Task Force 9: Training in the Care of Adult Patients With Congenital Heart Disease

DAVID J. SKORTON, MD, FACC, CHAIRMAN, MELVIN D. CHEITLIN, MD, FACC, MICHAEL D. FREED, MD, FACC, ARTHUR GARSON, Jr., MD, MPH, FACC, WILLIAM W. PINSKY, MD, FACC, DAVID J. SAHN, MD, FACC, CAROLE A. WARNES, MD, MRCP

The care of the patient with congenital heart disease has long been the province of pediatric cardiologists and cardiovascular surgeons. With advances in surgical and medical management, increasing numbers of patients with congenital heart disease are surviving into adulthood. These patients often present complex combinations of problems that may be unfamiliar to those who undergo a traditional medical (internal medicine) cardiology training program. Medical cardiologists are expert in the care of patients with acquired diseases of the heart and circulation, but currently most have little training in congenital heart disease, particularly in complex disorders. This report suggests an initial approach to the more systematic training of medical cardiologists in the recognition and care of adults with congenital heart disease.

We differentiate two levels of training and expected expertise in the care of adult patients with congenital heart disease: Level 1 training represents the level of knowledge appropriate for all trainees in medical cardiology and indicates the knowledge content that each graduate of such a program should acquire. This level of knowledge should be tested in the Subspecialty Certification Examination in Cardiovascular Diseases and will provide the graduate with sufficient expertise to recognize and evaluate common congenital heart disorders in adults. However, for trainees with level 1 expertise, consultation with a pediatric cardiologist or level 2-trained clinician will be advisable when major management decisions are made about patients.

Level 2 training represents the level of knowledge needed by those graduates who wish to make a commitment to this field.
and who wish to become competent in the care of the entire range of adult patients with congenital heart disease.

**Level 1: Basic Training for all Medical Cardiology Fellows**

All medical cardiology trainees should be exposed to a core of information regarding adults with congenital heart disease. The goal of level 1 training is for all graduates to be able to recognize and evaluate common, simple congenital heart lesions. These graduates should consider consultation and collaborative patient management with a level 2-trained specialist or pediatric cardiologist when major management decisions are made for adults with congenital heart disease and for periodic discussions of ongoing care.

We suggest that at least 3 h of formal lectures within the core curriculum of the training program be devoted to congenital heart disease in adults. Table 1 indicates the content suggested for these 3 h, covering key basic and clinical aspects of these disorders.

In addition to the didactic material in the core curriculum, trainees ideally should be exposed to adult patients with congenital heart disease on a regular basis. This could be done in the context of ongoing weekly case conferences already present in the medical cardiology training program. For example, at least one of the patients discussed in case conferences each month could be an adult with congenital heart disease. In addition, involvement in an ongoing congenital heart disease clinic or seeing older children or adolescents with a pediatric cardiology colleague, or both, is encouraged.

During rotations in electrocardiography, echocardiography, nuclear cardiology and the cardiac catheterization laboratory, and when being trained in other imaging techniques (magnetic resonance imaging, computed tomography), trainees should be exposed to the evaluation of congenital heart disease with these diagnostic modalities. Didactic material for these rotations should include consideration of the adult with congenital heart disease.

**Level 2: Special Expertise in Adults With Congenital Heart Disease**

At least 1 year of concentrated exposure is necessary for those trainees who wish to care independently for adult patients with congenital heart disease. Table 2 indicates the knowledge areas that should be covered during this year. In addition to didactic materials, the training should include the following activities and aims:

- Attending a regular (at least weekly) clinic organized for the care of adults with congenital heart disease.
- Participation in formal rotations in pediatric cardiology, including exposure to neonates and children with congenital heart disease.
- Gaining familiarity with the range of diagnostic and therapeutic methods, including direct experience in echocardiography and cardiac catheterization.
- Participation in the perioperative care of patients with congenital heart disease (preferably in adults), including direct observation of surgical repair.

**Program Requirements**

Two basic requirements are indicated for a program to train effectively at level 2:

- The presence of associated formal programs in pediatric cardiology and cardiovascular surgery.
- At least one faculty member with a career commitment to the care of adult patients with congenital heart disease; preferably this faculty member would have received level 2 training.

Because relatively few centers in the United States have amassed a sufficient number of adult patients with congenital heart disease followed in an organized manner, regionalization of training in the care of the complex congenital heart disease patient is necessary.
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

Task Force 10: Training in Preventive Cardiovascular Medicine

JAY M. SULLIVAN, MD, FACC, CHAIRMAN, EDWARD D. FROHLICH, MD, FACC, RICHARD P. LEWIS, MD, FACC, RICHARD C. PASTERNAK, MD, FACC

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.

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.