 2010) Demonstration Program. Demonstration projects are two-phase projects whose purpose is for communities to mobilize and organize their resources in support of effective and sustainable programs that will generate strategies to eliminate the health disparities of racial and ethnic minorities. These demonstrations feature collaboration of both program and research experts, for the purpose of identifying and/or developing successful community-based disease prevention and health promotion models that can be broadly replicated. They also include traditional and nontraditional public health partners, ranging from health departments, community-based organizations, schools, health clinics, faith organizations, universities, and others, in order to develop unique community-driven strategies for eliminating health disparities. Also unique about this demonstration program is the funding amounts that are being allocated. For the implementation of their projects, coalitions, through a lead agency, are awarded approximately $1 million per year for 4 years.

Communities had an opportunity to select the one or more health issues to address through their REACH 2010 Project. A disproportionate number of communities (14/33) selected CVD or combined CVD and or diabetes as the most critical issues. This presentation will provide an overview of the REACH 2010 Demonstration Program and provide highlights of accomplishments of select CVD projects. Also highlighted will be the use by communities of the REACH 2010 evaluation logic model, which includes opportunities to document change in five areas: capacity building, development of a target action plan, systems change and change among change agents, change in the areas of risk and protective behaviors, and change in health disparities as captured by change in morbidity and mortality.

51 CVD in Native Americans: Reservations and Potentials

James M. Galloway, M.D., F.A.C.P., F.A.C.C., Native American Cardiology Program, Indian Health Services

While the mortality rate for cardiovascular disease (CVD) in the general U.S. population has declined by more than 50% since the mid-1960s, incidence rates in Native American populations have, unfortunately, increased remarkably during this period. Recent studies of the incidence of coronary artery disease have demonstrated a marked and concerning upward trend with rates now almost double that of the general U.S. population.

The prevalence of many of the classic risk factors for CVD have likewise been noted to be increasing and appear responsible for this worrisome trend in CVD. Clearly, a number of recent reports have noted a significant increase in the prevalence of hypertension. Tobacco use among Native Americans, especially in the teen years, appears to be increasing. As obesity becomes more prevalent, the presence of the "insulin resistance syndrome," currently referred to as the "metabolic syndrome," is increasing and fuels the current epidemic of diabetes among Native Americans. This epidemic of diabetes, in turn, adds another powerful CVD risk factor. Diabetes appears to be the major risk factor contributing to the rapidly rising rates of CVD in Native Americans.

In this session, we will discuss the issues related to the rise of CVD among American Indians and how to focus efforts on primary, secondary, and tertiary prevention among Indian communities.

A5 Enhancing Public Health Capacity for Heart Health Programs in Canada

Kerry L. Robinson, M.A., McMaster University, Murray S. McKay, M.A., Dexter Harvey, Susan Elliott, Jennifer O'Loughlin

There is a dearth of research on capacity building for and dissemination of evidence-based approaches to community-based heart health promotion within public health systems. The Canadian Heart Health Dissemination Project (CHHDP) and the Heart Health Indicators Project (HHIP) are two Canadian research projects working in collaboration to advance our understanding of dissemination research and capacity building, in order to strengthen heart disease prevention programming across Canada's public health systems. These projects are working collaboratively with the provincial projects within the Canadian Heart Health Initiative (CHHI) to develop a set of core indicators (measures) for and to assess the development of heart health infrastructure, policy, partnerships, communication, practices, and programming within public health organizations. This presentation will report findings from an analysis of a subset of provinces within the CHHI dissemination phase. Key strategies and activities used to build public health infrastructure and capacity for heart health promotion will be presented, along with evidence of resulting outputs and impacts on the heart health knowledge, skills, practices, and programming of public health organizations. The challenges and future directions of this research will be discussed.

A5 Beginning a New Conversation With Consumers: Creating Messages That Work

Michael Shirreffs, International Food Information Council

Purpose: Nutrition communications are key to all health professionals' success in motivating healthy eating and change in physical activity behavior. Marketing models used to sell tangible "product" can also be applied to food, nutrition, and physical activity "product."

Setting: Sometimes the path of nutrition communications follows a one-way street—messages reach the consumer, but do we know how, or even if, these communications have impact?

Interventions: Advertisers and marketers often use a five-step process to obtain consumer input about a potential product or campaign. The International Food Information Council utilized a marketing tool to develop message concepts on dietary fats and sweet foods.

Outcomes: Through a series of consumer focus groups, creative message development, and qualitative validations, several basic message concepts that resonate with consumers were developed.

Conclusions: Knowing what consumers are thinking and feeling about their food choices, why they make the decisions that they do, and how they respond to nutrition messages are essential to successfully communicating and motivating behavior. In other words, a dialogue to talk with consumers, rather than at them, should be established.

Learning Objectives: Participants will:

1. Understand the importance of consumer-focused food and nutrition messages/communications
2. Gain insight into consumers' emotional and behavioral reactions to traditional messages versus reactions to new messages
3. Create and communicate more effective and meaningful nutrition messages for their specific target audience(s)

A5 Operation Stroke Atlanta, 2001

Judith Kay Griffith, State of Georgia Division of Public Health

Purpose: Operation Stroke Atlanta is a community campaign that features several components, such as public awareness, partnerships, emergency and medical services, and rehabilitation support.

Methods: Specific components of this initiative will be discussed, including House Resolution #183, public service announcements (PSA) for stroke warning signs, and Stop Stroke Saturday, featuring multiple sites for comprehensive stroke screenings. Professional education will be a part of this presentation, with an emphasis on state-of-the-art emergency and clinical procedures plus systems change for efficient treatment. Programs such as the 2001 American Stroke Association (ASA) Symposium and the Emergency Medical Technicians' training for emergent care of victims of stroke are examples to be reviewed.

Results: Stop Stroke Saturday—16 medical center sites serving 705 adults (increase of 86 percent compared to 2000). The PSA in May featuring warning signs of stroke reached 500,000 listeners in Georgia. Throughout the year, 8 million impressions were made through television, radio and print interviews, news features, and announcements on the subject of stroke. At the ASA professional symposium, 280 clinicians attended to learn the current emergency and clinical treatment of patients suffering brain attacks. The Atlanta Peer Visitor Program of ASA will be highlighted to demonstrate the benefits of this support group for stroke victims. Nine Metro Atlanta medical centers offer this service through approximately 70 trained lay volunteers.

Conclusion: Operation Stroke Atlanta has made a significant impact on public awareness of stroke warning symptoms and has improved clinical services in the 22 county metropolitan area.

A6 Centers for Disease Control and Prevention's Cardiovascular Health Program: Building Capacity To Achieve Cardiovascular Health for All

Lazette Lawton, M.S., C.H.E.S., Centers for Disease Control and Prevention, Nancy Watkins, M.P.H.

An overview will be provided of the Centers for Disease Control and Prevention's (CDC's) national, State-based Cardiovascular Health Program, as an essential strategy to achieve cardiovascular health (CVH) for all as set forth in Healthy People 2010.

Recognizing the immense burden of cardiovascular diseases (CVDs), Congress made funding available to CDC in 1998 to initiate a national, State-based CVD prevention and control program. Support initially went to eight of the States with the highest CVD burden. Currently, CDC funds 28 State Cardiovascular Health Programs. Most States are funded to conduct planning activities that build capacity, while six States are funded to implement prevention and control interventions. The focus of State CVH Program efforts is developing the capacity to define the CVD burden within the State; developing partnerships that include organizations traditionally uninvolved with public health efforts; identifying population-based strategies for primary and secondary prevention of CVD, with an emphasis on policy and environmental changes at the State level and in major settings (e.g., community, worksite, health care, school); developing a comprehensive State plan to reduce CVD, to promote CVH in the general population, and to reduce health disparities among priority populations; evaluating and monitoring secondary prevention efforts; and raising awareness about CVH, CVD, related risk factors, first signs and symptoms of heart attack and stroke, and the need for policy and environmental strategies. State capacity is being strengthened by CDC's leadership in creating a national vision and evaluation framework, forming strategic partnerships internally and with other Federal and national organizations, developing a sound foundation of prevention science, developing tools and training programs, and integrating State input into program design.

