

The specific numbers of patients and procedures that will be required to develop expertise in this discipline have not been well defined. It may be helpful to note that the several currently active multidisciplinary programs training clinicians in this area typically have well delineated populations of at least 500 adult patients, and have regularly scheduled clinics encompassing 10 to 20 patients/week, including diagnostic

procedures. The level 2 trainee should be involved with the care of a minimum of 10 patients/week.

Reference

1. Skorton DJ, Garson A Jr. Training in the care of adult patients with congenital heart disease. *Cardiol Clin* 1993;11:717-20.

Task Force 10: Training in Preventive Cardiovascular Medicine

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The application of the techniques of molecular biology to the study of the cardiovascular system has resulted in the creation of an enormous and growing new knowledge base of clinical as well as investigative relevance that demands a sufficient amount of time to master. It has now been shown that atherosclerotic plaques can be stabilized or even reversed, with a clinically significant impact on outcome. Because cardiologists provide most of the care for patients with symptomatic or advanced cardiovascular disease, it is imperative for cardiovascular specialists to become proficient in the primary and secondary prevention of cardiovascular diseases. This also includes the ability of the cardiologist to identify patients at high risk for cardiovascular disease and to recommend specific primary preventive measures. A copy of the policy statement on preventive cardiology and atherosclerosis approved by the American College of Cardiology is appended. This report outlines specific areas of knowledge necessary to achieve these goals.

General Standards and Environment

The training institution must have the appropriate facilities and staff to conduct a general training program in clinical cardiovascular medicine. Trainees and staff should have opportunities for research in the basic biomedical science departments of the training institution as well as in the cardiovascular division. It is desirable for this training to take place in an academic medical center or an institution with a strong commitment to academic training and appropriate certification.

Trainees must meet the criteria required for admission to an adult cardiology training program and should have adequate preparation in the biologic, physical and epidemiologic sciences basic to medicine.

The faculty of the institution must be adequate in number and experience to conduct a training program in clinical

cardiovascular medicine. It is desirable for certain members of the faculty to have special expertise in vascular biology, atherosclerosis, hypertension, disorders of lipid metabolism, peripheral vascular disease, thrombosis, thrombolysis, preventive cardiology, clinical epidemiology and the clinical pharmacology of cardiovascular drugs (1).

Content of the Training Program

Knowledge in this field can be obtained at three levels.

Level 1

Level 1 includes training that should be part of the knowledge base of *all* clinical cardiologists and includes exposure to the following general and specific areas.

General content areas:

1. Vascular biology of the heart and blood vessels. (It is important for future cardiovascular medicine trainees to understand the language of molecular biology so as to continue self-study and critical review of published medical reports).
2. Clinical epidemiology and biostatistics.
3. Principles of clinical trials and outcomes research.
4. Principles of clinical pharmacology.

Exposure to the following specific content areas is also essential:

1. Diagnosis and treatment of primary and secondary hypertension.
2. Diagnosis and treatment of primary and secondary dyslipidemias.

3. Diagnosis and treatment of thrombosis and hypercoagulable states.
4. Management of smoking cessation and nicotine addiction.
5. Cardiac rehabilitation.
6. Exercise physiology.
7. Nutrition and its effects on the cardiovascular system.
8. Psychosocial and behavioral aspects of cardiovascular diseases.
9. Diagnosis and treatment of peripheral vascular disease (1).

Training in these areas should be integrated into consultative, inpatient and outpatient rotations and didactic components of core cardiovascular medicine programs. The time allotted should be equivalent to 1 month of full-time training. Alternatively, this goal could be met by 1 month of block time followed by experience in continuity clinics.

Level 2

Level 2 training should achieve a level of expertise for the cardiovascular specialist so that the trainee could serve as an independent consultant to other cardiovascular practitioners in the management of cardiovascular risk factors. This should involve 6 to 12 months of training within the 36 months of a cardiovascular training program and include block time for direct evaluation of patients with advanced atherosclerosis, resistant hypertension or hyperlipidemia or recurrent thrombosis.

