Meeting Summary

Measuring Psychosocial Variables in Epidemiological Studies of Cardiovascular Disease

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The National Heart, Lung, and Blood Institute and the University of Texas Medical Branch sponsored this workshop, which was held in Galveston, Texas on December 12-14, 1983. The purpose of the conference was to convene scientists from varied disciplines who are involved in epidemiological studies of cardiovascular disease (CD) and enable them to review the state of the science, identify obstacles to progress, and develop suggestions for future research.

The epidemiologic method has contributed a good deal to our understanding of risk factors for CD, the natural history of this disease, and the potential for prevention. There is substantial agreement about risk factors both within and between several countries. However, currently known risk factors account for only about half the CD incidence in these studies. So the search continues for other factors that may influence the atherosclerotic process and CD.

The heart, the mind, and the emotions have been linked in human thought and writing for millennia, and people in many parts of the world believe that there is a relationship. However, the job of the scientist trying to unravel that relationship has not been easy. Tantalizing leads have been followed by failures to replicate findings. Relationships identified with one type of measurement have disappeared when another set of measures was used. Psychologists and psychiatrists do not usually know how to deal with the cardiovascular system at the physiologic and molecular level. Cardiologists, cardiovascular physiologists, and lipid chemists are out of their element in dealing with mood, behavior, life events, social change, and their effect on the heart and vessels.

Within the past two decades, psychosocial variables potentially affecting the atherosclerotic process and CD have been defined with increasing precision and have been included in epidemiologic studies. The expectation has been that if a psychosocial variable is related longitudinally to one form of CD in a consistent, logical, and graded way, if there is supporting evidence from an animal model, and if altering the psychosocial variable favorably affects CD, causal relationship exists. All these criteria have not been met for the psychosocial variables under investigation, but the evidence has been piling up.

Before the meeting, papers critically and comprehensively reviewing the literature in each of six areas of study were prepared by program participants and distributed. These papers provided the background material for detailed discussions by small groups of invited participants. In each discussion, the paper was evaluated by an epidemiologist and then by experts in the subject matter. The groups identified methodological and substantive problems, suggested potential solutions, defined research areas that could be fruitful and areas that should be abandoned, and discussed the preparation of a book based on the conference proceedings. Researchers known to be skeptical of relationships between psychosocial variable and CD were invited to participate and speak their minds.

The following brief account taken from the written conference proceedings provides an idea of what went on.

Socioeconomic Factors and Cardiovascular Disease

The group identified four uses for a measurement of socioeconomic status in epidemiologic studies of cardiovascular disease: 1) to describe the population under study; 2) to adjust for other associations (for example, between alcohol intake and blood pressure) in order to remove the effects of status; 3) to indicate segments of the population at particularly high or low risks for CD; 4) to explain variations in CD risks.

Much of the experience with indicators of status in the United States has been based on data from employed white men. Investigators should not assume that these indicators have the same implications regarding prestige in other demographic groups (e.g.,
blacks, Hispanic-Americans, and women), and special sociological expertise should be obtained when studying such groups.

Greater emphasis should be placed on identifying the association between status and the risk of CHD — particularly the current inverse association. In doing this, investigators should distinguish between factors that increase CHD incidence and factors that reduce survival after CHD.

Six areas of potentially fruitful research were identified: 1) associations between established biological and behavioral risk factors such as high blood pressure, cigarette smoking, diet, and consumption of alcohol; 2) psychological variables such as hostility and ways of dealing with anger; 3) knowledge about disease and about behaviors that affect risk of disease; 4) access to and utilization of health care services; 5) exposure to physical and chemical factors; and 6) exposure to social factors such as crowding, social disruption and social supports.

Social Support, Social Networks, and Cardiovascular Disease

Social support is not a unitary concept, and four components of social support were identified: the quantity of support, the quality of support, the type of support (instrumental, informational and emotional or expressive), and the source of support (family, friends, colleagues).

The following are five ways in which social support may beneficially affect health: 1) facilitating access to good health care; 2) directly promoting care (providing money, transport); 3) promoting health through group norms of behavior (e.g., Mormons, Seventh Day Adventists); 4) influencing the neuroendocrine and immune systems that promote resistance to disease; and 5) promoting well being that induces good health through behavior and the neuroendocrine system.

