Definition of the Problem

Of the U.S. population of 250 million, >70 million have heart disease. Large segments of the population have substandard health status, do not have adequate access to the resources of the health care system and, by multiple measures, can be defined as the underserved (1). Two major components of the overall problem must be examined in detail: 1) The overall decline in morbidity and mortality for cardiovascular disease in the United States is not uniform, and certain segments of the population have benefitted relatively little, specifically minority groups and other individuals in lower socioeconomic strata (2). 2) There is a maldistribution of health care resources, which are allocated primarily along socioeconomic lines, compounded by the disproportionately large numbers of minorities represented in the lower socioeconomic strata (3).

Correlated with these twin factors are the following: 1) Approximately 35.4 million U.S. citizens are without hospitalization or health insurance, including unemployed persons, welfare recipients and the working poor (i.e., people who may earn >$20,000/year but are employed in small businesses or are self-employed and cannot afford health insurance). This equals 10% to 15% of the U.S. population. 2) Morbidity and mortality rates can be expressed as percentages above the measured norms; some subgroups of the population have documented rates of effective life loss in excess of the majority population by as much as 75% (1,4,5).

Using the criteria of health status, availability of health coverage and socioeconomic status, the underserved population can be defined (1). It has not benefitted from high technology procedures at the same rate as others (5-7). James P. Grant, Executive Director, UNICEF, emphasized that morality marches along with increased capacity: "As our capacity to do good has increased, it is gradually becoming unacceptable ethically not to use that capacity, or to exclude nations, communities or individuals from the benefits of progress" (8). This principle should have much broader application.

The Underserved

Low socioeconomic status. A numerically significant percentage of the majority population lacks adequate resources for cardiovascular care. Multiple data sources document that cardiovascular disease mortality rates are significantly affected by socioeconomic status, as defined by education levels, yearly income, occupation status and numbers of people living in the same household. Similar data are available from other countries. Moreover, similar disparities between rates of decline in mortality rates for cardiovascular disease seen for African-Americans compared with whites is seen for lower socioeconomic status whites compared with the middle and upper socioeconomic status groups (3,4,6,9). Such data have been recorded serially in Los Angeles and were recently confirmed in New York (Harlem), Detroit and Chicago, where low socioeconomic status compounds the problems of minority status (7,10-13).

Racial and Ethnic Minorities

African-Americans. African-Americans comprise 12% of the population and are the largest minority group, concentrated in urban inner city areas and in the rural South. A large percentage of this population receives substandard or no cardiovascular care, and 25% to 35% have no health insurance or inadequate coverage. This population has the highest overall cardiovascular mortality rates, primarily from hypertension-related problems (stroke, end-stage renal disease) and ischemic heart disease. Diabetes and obesity are frequent comorbid conditions. Coronary artery bypass graft surgery rates are considerably lower than for the majority population (6). Although political influence has flowed from high population percentages in several major cities, dwindling financial resources has muted this influence on redressing inadequacies in the health care system in such cities as New York (Harlem), Chicago, Detroit and Los Angeles (7,10,11).

Latinos. Latinos comprise the second largest minority group; a high percentage of this multicomponent population also receives substandard or no cardiovascular care. This group has the highest percentage without health insurance, at nearly 50% (5). The cardiovascular mortality rates are somewhat lower than for the majority population, but effective life lost is higher (4). There are four major subgroups of the Latino/Hispanic population: 1) Puerto Rican-Americans are concentrated in urban northeastern cities and in the territory of Puerto Rico; 2) Cuban-Americans are concent-
trated in Florida and along the eastern seaboard; 3) Mexican-Americans are the largest subgroup and are concentrated in the urban and rural southwestern states and some cities in the Midwest; and 4) those of Central and South American origin are concentrated in California and western and midwestern urban and rural areas. Cardiovascular disease rates vary considerably among these groups, with higher ischemic heart disease rates among male Puerto Rican- and Cuban-Americans in the eastern seaboard areas (4). Obesity and diabetes are major contributors to the risk profile. Coronary artery bypass graft surgery is less frequently performed than might be expected, whereas rheumatic heart disease and valvular surgery rates are higher, particularly in California (6,7).