Building State capacity, including strong partnerships with a variety of organizations, is a major CDC strategy to achieve CVH for all as envisioned in Healthy People 2010.

A6 Virginia's Cardiovascular Health Program: Building Capacity To Achieve Cardiovascular Health for All

Jody Lynne Stones, M.Ed., Cardiovascular Health Project, Virginia Department of Health

Purpose: The purpose of this presentation is to highlight Virginia's strategies to achieve cardiovascular health (CVH) for all as set forth in Healthy People 2010.

Methods/Results: Recognizing the immense burden of cardiovascular diseases (CVD), Congress made funding available to the Centers for Disease Control and Prevention (CDC) in 1998 to initiate a national, State-based CVD prevention and control program. Virginia Department of Health was funded for capacity building in 1999 and moved to a comprehensively funded state in 2001. Virginia fulfilled the capacity-building criteria and has learned many valuable lessons pertaining to planning activities, which build capacity and implementing prevention and control interventions. This presentation will focus on Virginia's experience in defining the CVD burden within the State; developing partnerships that include organizations traditionally uninvolved with public health efforts; identifying population-based strategies for the primary and secondary prevention of CVD, with an emphasis on policy and environmental changes at the State level and in major settings (e.g., community, worksite, health care, school, and faith organizations); developing a State plan and a "Call to Action" plan to accompany the original document, which promotes CVH in the general population and focuses on the reduction of health disparities among priority populations; evaluating and monitoring secondary prevention efforts; and raising awareness about CVH, CVD, and related risk factors, first signs and symptoms of heart attack and stroke, and the need for policy and environmental strategies.

Conclusions: Building Virginia's capacity, including strong partnerships with a variety of organizations, is a major strategy to achieve CVH for all as envisioned in Healthy People 2010.

A11 Compliance With National Recommendations for Dietary Intake of Fruits, Vegetables, and Fat in the Community: Results From Olmsted County, Minnesota

Randal J. Thomas, M.D., Mayo Clinic and Foundation, Stephen W. DeBoer, Thomas E. Kottke, M.D., M.S.P.H., Lee Brekke

Context: National dietary guidelines recommend the intake of at least five fruits and/or vegetables per day and less than 30 percent of daily caloric intake from fat. It is unclear how many individuals in the community are meeting both of these recommendations.

Objective: The purpose of this study was to assess self-reported compliance with national recommendations for the intake of fruits and vegetables and of dietary fats in the adult population.

Design: Random digit dial telephone survey, March 1–April 21, 1999

Setting: Olmsted County, MN

Participants: 732 adults

Main Outcome Measures: Percentage of individuals and predictors of those who meet recommendations for intake of fruits, vegetables, and dietary fat.

Results: Only 15 percent of the adult population of Olmsted County reported meeting national recommendations to consume five or more fruits and/or vegetables

per day and < 30 percent of calories from fat. Fifty-one percent of the population is meeting neither goal. Women were more likely than men to report meeting both goals (22 percent versus 8 percent, p < 0.0001), but still more women were meeting neither goal than were meeting both goals (40 percent versus 22 percent, p). Multivariate logistic regression revealed the following factors to predict compliance with both dietary goals: female gender, older age, and daily physical activity.

Conclusions: Only a small minority of individuals in the community are simultaneously meeting national recommendations for intake of fruits, vegetables, and dietary fat. More effective public health methods are needed to help improve the dietary habits in all subgroups of the adult population.

A11 Dietary Patterns and the Development of Overweight Among Women: The Framingham Nutrition Studies

Paula Ann Quatromoni, Boston University School of Public Health

Understanding dietary predictors of overweight is of national public health concern in light of the obesity epidemic. We prospectively investigated relationships between dietary patterns and the development of overweight among women in the Framingham Offspring Study. Dietary patterns were characterized in 1,828 women by applying cluster analysis to data from a semi-quantitative food frequency questionnaire. Five dietary clusters emerged: Heart Healthy, Light Eating, Wine and Moderate Eating, High Fat, and Empty Calorie patterns. Clusters of women differed in terms of food group consumption, nutrient intake, and risk factor profiles. Women who were lean at baseline (body mass index [BMI] < 24) were followed over 12 years for the development of overweight (BMI > 25). The incidence of overweight ranged from 22 percent of women in the Wine and Moderate Eating cluster to 41 percent of those in the Empty Calorie cluster. Compared with women who ate a lower fat, nutritionally varied Heart Healthy diet, women who ate an Empty Calorie diet that was rich in sweets and fats with fewer servings of fruits, vegetables, and lean food choices were at increased risk for becoming overweight (RR 1.4, 95 percent CI [0.9, 2.2]) after adjusting for multiple covariates. Behavioral interventions for weight management and obesity prevention need to creatively address differences in eating patterns and dietary quality among population subgroups.

A11 Prevalence of Healthy Lifestyles in the United States Based on Data From the Behavioral Risk Factor Surveillance System 2000

Mathew John Reeves, Michigan State University, Ann P. Rafferty

Purpose: Recent epidemiologic studies have demonstrated that following a healthy lifestyle can substantially reduce the risk of cardiovascular disease. We used national data to determine the prevalence of healthy lifestyles and to identify demographic predictors.

Methods: Data were obtained from the 2000 U.S. Behavioral Risk Factor Surveillance System (BRFSS), which consists of state-level, random-digit-dialed household telephone surveys conducted nationwide. Using data from more than 150,000 adults, we estimated the prevalence of a combination of four healthy lifestyle characteristics (HLCs) (defined as not smoking, healthy weight [18.5 < body mass index < 25], consuming 5 fruit and vegetables a day, and regular physical activity [≥ 30 minutes, ≥ 5 times/week]). Logistic regression analysis was used to identify the demographic predictors of reporting all four HLCs.

Results: Only 3.0 percent (95 percent confidence interval [CI] = 2.9–3.1 percent) of adults reported all four HLCs, and no demographic subgroup reported a prevalence greater than 5 percent. Statistically significant predictors of all four HLCs were age, gender, race, and education. The prevalence of all four HLCs was highest among persons aged 65–74 years (4.0 percent) and lowest in 35- to 44-year-olds (2.5 percent). Women were more likely than men to report all four HLCs (OR = 2.5 [95 percent CI = 2.2–2.8]), and Blacks were less likely than whites to report all four HLCs (OR = 0.61 [95 percent CI = 0.47–0.78]). College graduates were four times (OR = 4.0 [95 percent CI = 2.8–5.6]) more likely than persons without high school education to report all four HLCs.

Conclusions: These data confirm that a combination of relatively simple modifiable health characteristics are undertaken by a very small minority of the adult population.

A11 Participation in "Walk & Win," a Community Physical Activity Contest in Olmsted County, Minnesota

Thomas E. Kottke, M.D., M.S.P.H., Mayo Clinic and Foundation, Mark James Brekke, Rebecca S. Hoffman, B.A.

Purpose: CardioVision 2020 is a multidisciplinary project organized in 1999 by the Mayo Clinic Division of Cardiovascular Diseases. The project goal is to minimize the population burden of cardiovascular disease for Olmsted County, MN (which has a population of approximately 114,000), by promoting (1) a tobacco-free environment, (2) sound nutritional habits, (3) a physically active lifestyle, (4) control of blood pressure, and (5) control of serum cholesterol. To address the growing sedentary lifestyle trend, CardioVision 2020 designed "Walk & Win," a community contest encouraging daily physical activity, and tested whether county residents would participate in both 2000 and 2001.

Methods: Recruitment of Olmsted County, Minnesota residents was done through the distribution of flyers at businesses ("community sponsors") and through individual contact at festivals. Contestants received a walking tips booklet for entering. For each of the 12 contest

weeks, contestants were encouraged to be physically active for 30 minutes on at least 5 days, recorded their activity on a scorecard, and dropped the scorecard off at a community sponsor. At the end of the contest, the $500 grand prize winner was randomly drawn from the scorecards and was honored at a media-covered, public celebration.