This could involve block time in hypertension and lipid clinics or services, or both, coagulation laboratories, peripheral vascular laboratories, clinical and cardiac rehabilitation services and additional exposure to behavioral medicine, exercise physiology, clinical epidemiology, outcomes research and vascular biology.

The clinical application of information contributed by newly emerging fields, such as vascular biology and medicine, lends itself to the development of the clinician/scientist and the expert teacher/clinician.

Level 3

Level 3 requires advanced training to qualify as a director of a clinical service or research program, or both. Examples include director of a preventive cardiology, hypertension or lipid service; director of a cardiac rehabilitation program; or director of a vascular biology laboratory; or a trainee who obtains an MPH in clinical epidemiology or outcomes research, or both.

Training to this level would require at least 1 year of a 36-month program. Alternatively, 2 to 3 years in a vascular biology laboratory or health services outcomes research/clinical epidemiology program would be required to attain expertise in these fields, possibly leading to an advanced degree.

Evaluation

The basic science knowledge and clinical competence of the trainees must be evaluated regularly by the cardiovascular medicine program director. The evaluation should include fund of knowledge; manual, clinical and decision making skills; and clinical judgment, attitude and relations. Trainees must be informed about the results of their evaluations.

Appendix. Policy Statement

Preventive Cardiology and Atherosclerotic Disease

To fulfill its mission to foster "optimal cardiovascular disease prevention," it is appropriate and necessary that the American College of Cardiology develop a leadership role in preventive cardiology. In 1980 Dr. Robert O. Brandenburg, College President, expanded that aspect of the mission statement as follows: "The mission of the College is to ensure optimal care for persons with cardiovascular disease or the potential for developing it; and ultimately through education and socioeconomic activities to contribute significantly to the prevention of cardiovascular disease."

With increasing knowledge concerning the specific roles of the various risk factors in atherosclerotic and thrombotic diseases and vascular dysfunction, strategies aimed at the appropriate detection and modification of these risk factors now demonstrate the potential for slowing the progress of atherosclerosis and even regressing the process. Recent data suggest an important reduction in adverse clinical sequelae in certain high risk groups. The results of clinical experiences, clinical trials and published consensus reports establish that outcomes can be improved by promoting favorable life-style behaviors and treating identified abnormalities. When interventions are appropriately targeted, there is little debate that they can be both clinically and cost-effective. Current legislative and social initiatives favor health policies based on the concept of "prevention." In contrast to the prevention of cardiac diseases, such as rheumatic fever and infective endocarditis, it is unlikely that such measures truly prevent the development of atherosclerotic disease, or the adverse events resulting therefrom, although a reduction in disease incidence and severity is probable, and fewer complications can be expected in many patients. Therefore, this Committee recommends that the College reaffirm and expand its policies regarding prevention of cardiovascular diseases.

The College will actively promote 1) dissemination of information relative to the prevention of atherosclerotic cardiovascular diseases and of its adverse consequences; 2) development of educational programs specific to the role of the cardiovascular specialist with regard to prevention; 3) cooperative development of practice guidelines, for consultative as well as rehabilitation services, to deliver cost-effective preventive care; 4) policies of fair reimbursement for effective services; 5) participation in the assessment of clinical outcomes of such programs.

The College recommends that cardiovascular specialists also promote preventive cardiac care by 1) endorsing antismoking policies and programs; 2) encouraging healthy dietary behavior by limitation of total calorie intake, fat and cholesterol; 3) promoting prudent physical activity; 4) ensuring adequate control of arterial blood pressure; 5) managing patients with hyperlipidemia and with metabolic, coagulative and other risk factors; 6) advising primary care physicians with regard to risk reduction; 7) developing a cardiovascular health promotion plan for cardiac patients and their families.

These actions of the American College of Cardiology serve to define the opportunities and responsibilities of cardiovascular specialists.

Reference

1. Spittell JA, Creager MA, Dorros G, et al. Recommendations for peripheral transluminal angioplasty: training and facilities. *J Am Coll Cardiol* 1993;21:546-8.

*Webster's definition of prevent: 1) (formerly) to act in anticipation; to anticipate. 2) to stop or keep from doing something. 3) to keep from happening; to make impossible by prior action; to hinder. 4) to preoccupy (the mind) (obs.)