Asian-Americans. Broadly defined, this group includes people from Japan, the Philippines and other Pacific islands, China and the Indochina and Indonezan peninsula. These groups are concentrated on the West Coast and in Hawaii and in midwestern and northeastern urban areas. Varying percentages lack resources for health care based primarily on socioeconomic and immigrant status. Cardiovascular disease mortality rates are considerably lower than the national average, although the stroke rate is high in first- and second-generation Japanese-Americans (10).

American Indians. The plight of American Indians is characterized by differential health status. Common to many tribes is the markedly increased incidence of diabetes and, in some tribes, a high incidence of strokes. More recently documented is an incidence of ischemic heart disease mortality for American Indian men comparable to that of Puerto Rican- and Cuban-American men (4,9). American Indians are located on reservations scattered throughout the country, most notably in West and in eastern seaboard states.

The elderly. People ≥65 years make up a large percentage of the total population, and a significant percentage lives at or near the poverty line despite social security and receives inadequate health care despite Medicare. This is especially true for elderly minorities and those who are not covered by Social Security and Medicare (e.g., noncitizens). As the population ages, this issue is compounded by the companion problem of inadequate nursing home resources (9,14).

Children. Largely related to minority or low socioeconomic status, or both, of the family unit, a large number of children receive inadequate cardiovascular care, primarily because of lack of access (2,3,9). This problem is seen in both inner city urban and rural areas and is most prominent in the latter (8,15,16).

Women. Women, like minorities, have frequently been left out of large studies of cardiovascular issues. However, data clearly indicate that they are at higher overall cardiovascular risk, although increased mortality rates occur ~9 years after such rate increases occur in men.

Undocumented aliens. A major problem in some areas of the country is the large number of undocumented aliens with a high disease burden who place large demands on the available health care system. Any strategy for improving the care available to the underserved population must include strategies addressed to this population subgroup. Some aspects of the problem can be better addressed under a national plan for health care delivery, but individual effort and sacrifice will still be required (17,18).

Dimensions of Cardiovascular Personnel Needs

The cardiovascular personnel needs of the underserved populations must be categorized (8,15-17). As long as there is a maldistribution of specialists and facilities, inadequate financing of existing programs and many people unwilling to serve in underserved areas, the recognition of the extent of the problems should be a clarion call for those who truly wish to serve in the grand tradition of medicine.

Although our primary focus is on the workforce needs for the care of the underserved, it is clear that the differential health care needs of these subgroups are conditioned by variations in cardiovascular risk. Multiple studies document that blacks are less likely to seek immediate care for a suspected heart attack or for chest pain (19,20); are more likely to have a poor outcome after a heart attack, especially black women (21-23); and have a poorer outcome with medical management of ischemic heart disease despite less severe coronary artery disease on angiography (24,25). Long-term follow-up of subjects in urban/rural black/white comparison studies indicate that blacks are at higher risk for all-cause mortality and at comparable or higher risk for ischemic heart disease mortality over age 30 years (26). Although age adjustment increases the likelihood of a poor outcome for blacks, prompt institution of thrombolytic therapy may give results comparable to the majority population (4,7,27). The contributions of specific risk factors warrant further investigation, such as left ventricular hypertrophy and lipid abnormalities (28-32). There is clearly a need for further research while dealing directly with the overall problem of access to appropriate levels of health care delivery (33).

An economist recently noted that the American health care system is badly in need of fixing but that the rate of increase in health care costs in the United States is slower than that in six other countries, and the higher wage structure in the United States means that health care is "cheaper," or more affordable, here (34). Although these observations may be correct, the problem of inadequate health care in a large segment of the population remains unaddressed (35,36).

To reduce the discrepancies in health care outcomes between the underserved populations in the United States and those who enjoy the benefits of our remarkable ability to deliver high quality health care when resources are not an issue, we must 1) recognize the gaps between fixed facility resources and personnel distributions in both urban and rural "overserved" and "underserved" populations, and 2) iden-
tify potential resources that can be reallocated or modified to serve the broader population needs. For example, of the estimated 22.1 million patient visits made to office-based cardiologists during 1989 to 1990, an average of ±11 million visits/year, each subspecialist received an average of 4.5 visits/100,000 persons per year. Visit rates were equal for the sexes and highest for those ±65 years old (59.7% of total visits), in contrast to other specialists. Whites had a significantly higher rate of visits than blacks (4.5 vs. 2.2/100,000 per year), accounting for 90.2% of all cardiovascular specialist visits compared with 6.1% for blacks and 2.7% for others (37).