Results: In 2000, 8 community sponsors and 1,111 Olmsted County residents participated in Walk & Win. In 2001, there were 30 sponsors and 1,050 participants. The contest received broad media attention both years.

Conclusions: The results indicate that community individuals, businesses, and media will participate in the Walk & Win contest and that participation does not decline in a second contest 1 year later.

A4 Effect of Different Doses of Pravastatin on Blood Pressure Control and the Forearm Hemodynamic in Hypercholesterolemic Patients With Borderline Hypertension

Claudio Borghi, Department of Internal Medicine, University of Bologna, St. Orsola Hospital

Objective: The objective of this study was to compare low-sodium diet and statin therapy on resting/stimulated blood pressure (BP), forearm hemodynamic, and lipid profile in borderline hypertension (BHT).

Methods: In 19 BHT subjects (average office BP 145/88 mmHg), we measured office and 24-hour BP, forearm blood flow (FBF), and vascular resistance (FVR) by venous plethysmography, BP response to mental arithmetic (MA) and handgrip (HG), and serum lipids at baseline (B), 4 weeks after beginning a low-sodium diet (LS, 75 mmol/day), and 8 weeks after beginning pravastatin (20 or 40 mg/day).

Results: Pravastatin reduced both systolic and diastolic BP, compared to B and LS (average 24-hour BP: B 137/88, LS 136/88, pravastatin 131/82 mmHg; $p < 0.001$ pravastatin versus B, LS). The average 24-hour BP reduction was enhanced in patients treated with a high pravastatin dose. Pravastatin blunted the pressor response to MA and HG, increased FBF (B 3.4, LS 4.1, pravastatin 5.1 mL/min/100 mL; $p < 0.01$ versus LS), and reduced FVR (B 29, LS 23, pravastatin 19 units; $p < 0.01$ versus LS). Again, changes were enhanced with pravastatin 40 mg/day. Total and HDL cholesterol were reduced by pravastatin, even whether the changes were only weakly related to BP modification both at rest and after stress.

Conclusions: This study showed that pravastatin improved BP control in borderline hypertension, both at rest and in response to a stressful situation, and increased peripheral vasodilatation that could contribute to BP control. The effects of pravastatin seem to be dose-related and only weakly related to cholesterol changes, suggesting a direct effect of pravastatin on peripheral vascular tone.

A4 Health Education and Risk Reduction Training Program: A Nurse Care-Managed Model for the Prevention of Heart Attack and Stroke

William L. Haskell, Stanford University School of Medicine

Purpose: The Health Education and Risk Reduction Training (HEARRT) Program was undertaken to evaluate the feasibility and effectiveness of a care-managed multiple risk reduction program (MRRP) in diverse clinical settings (two worksites and one individual practice association).

Methods: Participants classified at higher risk for cardiovascular disease (CVD) based on a multifactor self-report cardiovascular risk assessment (CRA) were invited to a CVD clinic screen. The CRA obtained data on family history of CVD, personal history of CVD, hypertension, hypercholesterolemia, diabetes, body mass index, smoking, nutrition, physical activity, and stress. Those considered at highest risk were eligible for MRRP consisting of counseling by a specially trained nurse and dietitian and referral to their personal physician for medical management. For each risk factor, a participant was classified as being at low, increased, high, or very high risk. Evaluations were performed at baseline and 1 year.

Results: A total of 3,956 participants completed the CRA, with 1,179 (29.8 percent) invited to and completing the clinic screen. Of these, 820 (69.6 percent) participants entered the MRRP program, of which 740 (90.2 percent) completed the 1-year MRRP evaluation. There were significant reductions from baseline to 1 year in the number of participants in the high and very high-risk categories: LDL-C from 32.6 percent to 16.6 percent, SBP from 39.0 percent to 21.2 percent, DBP from 28.1 percent to 11.1 percent, physical activity from 35.1 percent to 28 percent, and nutrition from 26.6 percent to 16.1 percent.

Conclusions: A 1-year, care-managed program is a valuable model for achieving significant CVD risk reduction in a variety of clinical settings.

A4 Sleep-Disordered Breathing and Cardiovascular Disease in a Community-Based Sample

F. Javier Nieto, M.D., Ph.D., Department of Population Health Sciences, University of Wisconsin - Madison

Sleep-disordered breathing (SDB) and sleep apnea, prevalent conditions in adults, have been linked to hypertension and cardiovascular disease (CVD) in previous studies, although most of these studies used surrogate information to define SDB (e.g., snoring) and/or were based on patient populations. These associations were investigated in cross-sectional analyses among participants in the Sleep Heart Health Study (SHHS), a multicenter, community-based study ($n = 6,440$; age ≥ 40 years; 52.8 percent female). The apnea-hypopnea index (AHI, average number of apneas plus hypopneas per hour of sleep) was obtained by unattended home polysomnography. The

dependent variables were CVD (history of myocardial infarction, angina, coronary revascularization, heart failure, or stroke) and hypertension (blood pressure ≥ 140/90 mmHg or antihypertensive medications). In multivariate analyses controlling for age, gender, BMI, and other CVD risk factors, the odds of CVD and hypertension in individuals with SDB (AHI greater than 15 or 30/hr) were about 35 percent to 40 percent higher than in those with no evidence of SDB (AHI < 1.5/hr). These associations were generally consistent in subgroup analyses and when another measure of SDB (percent time below 90 percent O_2 saturation) was used. These findings are compatible with modest-to-moderate independent effects of SDB on CVD and hypertension, even within ranges of AHI values that are considered normal or mildly elevated in a sample of the general population.

A4 Comparison of Systolic and Pulse Pressure as Predictors of Cardiovascular Disease and All-Cause Mortality

Yiling J. Cheng, M.D., Ph.D., The Cooper Institute, Timothy S. Church, M.D., Ph.D., James B. Kampert, Ph.D., Steven N. Blair, P.E.D.

While elevated systolic blood pressure (SBP) is a well-known risk factor for cardiovascular disease (CVD), the role of pulse pressure (PP) as a CVD risk factor remains largely unexplored. Further, no reports have controlled for physical fitness (PF: maximal treadmill time). In the Aerobics Center Longitudinal Study, 25,652 normotensive men and 8,501 hypertensive men were examined. During followup (mean, 13 years), there were 1,491 deaths (578 from CVD). In normotensive men, the CVD mortality hazard ratio (HR) per 1 SD increase in SBP or PP was 1.37 ($p < 0.001$) or 1.20 ($p = 0.01$), respectively, after adjustment for age, PF, body mass index, total cholesterol, smoking, alcohol consumption, and diabetes. In hypertensive men, the corresponding HRs were 1.18 ($p < 0.001$) or 1.09 ($p = 0.05$), respectively. With SBP and PP in the same model, only SBP significantly predicted CVD mortality in normotensive (HR: 1.42) and hypertensive (HR: 1.25) men. SBP was associated with all-cause mortality in hypertensive individuals only (HR: 1.14) after controlling for other variables. We conclude that SBP is a better predictor of CVD death than PP in both normotensive and hypertensive men.

A18 Warning! High Blood Pressure Out of Control

Anita Peden Sherer, R.N., M.S.N., Moses Cone Heart and Vascular Center, Kristen Wither Yntema, M.B.A., M.H.S.A., Joan Behrens, R.N., B.S.N., Charles H. Wilson, M.D.

Two hundred ten over one hundred ten is a blood pressure reading that causes any health professional's heart to skip a beat! During our weekly blood pressure screenings at community locations, our nurse health educators encountered participants with extremely high blood pressures. Most were asymptomatic, and many had driven themselves to the screening. Despite intensive counseling, we struggled with what was the appropriate referral procedure. Failing to find any existing protocols from literature reviews, we developed a blood pressure protocol to guide our actions when managing extremely elevated blood pressures. Key components of the protocol include triaging patients for immediate management based on blood pressure ranges, physician notification, transportation arrangements, and followup contact with participants. Since implementing the protocol, 2,054 participants have been screened. Six hundred ninety-eight had mild-to-moderate hypertension, and 12 had severe or very severe hypertension. All those with severe hypertension received a followup phone call and reported being seen by a physician for appropriate management. This blood pressure protocol has provided a guide for action when blood pressures soar out of control.