Social supports may affect the development of coronary risk factors, affect the development of physiologic precursors of disease, enhance or inhibit the atherogenic process, promote clinically severe disease, and enhance mortality.

Monitoring cardiovascular risk factors, morbidity, and mortality in persons living alone and in suitable comparison groups, especially when all participants get care from the same source, could be very useful in understanding the effects of social support.

Acute Physiologic Reactivity to Behavioral Stimuli

More extensive use of acute reactivity measures in defined populations can enhance our knowledge. Potentially useful methods include Holter Monitoring, ambulatory blood pressure monitoring, and 24-hour urine sampling for catecholamines.

Laboratory studies allow a broader assessment of cardiovascular functioning than field studies and can lead to hypotheses that might be later tested in the field. The laboratory study of the effects of behavioral stimuli on the following measures appears particularly promising: cardiac contractility through use of systolic time intervals, cardiac output through impedance cardiography, cardiac ejection fraction through miniaturized radionuclide scanners, neuroendocrine response to stressors, alpha- and beta-receptor function, and renal blood flow.

Urgently needed in studies of reactivity are: standard definitions of reactivity, instrumentation that permits laboratory measures to be taken into the field, and the characterization of particular tasks according to the types and patterns of the physiologic responses they elicit.

Chronic Life Situations, Life Events, and Cardiovascular Disease

The relevant major life situations that may influence the atherosclerotic process are work or school, marriage and family, the physical residential setting, and social and leisure pursuits. However, only in the two areas of work conditions and stressful life events has much evidence accumulated. In the study of stress, there has been work in two areas: research using an instrument (one of the cumulative, Schedule of Life Events questionnaires, and research on specific events (unemployment, retirement, widowhood, divorce, and job changes). In most studies, little work has been done that specifically concerns the cardiovascular system.

It was agreed that further research involving major life events on the one hand and the cardiovascular system on the other, prospective in method and taking advantage of natural experiments would be most useful. A simple paradigm for such research is the identification of a group about to undergo a major life change (such as marital status change, residential change, or exposure to danger) and studying these factors and the cardiovascular system before, during, and after these life changes.

Many characteristics of the work environment may relate to CHD. They include quantitative overload; work paced by external mechanisms, particularly machines; high levels of vigilance or arousal and work responsibility; low levels of discretion or control; and high job insecurity.

Research into these problems is dependent on objectively defined and measurable environmental conditions, subjective perceptions of these conditions, and apparently subjective perceptions that actually only reflect a personality trait or characteristic not uniquely related to the life event under study.

Personality Characteristics and Cardiovascular Disease

There is evidence suggesting that personality variables are related to specific clinical forms of CHD rather than to all forms taken together. In future studies, personality factors should be examined prospec-
tively for their relationships to angina, sudden death, or myocardial infarction, rather than to all CHD endpoints combined. Characteristics that appear worthwhile for such a study include coping style, self-esteem, sense of belonging, sense of control, and vital exhaustion. Persons about to undergo coronary angiography may be persons who, with informed consent, can provide useful information about relationships between personality variables and the extent of coronary atherosclerosis. In most studies of personality characteristics and cardiovascular disease, the prospective method is advisable because disease may affect personality variables. The addition of psychosocial variables to ongoing studies may help to reduce research costs.

Assessment of Type A Behavior, Anger, Hostility and Coronary Heart Disease
The failure to identify a relationship between Type A behavior and CHD in two recent longitudinal studies and the equivocal relationships between the two in cross-sectional studies occasioned a great deal of discussion. Possible reasons for these results include changes in the methods of measurement of Type A, the effect of education and treatment programs on the public, different characteristics in the populations studied, and changes in social class and lifestyle.

Standardization of the assessment of Type A behavior is essential for further work. Recent research suggesting the importance of specific components of Type A behavior, in particular hostility, has received a good deal of attention. The development of separate assessment techniques for specific components of Type A, not only the anger and hostility component, was recommended.

In the Western Collaborative Group Study men rated Type A by both a standard interview and a questionnaire were more likely to develop CHD than men identified as Type A with only one measure. Multiple measures of Type A are therefore recommended.

Publication of the detailed proceedings of the meeting is expected in the near future.

Index Terms: epidemiology • cardiovascular disease • risk factors • mood • life events • psychosocial factors
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