**Urban Issues**

The substandard health status of the medically underserved in our cities is well documented (38,39). It is paradoxical that the cities—the sites of some of our finest health centers and medical schools and the sources of many advances in medicine—have the highest concentrations of the underserved population (5,38). The large urban centers of the Northeast, South, Midwest and Southwest have the highest percentages of low socioeconomic status people and minority subgroups. Although the specific mix varies by geography and immigration/migration factors, the basic picture is the same: The less affluent and minorities occupy the run-down, poorly maintained central city areas (the "inner city"), and the affluent are concentrated in the suburbs. Some previously high quality health care facilities in inner cities have deteriorated or closed, with newer facilities now located in the suburban areas. Although there may be an overall surplus of hospital beds, the inner city hospitals are the only specialty services for hundreds of thousands of urban poor. Population characteristics further compound the access issues (39,47).

Chicago provides a prime example of the disparity in resources along racial and economic lines (Table 1), with striking correlations between areas of low income and high minority population density with high cardiovascular death rates, high infant mortality and high percentages of death occurring before age 65. In one mixed area (Near North Side), the smaller minority population skews statistics upward for infant mortality and percent of cardiovascular deaths under age 65 years. In the city of Chicago, with seven medical schools, 6,500 physicians in clinical training and several community hospitals of recent vintage closed, is the problem of inadequate health care for the underserved insoluble?

Paradoxically, our cardiology training programs produce more than adequate numbers of specialists who compete for the lucrative procedure "market," whereas underserved population ratios are compounded by low minority physician/minority population ratios and nonminority physicians who may decline to practice in predominantly minority areas (45-47).

The American Medical Association (AMA) master file data demonstrate that urban areas with high concentrations of poor and minorities have few or no adult specialty cardiologists, except in a few large teaching hospitals. Such 5-digit zip code maps do not indicate the physical and traditional barriers and defined routes of travel that dictate access to medical services. In Los Angeles, one of the underserved areas is almost as large as the District of Columbia, whereas in New York City (Harlem and Brooklyn) public hospital facilities provide the only specialty services for hundreds of thousands of urban poor. Population characteristics further compound the access issues (39,47).

Personnel and Resource Needs of the Underserved Population

Physicians. Marked variances in the ratio of physicians to population occur across the urban and rural areas of the United States, with the lowest ratios in areas of high concentration of urban poor. Ratios of 1 to 990 are not unusual in affluent suburban areas, whereas extremes of 0 to 28,000+ are encountered in many underserved areas (40-44). Low ratios are compounded by low minority physician/minority population ratios and nonminority physicians who may decline to practice in predominantly minority areas (45-47).

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Table 1. Health Care Resources in Chicago in 1990

<table>
<thead>
<tr>
<th>Location</th>
<th>Population</th>
<th>White (%)</th>
<th>Black (%)</th>
<th>Income</th>
<th>Poverty (%)</th>
<th>No. of Hospitals</th>
<th>No. of MDs</th>
<th>Infant Mortality (%)</th>
<th>No. of CV Deaths (per 100,000)</th>
<th>No. of Deaths &lt;65 yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Near North Side</td>
<td>62,800</td>
<td>71</td>
<td>23.9</td>
<td>$38,680</td>
<td>20.00</td>
<td>2</td>
<td>117</td>
<td>19.4</td>
<td>277</td>
<td>35</td>
</tr>
<tr>
<td>Forest Glen/North Park</td>
<td>33,990</td>
<td>90</td>
<td></td>
<td>$43,448</td>
<td>4.13</td>
<td>46</td>
<td>5.0</td>
<td>20.4</td>
<td>386</td>
<td>15</td>
</tr>
<tr>
<td>North Lawndale</td>
<td>47,297</td>
<td>96.0</td>
<td></td>
<td>$13,570</td>
<td>48.30</td>
<td>15</td>
<td>20.4</td>
<td>306</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>Woodlawn</td>
<td>27,472</td>
<td>95.5</td>
<td></td>
<td>$13,600</td>
<td>37.00</td>
<td>15</td>
<td>20.4</td>
<td>306</td>
<td>58</td>
<td></td>
</tr>
</tbody>
</table>

populations have too few facilities and physicians and cannot afford the services that are available. Inadequate numbers of minorities have been admitted to medical schools in the past 10 to 15 years; actual numbers have declined during some of those years (most strikingly male African American candidates), whereas the population has increased. Minority representation on medical faculties remains very low (48-51).