A18 A Process for Predicting Compliance and Aligning a K–6 Cardiovascular Curriculum To National Health Education, Science Education (Personal Health), and Technology Standards

Sandra Lee Owen, Georgia State University, Gerald S. Berenson

Purpose: The newly revised edition of the curriculum integrates national health education, science education (personal health), and technology standards for which schools are currently held accountable. It incorporates school guidelines for nutrition, physical activity, tobacco use prevention, injury, and violence prevention recommended by the Centers for Disease Control and Prevention (CDC) and Healthy People 2010.

Method: Each grade-level analysis included raw scores, percentages, and means for all sections and subsections of the Curriculum Analysis Tool (developed by Educational Development Center, Inc., for CDC). All items were equally weighted. The outside evaluator (phase I) carefully read and developed clarifying questions for each grade level prior to scoring, (phase II) conducted grade level scoring and submitted revision suggestions (to bring curriculum into alignment) to Tulane Center for Cardiovascular Health, and (phase III) completed postrevision rescoring. A collaborative team of scientists, health education specialists, practicing teachers, and several principals guided the final revision.

Results: Prerevision analysis: Eighty-two percent met health education criteria; 78 percent met national health education standards; 77 percent met CDC-recommended school guidelines for nutrition, physical activity, and tobacco use prevention; 75 percent adhered to curriculum fundamentals; and 0 percent met K–6 national technology standards. Postrevision analysis: All section and subsection C.A.T. scores met 100-percent compliance, and technology standards were integrated.

Conclusion: After an extensive 2-year revision, Health Ahead/Heart Smart K–6 Curriculum offers schools coordinated, comprehensive, standards-based lessons, which join the science of predictive risk behaviors with the effec-

tive application of protective health behaviors; integrate technology; and complement existing local, district, or State curricula.

Saturday April 13, 2002
10:15 a.m.–11:15 a.m.

8 Environmental and Policy Interventions To Improve Physical Activity

James F. Sallis, Ph.D., San Diego State University

Because of the high prevalence of physically inactive lifestyles, research is needed that explains why so many people are insufficiently active. Most studies have examined psychosocial correlates, but some research supports the idea that physical activity can be adversely affected by the way buildings and communities are designed, dependence on the car for transportation, predominance of sedentary work, and inactive recreational patterns. Yet very little is known about these proposed environmental and policy influences, even though they may be contributing to low physical activity across the U.S. population. The research from the transportation field linking community design and walking and cycling for transportation will be reviewed. The National Heart, Lung, and Blood Institute-funded Neighborhood Quality of Life Study (NQLS) will be described. The primary aim is to document the association of neighborhood environment characteristics (primarily density, mixed land use, and street connectivity) with physical activity in adults. It is hypothesized that physical environment variables are independently associated with adults' total and moderate intensity physical activity beyond variance explained by psychosocial and sociodemographic correlates of physical activity. Neighborhood environments are objectively measured and analyzed using Geographic Information Systems, and the same variables also are assessed by standardized survey. Physical activity is objectively measured using accelerometers. Thirty-two neighborhoods in two cities are being selected to represent low and high "walkability" and low and high income. A total of 2,400 adult residents will be randomly selected. Findings from the NQLS study can inform environmental and policy changes that can promote daily physical activity in the U.S. population.

8 The Partnership To Promote Healthy Eating and Active Living: Millennium Communities Project

James O. Hill, Ph.D., University of Colorado Health Sciences Center

The Partnership for Healthy Eating and Active Living (The Partnership) aims to promote healthy eating and physical activity lifestyle behaviors through a public/private partnership grounded on consumer understanding. The Partnership developed a conceptual framework for understanding how to change lifestyle behaviors that includes understanding how factors within the individual and within the environment affect behavior. The Partnership has launched the Millennium Communities Project, which takes the conceptual framework and applies it to changing lifestyle within a community. A basic tenet of the Millennium Communities Project will be continuous, incremental learning or "learn and do, learn and do." And unlike traditional community intervention projects that require a year or two of planning before sites are selected and launched, the project will engage communities from the very beginning, involving them in the continuous, incremental learning about how to launch a community-wide initiative. A major thrust of The Partnership's approach will be developing a better understanding of the economics of behavioral change within a community and the use of economic incentives to achieve sustainable change in lifestyle behavior. The Partnership will also encourage the use of proven social marketing techniques to effect behavioral change, focusing first and foremost on the consumer's needs, wants, and perceptions. Each community participating in the Millennium Communities Project will develop its own specific goals for sustainable lifestyle changes; The Partnership's role will be to facilitate the achievement of these goals. To do this, The Partnership will provide participating communities with the encouragement, knowledge, resources, and connections they need to identify, assess, and incorporate into the fabric of the community new approaches to promoting healthier eating and physical activity behaviors. The Partnership will help communities break down barriers to success.

10 Impact of Nutrition Academic Award on Medical Students

Jo Ann Simon Carson, Ph.D., R.D., L.D., University of Texas Southwestern Medical Center

One of the Healthy People 2010 goals is to increase from 42% to 75% "the proportion of physician office visits made by patients with a diagnosis of cardiovascular disease, diabetes, or hyperlipidemia that include counseling or education related to diet and nutrition." Strategies that Nutrition Academic Award (NAA) medical schools are using to achieve this goal include (1) distribution of information and materials through Web sites, (2) provision of consistent messages to physicians in training using national practice guidelines, and (3) enhancing the relevancy of nutrition in medical education through case-based instruction. The NAA Web site (www.nhlbi.nih.gov/funding/training/naa) provides general information about NAA and links to NAA Web sites at each of the 21 NAA medical schools. Individual sites provide Web-based nutrition resources and links to other sites, including those providing national practice guidelines, such as the National Cholesterol Education Program and the American Diabetes Association.

UT Southwestern's Web site (www.utsouthwestern.edu/naa) includes two computer-based cardiovascular cases designed for fourth-year medical students and senior physician assistant students to use their knowledge of national practice guidelines while gaining nutrition knowl-

edge and skill. Surveys completed before and after students completed a 4-week ambulatory care rotation with or without the cases demonstrated significant improvement in cardiovascular nutrition knowledge and self-efficacy among students completing Web-based cases and participating in a class discussion. Audits of chart notes from a subset of students suggest that the improved knowledge and self-efficacy manifests in more frequent attention to nutrition in primary care visits, particularly in regard to weight control.

10 Use of Standardized Patients To Teach Physicians To Collect and Evaluate Patient's Dietary Intake and Negotiate for Change

M.N. Woods, D.Sc, Department of Family Medicine and Community Health, Tufts University School of Medicine

The Nutrition Academic Award has funded 21 medical schools to develop or increase the nutrition education of their medical programs. A typical activity across the schools is their requirement of the students to keep a food record and evaluate their own current dietary intake. In addition, some schools have had their students practice making dietary changes to prevent or treat a chronic disease. In the pursuit of developing competencies, standardized patients have been utilized to allow the students to practice the collection of dietary intake of patients, evaluate their current diets, and practice skills to negotiate for the change of dietary intake. Experience and understanding of nutrition knowledge, skills required for a successful change in eating pattern, and the time commitment of the physician and/or nutritionist to accomplish this task are developed. A set of data on nutrition knowledge is identified as essential for an effective interaction. Communication skills to transmit this knowledge are evaluated within the standardized patient experience. Interviewing skills of the physician and behavioral skills needed by the patient to be successful are also taught and evaluated. Developing rapport with the patient is essential, and discussions on identifying the motivation of each patient enhance sensitivity and empathy in the "physician-patient" interaction, which maximizes the collaborator effort for change. Student evaluation of these practice sessions, using standardized patients, is very high.

12 Putting the Clinical Guidelines on Overweight and Obesity Into Practice

Louis J. Aronne, M.D., Weill Medical College of Cornell University

Overweight and obesity represent a substantial public health issue in the United States. Approximately 108 million adults in the United States are overweight or obese, comprising about 61% of the population, where overweight is defined as a body mass index (BMI) of > 25 and obesity is defined as a BMI > 30. According to NHANES data, the proportion of obese adults in the population has increased from 23% in 1988–94 to 27% in 1999. Furthermore, no State had a prevalence of obesity = 20% in 1991, while in 2000, 22 States fulfilled that criteria.

Overweight and obesity increase the risk for developing many serious chronic diseases such as cardiovascular disease (CVD), type 2 diabetes, hypertension, dyslipidemia, sleep apnea, and certain cancers. The morbidity from obesity-associated disorders increases with increasing body mass index and begins within the normal weight range. Furthermore, convincing evidence supports the benefit of weight loss for reducing blood pressure, lowering blood glucose, and improving dyslipidemias. Weight loss should have a high priority in the management of the complications of overweight and obesity, but primary care providers having been lacking the education and tools needed to treat these problems.

The Practical Guide: Identification, Evaluation, and Treatment of Overweight and Obesity in Adults, available at ttp://www.nhlbi.nih.gov/guidelines/obesity/practgde.pdf, outlines an accepted approach to the assessment, classification, and treatment of weight in the primary care setting.

12 Moving From Knowledge To Action: Clinical Practice Pearls From the Centers for Obesity Research and Education (CORE)

Holly R. Wyatt, M.D., CORE

The *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults* was released in 1998 by the National Heart, Lung, and Blood Institute Obesity Education Initiative in cooperation with the National Institute of Diabetes and Digestive and Kidney Diseases. The Guidelines were established to systematically evaluate the published information on overweight and obesity and to determine treatment strategies that would constitute evidence-based clinical guidelines for health care providers. While a general awareness and knowledge of the recommendations in the Guidelines are important, applying that knowledge to a 15-minute office visit is a critical hurdle most practitioners must overcome to be successful in the management of their overweight and obese patients. Answers to questions such as "How can health care providers help patients to increase their physical activity? How can a patient's diet be assessed in a typical office visit? How can the office staff be supportive and involved in obesity management?" are important in the successful application of the Guidelines to a clinical practice. CORE was formed to answer questions like these and provide practical information in using the Guidelines in an everyday clinical practice setting. Practical tools such as previsit questionnaires, office equipment, food and activity diaries, use of pedometers, methods for giving quick dietary advice, practical patient handouts and resources to keep on hand, and general office protocols will be discussed. These practical tools can be used to facilitate evidence-based obesity management in a typical office visit.

22 Leveraging Community Partnerships: American Heart Association's Model for Mobilizing Stakeholders To Address Cardiovascular Health Issues

Mark S. Decker, B.A., N.R.E.M.T.-P., Field Health Initiatives, American Heart Association

The American Heart Association has a rich history of mobilizing the community to address key issues and impact change in the public and professional sectors. During this presentation, the American Heart Association's success with building local partnerships and mobilizing the community to impact the stroke and cardiac arrest patient population will be discussed. At the end of this session, each participant will be able to apply lessons learned by the American Heart Association to form effective local partnerships around key cardiovascular issues.

32 Evaluating Your Partnership: Introduction to the Web-Based Partnership Self-Assessment Tool

Roz Diane Lasker, M.D., Division of Public Health, The New York Academy of Medicine

As we documented in "Medicine and Public Health: The Power of Collaboration," collaboration can be a valuable strategy for promoting heart health. Running a successful partnership is more easily said than done, however, particularly when the partnership involves participants from different backgrounds (like researchers, clinicians, health department staff, and community residents directly affected by health problems). This presentation will describe an easy-to-use, yet methodologically rigorous, Web-based tool, which partnerships can use to determine how well their collaborative process is working and what they can do to make it work better. Based on measures and findings from the National Study of Partnership Functioning, the tool assesses the success of a partnership's collaborative process by measuring its level of synergy (i.e., the extent to which the participants in the partnership are accomplishing more together than they can on their own). The tool identifies a partnership's strengths and weaknesses in areas that are known to be related to synergy, including leadership, efficiency, administration and management, and sufficiency of resources. It also measures participants' views about the partnership's decision-making process, the benefits and drawbacks they are experiencing, and their satisfaction with the partnership.

33 Healing Partnerships: State Government, Community Organizations, and Faith-Based Organizations Working Together To Heal Hearts and Souls

Marvin Tyrone Cato, M.A., The Detroit Medical Center, Community Health Institutes

This presentation will focus on two partnership approaches that utilize faith-based organizations to reach high-risk citizens that do not visit a doctor on a regular basis, may not have health insurance, or may not trust traditional health care institutions. The first approach is a partnership between the Michigan Department of Community Health, the Michigan Neighborhood Partnership, and a group of 40 to 50 faith-based organizations on an annual basis. The faith-based organizations are the key to reaching thousands of people a year that are screened and educated about cardiovascular disease.

The second approach is through the Congregational Health and Nursing Network of the Detroit Medical Center's (DMC's) Community Health Institutes. In this approach, the participating faith-based organizations sign partnership agreements with the DMC/Community Health Institutes. The parish nurses and health program coordinators receive training in health program development and educational and medical support from the Detroit Medical Center. There is a strong emphasis on spiritual well-being as well as physical health.

33 Faith-Based Intervention Approaches: Connecting Mind, Body, and Spirit

B.A. Jinadu, M.D., M.P.H., Public Health Services, Kern County Department of Public Health

Presentation in graphic form of Kern County Vital Statistic cardiovascular health data (CVH) to African-American ministers, churches, and community groups is coupled with faith-based, scriptural admonitions regarding holistic health of mind, body, and spirit. Education regarding CVH is presented to cosmetologists, at church potlucks, and at other community groups and celebrations including demonstrations of "heart-smart soul food," and recipes, to enhance nutrition. Regular individual and group physical activity is demonstrated and promoted. Outcomes of CVH nutrition and physical activity interventions are under development.

40 Chronic Care Model: Improvement Seen and Improvement Felt

Keith E. Junior, Matthew Walker Comprehensive Health Center

The chronic care model is designed to integrate the community with the health care system. Major components of the model include community-based resources and policies, the health care organization, self-management support, delivery system design, decision support, and clinical information systems. The Matthew Walker Comprehensive Health Center, in collaboration with the Bureau of Primary Health Care, has improved its ability to evaluate patient information by using the chronic care model and a series of tests designed to improve collection, entry, retrieval, and analysis of data. The information assists the patient, doctor, and center in the improvement of health outcomes in patients with diabetes and cardiovascular diseases. Once systems changes are established, an innovative application to an array of chronic health care problems is possible.

40 High-Risk Communities Taking Control of Their Cardiovascular Health: Intervention Models That Work

Michael Allan Moore, M.D., Dan River Region Cardiovascular Health Initiative Program

The Dan River Region encompasses a large area of Southside Virginia, centered on the single hospital in Danville, VA, with approximately 250,000 residents. Low income and educational levels, tobacco farming, a failing textile industry, in addition to other manufacturing characterize the population. The region has greater cardiovascular (CV) mortality, more sexually transmitted disease, and higher infant mortality than any other area in Virginia. Four concerned health care professionals formed a voluntary health organization. They developed a coalition among the local hospital, public health department, and the Consortium for Southeastern Hypertension Control. A community CV program, the Dan River Region CV Health Initiative Program (DR CHIP) was developed. DR CHIP received an NHLBI contract as one of six Education and Utilization Dissemination Centers (EDUC) to improve community CV health. DR CHIP conducts community CV screening and referral, hypertension/lipid referral clinics, physician and public health education programs, and a unique middle school program in which public health nurses teach CV health year long. Industry-based screening demonstrated over 30% of employees with uncontrolled hypertension. Physicians have begun a 3-year, focused CME program dedicated to CV disease recognition, prevention, and management. Serial testing in the middle school program has shown improved CV knowledge among the students. DR CHIP has demonstrated tremendous community strength through community volunteers while it is facing the increasing challenge of meeting the very high level of CV disease in the community.

50 The Metabolic Syndrome and Vascular Pathobiology

Brent M. Egan, M.D., Medical University of South Carolina

An expanded adipocyte mass may play a central role in the pathogenesis of the metabolic syndrome through effects on lipid and peptide signaling molecules. The metabolic syndrome includes increased plasma nonesterified fatty acids (NEFAs), which are resistant to suppression by insulin. High NEFAs increase hepatic VLDL and Apoprotein B synthesis, impair skeletal muscle glucose utilization, and induce apoptosis of pancreatic islet cells. NEFAs also increase oxidative stress, impair endothelium-dependent vasodilation, enhance vascular reactivity, decrease arterial compliance, and raise blood pressure in humans.

The renin-angiotensin-aldosterone system (RAAS) is activated in subjects with the metabolic syndrome and may contribute to cardiovascular complications. However, native populations on very low salt diets experience intense activation of the RAAS without cardiovascular disease. Angiotensin alone induces limited oxidative stress in vivo, while it synergistically enhances the production of reactive oxygen species (ROS) in vascular smooth muscle cells (VSMCs) stimulated with oleic acid. ROS are critical signaling molecules in the migration and proliferation of VSMCs stimulated with oleic acid and angiotensin. Moreover, proteinases, which destabilize plaque and contribute to rupture, are activated by oxidative stress. Thus, the interaction between angiotensin and lipids amplifies oxidative stress that probably is not attenuated by Vitamin E but is reduced by interrupting the RAAS.

An integrative research approach to the metabolic syndrome converges with other evidence implicating oxidative stress-sensitive mechanisms in the pathogenesis of cardiovascular disease and highlights the potential value of diets rich in antioxidants and a rationale approach to antioxidant therapy in cardiovascular disease prevention.

50 Integrative Medicine Approaches To Improve Cardiovascular Health

Martin J. Sullivan, M.D., Duke Center for Integrative Medicine, Duke University Medical Center

Integrative medicine seeks to combine the best of conventional medicine with evidence-based complementary and alternative medicine (CAM) practices and a patient-centered, mind-body-spirit approach to care. This approach offers considerable promise in cardiology because of the close link between atherosclerosis and lifestyle factors (diet, exercise, psychosocial factors) and the growing interest in researching CAM practices. Review of recent studies provides strong support for the use of diet, exercise, and stress reduction in cardiology, and there is intriguing preliminary data on the use of acupuncture, herbs, and supplements/vitamins in cardiology. Although integrative medicine approaches will introduce new therapies and techniques into conventional cardiology practice, it is important to understand that it also calls for a shift in patient care practices, to balance high-tech care with self-care, lifestyle, and mind-body-spirit approaches.

A1 The Interplay Between Knowledge and Actual Experience on Patient Delay in Seeking Treatment During Myocardial Infarction

Julie Johnson Zerwic, University of Illinois at Chicago, Cathy Ryan, Holli DeVon, Mary Jo Drell

Patient delay prior to seeking treatment during acute myocardial infarction (AMI) has been shown to be a significant factor that limits the successful use of reperfusion therapy. To access the emergency medical system (EMS) during an AMI, patients must be able to recognize and interpret the symptoms that they are experiencing. Cognitive and socio-environmental factors that affected patients' symptom interpretations and delay in seeking early treatment for AMI were examined in a culturally diverse female and male population. Eighty-six women and 132 men (35 percent African Americans or Hispanics)

were interviewed immediately after AMI using a structured format. Only 30 percent of subjects stated that the symptoms that they experienced were similar to what they had expected were the symptoms of AMI. Subjects whose expectations were similar delayed 1.5 hours (median delay) compared to 3.0 hours for subjects who stated that their experience was not similar to what they had expected ($p < 0.05$). Gender, race, age, and intensity of symptoms did not affect the ratings of expectations. However, subjects who did not experience chest discomfort were more likely to indicate that their symptoms were not similar with their expectations. Even though patients have some knowledge about AMI symptoms prior to their infarction, this knowledge does not facilitate their timely access to the EMS. This is likely due to the universal expectation that AMI is associated with severe chest pain and collapse. Strategies must be developed that help individuals and their families recognize the range of cardiovascular symptoms.

A1 Do Older Adults Have the Same Experience With Acute Myocardial Infarction Symptoms as Younger Adults?

Julie Johnson Zerwic, University of Illinois at Chicago, Cathy Ryan, Holli DeVon, Mary Jo Drell

Cardiovascular disease is the leading cause of death for Americans, with the risk for acute myocardial infarction (AMI) increasing with age. Studies have suggested that elderly individuals experience different symptoms during AMI compared to younger adults. The purpose of this study was to examine factors that contributed to health care-seeking behaviors among a diverse group of men and women who were hospitalized with AMI. Patients were interviewed shortly after admission for AMI ($n = 220$) about the symptoms that they experienced, the process that they used in treating the symptoms, and how they accessed the health care system. Eighty-six patients were in the older age group (> 65), and 134 patients were in the younger age group (< 65). The sample included 60 percent Caucasians and 29 percent African Americans. Sixty percent were male, and 40 percent were female. Although older patients were as likely as younger patients to experience discomfort somewhere in their chest (85 percent versus 90 percent), they were significantly less likely to experience the discomfort in the center of their chest (64 percent versus 77 percent, $p < 0.05$), which is considered the "classic" AMI location. Older patients were significantly less likely to experience discomfort in their left arm, and they were less likely to experience sweating, nausea, and dizziness. Older patients reported fewer associated symptoms than younger patients ($M = 4.2$ versus 5.2, $p < 0.001$). Older patients did not differ from younger patients in their rating of the intensity of their discomfort. Older patients were less likely to report feeling fear during the experience than were younger patients. These data indicate that older adults are less likely to experience what most health professionals consider are the classic AMI symptoms. These differences may adversely affect elderly patients' abilities to identify AMI symptoms and promptly access the health care system.

A1 Factors Affecting AMI Symptom Recognition in Women

Peggy Ann Wyatt, University of British Columbia, Pamela A. Ratner, Joy L. Johnson, Martha Mackay

The purpose of the study was to assess the information needs for AMI recognition by women in the Greater Vancouver area. A telephone survey using random digit dialing was conducted with 349 women. This work is important for designing strategies intended to educate women and to reduce the help-seeking portion of treatment delay for women experiencing AMI. Two response variables were examined: intention to delay (ITD) and likelihood of responding appropriately to myocardial infarction symptoms (LRS).

Women have not yet personalized information that they are at risk for AMI and are unaware that females experience AMI somewhat differently than do males. The participants expressed the need for more information pertaining to symptom recognition for AMI and were relatively uninformed about the risks that diabetes, obesity, and menopause pose for AMI. Many of the women had problems recognizing AMI symptoms and were not likely to respond appropriately. Factors associated with LRS were embarrassment caused by false alarm visits, preference for self-care, previous emergency room (ER) visits, and the effectiveness of those visits. Approximately one-third (36 percent) of the women would likely delay treatment seeking for AMI. Factors associated with intention to delay were embarrassment, preference for self-care, being an immigrant to Canada, and lower education.

A multidimensional approach is needed to address the information needs of women pertaining to AMI recognition and treatment seeking. Because women who had visited ERs were significantly less likely to respond appropriately to AMI symptoms, it is important that strategies for improving ER experiences be developed.

A8 Lessons Learned: Redesigning the CancerNet Web Site

Sanjay J. Koyani, National Cancer Institute, National Institutes of Health, Janice Nall

The National Cancer Institute recently redesigned its CancerNet Web site (http://cancernet.nci.nih.gov) for patients, health professionals, and the public. Key to the success of the redesign was the application of usability engineering methods to create a navigation system and information architecture that is usable, useful, and accessible. A wide range of primary and secondary users was involved in all phases of the redesign process, including data collection, prototype development, and usability testing.

This presentation is a case study of the redesign of a large, Federal health information Web site that contains a

vast amount of complex scientific information that must be usable by a wide variety of users. The objectives of this presentation are to describe effective methods for designing a usable health information Web site, to discuss various methods used to collect direct user feedback, and to provide practical examples of effective Web interface design.

This presentation will focus on the lessons learned while developing the CancerNet usability engineering process, which is a tool for evaluating and assessing the functionality of Web sites. The methodology of the usability engineering process includes data collection, prototype development, and the usability testing process. The results of these processes and the lessons learned will be addressed.

A8 Nutrition Education Tool: A Culturally Appropriate Book

Yvonne L. Bronner, Morgan State University

Since cardiovascular disease (CVD) is the leading cause of death among African Americans in the United States and two of the primary risk factors are poor diet and overweight, a book addressing these issues and making nutrition information more accessible would help the African American target audience better understand the nutritional components of weight management and good nutrition for preventing CVD. The purpose of this presentation is to describe the content and methodology used to develop the communication messages in the book entitled *Food Counts in the African American Community*. It begins with a discussion of the tools for making informed food choices. This is followed by a discussion of the importance of good nutrition throughout the life cycle and a review of diet and disease relationships. A discussion of the importance of lifelong physical activity is followed by a review of the food groups and their nutritional importance. All of this information has deliberately been put in a user-friendly, culturally appropriate format.

A8 Designing a Statewide Monitoring System for Hospital-Sponsored Cardiovascular Disease Preventive Services to Medically Underserved Populations

Patrice M. Gregory, Ph.D., M.P.H., UMDNJ-Robert Wood Johnson Medical School, Julie Pantelick, Maria Lourdes M. de Jesus, M.P.H., C.H.E.S., Alfred F. Tallia, M.D., M.P.H., Jo Ann Kairys, M.P.H, Benjamin F. Crabtree, Ph.D.

Purpose: Disparities in the utilization of hospital-based cardiovascular disease (CVD) services highlight the need for hospitals to provide outreach to medically underserved populations. This presentation describes a multimethod process for developing a statewide system to monitor hospital-sponsored outreach, specifically CVD preventive services. This system is designed to promote the provision of these services to the underserved and thereby help to eliminate disparities.

Methods: The system was developed using a three-phase process. First, reviews of the literature established potential system parameters. The second phase involved three multidisciplinary expert panels that recommended system specifications for (1) medically underserved populations, (2) hospital catchment areas, and (3) key marker services and reporting formats. The third phase consisted of designing and testing a reporting instrument.

Results: In the first phase, more than 300 articles, books, government documents, and reports were reviewed. Expert panelists included community members, health care providers, policymakers, hospital administrators, and researchers who reached consensus on system specifications. Three hospitals provided data to test the reporting instrument.

This process resulted in a system that identifies medically underserved populations according to eight variables (e.g., race/ethnicity, language spoken, and insurance). Hospital catchment and medically underserved areas are defined through patient origin and travel-time methodologies using geographic information systems. Key marker services include screening for hypertension, elevated blood lipids, diabetes, and obesity.

Conclusions: The multi-method approach, including the participation of State and national experts and community representatives, was essential for the successful development of the monitoring system. Future research must address whether this effort will contribute to the elimination of health care disparities.

A8 Impact of a Pharmacist-Managed Cardiovascular Risk Reduction Program in an Inner City Population

Catherine Elinore Cook

This research study describes the impact of a pharmacist-managed cardiovascular risk reduction program on the percentage of patients achieving goal low-density lipoprotein (LDL) levels. The objective of this study was to compare baseline LDL goal attainment (prior to pharmacist program) to end of study (within 6 weeks to 3 months after baseline visit). At the initial pharmacist visit, demographics, medications, comorbidities, and laboratory data were obtained. End of study data were obtained by abstracting the lipid profile. Another medical group practice within the same organization with a similar patient population were chosen as a comparator. Seventy-nine patients were seen in the pharmacist program. Of these, 16 patients were excluded from analysis. The majority of patients were African American women and had at least one cardiovascular risk factor. The percentage of patients who achieved goal LDL at the end of the study was higher than at baseline in all three National Cholesterol Education Program Adult Treatment Panel III risk categories. Overall, at baseline, 30.2 percent of the patients were at goal compared to the end of the study, where 54 percent of patients were at goal ($p < 0.05$). At the comparator site, the percentage of patients attaining goal LDL

levels was 26.4 percent versus 32.8 percent, for baseline and end of study respectively (p = NS). This pharmacy program is an example of a model that was successful in improving the care of patients with dyslipidemia in an inner city population. Future research will determine the clinical and economic impact of this model with other models.

A10 Comorbidity of Heart Disease With Diabetes Among Plains Indians

Betty Geishirt Cantrell, M.S.S.W., M.B.A., Center for American Indian Research and Education, University of Minnesota, Felicia Schanche Hodge, Roxanne Struthers, Lorelei Hope DeCora

American Indians present with very high rates of type II diabetes, sharing the same risk factors associated with diabetes as heart disease. The Center for American Indian Research and Education (CAIRE) is in the final stages of the Diabetes Wellness project, a 4-year project funded by NINR to test a culturally appropriate intervention to promote diabetes prevention and treatment compliance among the Sioux Indians of South Dakota and the Winnebago Indians of Nebraska.

Intervention and control sites were randomly assigned. The talking circles model of education and support was provided by trained community members. Information on chronic diseases, nutrition, exercise, and the impact of these health problems on family and community was presented in an interactive fashion. Pretests and posttests were completed by participants to obtain demographic information and to measure changes in knowledge, behaviors, and attitudes.

Analysis of the data collected to date indicates an extremely high smoking rate among the participants. Overall, 80.3 percent of the participants reported being a current smoker. The mean age of the smokers was 46 years (age range of 18–85 years), with 46 percent under 39 years of age. Additionally, 33 percent of the participants reported having a diagnosis of hypertension, compared to 25 percent for the general population and 26 percent for American Indians nationwide.

The alarmingly high incidence of smoking complicates the incidence of diabetes and hypertension and presents as a major risk factor of heart disease. An examination of the relationship of cardiovascular risk factors and incidence in this population will be presented.

A10 Development and Evaluation of a Medication-Adherence Self-Efficacy Scale in Hypertensive African American Patients

Gbenga Ogedegbe, M.D., M.P.H., M.S., Division of General Internal Medicine, Weill Medical College of Cornell University

Objectives: The role of self-efficacy has not been investigated in studies of adherence to antihypertensive medications. The purpose of this study was to develop and evaluate a medication-adherence self-efficacy scale in hypertensive African American patients.

Methods: An initial sample of 106 patients (mean age 55 years, 60 percent women) participated in the item-generation phase. These patients were asked open-ended questions about their experiences with taking their prescribed antihypertensive medications. Responses were analyzed using standard qualitative techniques. Responses were then transformed into specific questions and formatted into a draft self-efficacy questionnaire. For the item-testing phase, a second sample of 40 patients (mean age 60 years, 70 percent women) completed the draft questionnaire on two separate occasions to establish test-retest reliability, and kappa statistics were computed for each item. Items were selected for the final questionnaire if they fulfilled reliability criteria, defined as a kappa value of > 0.4, or if they were deemed to be clinically relevant.

Results: From the item-generation phase, a total of 10 categories of themes were generated: side effects, cost, beliefs, knowledge, social support, absence of symptoms, forgetfulness, inconvenience, been away from home, and fear of dependence. A series of 43 items were assembled from these categories into a draft questionnaire, 21 of which had kappa values > 0.4.

Conclusions: A reliable patient-derived, 21-item, medication-adherence self-efficacy scale was developed. This scale can be used to identify specific situations in which patients have difficulties adhering to antihypertensive medications; thus, this scale can help in the development of interventions aimed at identified situations.

A10 Intake of Fruits, Vegetables, and Fiber in Obese Versus Non-Obese Low-Income Mexican American Women

Susan Algert, Ph.D., R.D., California State University Sacramento, Marian J. Renvall, Katherine Weir

The retention of traditional Mexican dietary practices is hypothesized to be protective of heart disease, although few studies have documented consumption of fruits, vegetables, and fiber in Mexican Americans, particularly women. This study measured the effect of fiber by source on body mass index (BMI) in acculturated Mexican American women.

A convenience sample of 32 nonpregnant Mexican American women were recruited through the Women, Infants, and Children Nutrition Program in Sacramento, CA. Data were collected during in-depth ethnographic interviews composed of three parts: demographic, diet, and factors influencing food choices and dietary patterns. Food intake was analyzed for kilocalories, percent fat, and number of servings of fruits, vegetables, and staple Mexican foods. Data were analyzed by t-tests, and variables with a significance level < 0.08 were entered into a regression model.

Daily servings of fruits and vegetables did not differ significantly among groups of women and met Healthy

People 2010 goals. BMI was strongly correlated with fiber ($p < 0.002$); however, kilocalorie intake did not ($p = 0.109$). Fiber intake was significantly correlated with staple foods consumed ($p = 0.045$). Univariate analysis of fiber intake and BMI were highly significant (adjusted r-square = 0.25; $p = 0.002$). There was no interaction between staple foods and fiber when entered into the regression model.

In conclusion, consumption of staple Mexican foods high in fiber may contribute to higher fat intake and higher weight in acculturated Mexican American women. While fruit and vegetable intake are adequate, intake of fried beans, tortillas, and rice may be excessive and may contribute to increased weight in acculturated Mexican American women. Nutrition education efforts should be directed at modifying traditional high-fiber dishes to lower fat and calorie content.

A10 Social Context and Physical Activity Among African Americans: A Look at Neighborhood Safety

Catherine M. Waters, Ph.D., R.N., University of California, San Francisco

Physical activity offers many protective health benefits, yet physical inactivity is a major public health concern, especially among ethnic minorities. Social context, such as neighborhood safety, can influence participation in physical activity by enhancing characteristics that make it easier for people to be active. Yet, neighborhood safety from a sociocultural context has been studied little as a determinant of physical activity. The purpose of this cross-sectional descriptive study was to examine the association between perceived neighborhood safety and physical activity among a community-based sample of 90 healthy African Americans (54 women and 36 men). Results indicated that 47 percent perceived their neighborhoods to be unsafe; 36 percent engaged in no physical activity; and physical activity was significantly higher for those with higher incomes, those who had lived in the neighborhood longer, and those not limited by health problems. There was no significant association between physical activity and neighborhood safety. The conclusion is that this sample of mostly sedentary African Americans perceived their neighborhoods to be unsafe; however, the exact nature of neighborhood safety as a determinant of physical activity is an unclear and complex phenomenon that may consist of multiple factors that interact over time and in a complicated fashion. Neighborhood resources that inhibit or facilitate physical activity need to be systematically assessed and better understood.

A16 The Effects of School-Based Health Promotion on Obesity and Related Cardiovascular Health Measures in Urban Teenagers: The PATH Program

Paul Stephen Fardy, Ph.D., Queens College, Ann E. Azzollini, Chris Pitsikoulis, John R. Magel

Purpose: The purpose of the study was to measure the effectiveness of a school-based health promotion program that integrated exercise, health education, and behavioral modification in reducing obesity and improving cardiovascular health in urban adolescents.

Methods: Five hundred fifty-five teenage girls (389 Exp versus 166 Con) and 324 teenage boys (235 Exp versus 89 Con) were compared before and after a 12-week health promotion intervention on obesity and cardiovascular health measures. Compared with traditional sports-oriented physical education classes (such as volleyball and basketball), health promotion intervention (PATH) consisted of an integrated program of exercise, education, and behavioral modification. Obesity was assessed by body mass index (BMI) from height and weight and percent body fat (BF) as determined from skinfold thickness. Cardiovascular health measures included systolic (Sp) and diastolic (Dp) blood pressures, habitual physical activity (PA), dietary habits (DH), cholesterol (Ch), heart health knowledge (HHK), and estimated maximal oxygen uptake (VO_2). The significance of pretest to posttest within gender differences on all measures between experimental and control subjects were determined with independent t-tests. Cardiovascular health measures in the most obese girls and boys (i.e., > 75 percentile for BMI and BF) were also compared with independent t-tests. The 0.05 level of significance was used in all statistical analyses.

Results: Significant improvements in PATH females were observed in subscapular (15.7 versus 14.2 mm), suprailiac (19.4 versus 17.7 mm) and total skinfolds (52 versus 48 mm), BF (30 versus 28 percent), Sp (111 versus 105 mmHg), Dp (71 versus 68 mmHg), and HHK (52 versus 56 percent correct responses). The most obese girls in PATH also showed significant improvement in VO_2 (35 versus 37 $mL/O_2.kg.min$). Improvements for boys in PATH included significant decreases in Dp (72 versus 70 mmHg) and DH (48 versus 46 times/week intake of high fat, salt, sugar foods) and increases in HHK (47 versus 53 percent correct responses). The most obese boys in PATH also demonstrated significant increases in PA (4.8 versus 6.3 times/week of activity > 15 min) and decreases in intake of dietary fat (34 versus 32 times/week intake) and DH (46 versus 44 times/week intake of high fat, salt, sugar foods).

Conclusions: Teenage participants in the PATH school-based intervention program demonstrated significantly greater improvements in obesity and related cardiovascular health measures than teenagers who participated in traditional physical education classes. Improvements were greater in girls than boys and were greatest in teenagers who were the most obese at entry into the PATH program.

A16 ACTIVATE: A Childhood Overweight Prevention Initiative

Lisa Kelly, International Food Information Council Foundation

Purpose: ACTIVATE is a consumer communications outreach program designed to help children and their fami-

lies achieve healthy lifestyles through regular physical activity and good nutrition.

Setting: A collaboration of the International Food Information Council Foundation, International Life Sciences Institute, American Dietetic Association, American Academy of Family Physicians, American College of Sports Medicine, and National Recreation and Park Association developed a multifaceted communications program targeted at children aged 9–11 and their parents.

Interventions: ACTIVATE uses unprecedented, in-depth consumer research—focus group, ethnographic, in-home interviews and quantitative—to track consumer knowledge and perceptions of the overweight problem, define appropriate audiences for messages, and develop customized program elements in order to deliver personalized and achievable advice for healthy living.

Outcomes: An interactive and innovative Web site will be developed, incorporating consumer input that provides tools and advice to help children and their parents achieve a healthy lifestyle within the family structure.

Conclusions: Childhood overweight and obesity is a growing epidemic with no signs of diminishing. Effective communications and programs are needed to begin turning the tide for prevention. ACTIVATE is one small piece of a larger structure that must be in place to effectively address this issue.

Learning Objectives: Participants will:

1. Better understand the consumer psyche—identify key motivators and obstacles for children and parents in preventing childhood obesity.
2. Lean how to utilize consumer understanding in developing programs and messages that are impactful.

A16 Efficacy of a School Intervention Program for African American Adolescents

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Research indicates that hypertension is disproportionate in African Americans, and risk factors are present in adolescence. The purpose of this quasi-experimental design study was to determine the effects of a school health promotion intervention.

Methods: Subjects were African American adolescents, aged 14 to 16 years, attending an urban high school. Subjects were recruited from a personal fitness course and a life management course; they were designated as the intervention group (n = 31) and the control group (n = 17), respectively. The intervention was a 9-week program that focused on knowledge, diet (fruits and vegetables), exercise, and stress management. Multivariate repeated measures analysis of variance and covariance and descriptive statistics were used to determine blood pressure and salivary cortisol reactivity changes, knowledge, diet, and exercise.

Conclusions: The intervention program was efficacious in relation to knowledge ($p = 0.0001$), exercise ($p = 0.0001$), and intake of fruits and vegetables ($p = 0.0001$). Systolic blood pressure ($p = 0.5548$), diastolic blood pressure ($p = 0.9719$), and salivary cortisol levels ($p = 0.2469$) were not significant. Clinically significant were the findings that 10 subjects in the intervention program decreased their overall blood pressure, the mean cortisol for both groups was elevated (18 nmol/mL), and 14 adolescents were hypertensive.