Nurses. The critical shortage of nurses has been public knowledge for a decade, with "bidding wars" compounding the problems of public hospitals and clinics, especially those facilities with relatively lower pay scales. Meanwhile, opportunities for nurses as practitioners and specialists have grown, compounding the shortage. The potential for nurses and physician assistants to meet some basic health care personnel needs is undergoing active evaluation (40).

Ancillary personnel. Support personnel, such as specialty procedure technicians and laboratory personnel, are often in short supply. However, if the pay scale is adequate, training programs materialize to mitigate these shortages (40).

Social service. An expanded role for medical social workers as members of the cardiovascular health care team has developed, and adequate numbers are required (40).

Facilities needs. Urban areas of many major cities have inadequate cardiovascular facilities, including hospitals, clinics, emergency rooms and long-term care facilities. In some areas, physical plants are in place, and financial support is the major issue; in others, physical plants have deteriorated or closed. Most cities do not have a plan for incorporating the care of the affected population into alternative care systems. Even where some plan has been promulgated, inadequate financing still renders the plan grossly inadequate (6,40,52,53).

Rural Issues

Nowhere is the complexity of determining cardiology work force needs more acutely felt than in the consideration of the rural setting. Small patient populations spread over large distances make the practices particularly demanding and time-intensive (54). As in many aspects of cardiology work force issues, there is a lack of data that must be addressed.

Table 2. Changes in Supply and Distribution of Cardiologists in Iowa, 1980 to 1990: All Professional Activities

<table>
<thead>
<tr>
<th>Cardiovascular Disease</th>
<th>County Population</th>
<th>Specialty Physicians</th>
<th>All Physicians</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;10,000</td>
<td>11,000-24,999</td>
<td>25,000-49,999</td>
</tr>
<tr>
<td>1980</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1990</td>
<td>0</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Net change</td>
<td>0</td>
<td>-1</td>
<td>+4</td>
</tr>
<tr>
<td>% change</td>
<td></td>
<td>+69.8</td>
<td></td>
</tr>
</tbody>
</table>

*The total number of Iowa physicians at the close of 1980 and 1990 was 3,267 and 3,840, respectively. Source: Tracy RD, Iowa Physician Information System, Office of Community-Based Programs. Iowa City (IA): The University of Iowa College of Medicine, 1993.

Definition of Rural Versus Urban

The U.S. Census makes the distinction between urban and rural at the level of as few as 2,500 residents of incorporated cities, villages or boroughs, or a community that is adjacent to a densely settled surrounding area. By default, therefore, population sizes not included in an urban area are deemed rural. The term "rural" is not synonymous with residence on a farm (55) but includes predominantly people living in small population clusters. By this definition, in 1990 the rural population was 61.7 million (representing 24.7% of the total U.S. population). Of great interest to the logistics of health care delivery is the fact that the 75.2% of the population living in urban areas occupied only 2.5% of the total land area, whereas the 24.8% of the population living in rural areas was distributed over the remaining 97.5% of the country (56).

The southeastern rural areas have the highest rates of cardiovascular risk factors and subsequent mortality. Total cardiovascular disease age-adjusted death rates (per 100,000 population) range from 46th (Georgia) to 52nd (Mississippi), ranking states from lowest to highest (57). A large portion of this area is known as the "stroke belt," with age-adjusted stroke rates ranging from 48th (Georgia) to 52nd (South Carolina). Seventeen percent of the underserved live in the South, and 20% have less than a 12th grade education.

As a case in point relevant to rural cardiovascular care, cardiologists as a proportion of the total Iowa physician population increased from 1.9% to 2.8% during the decade of 1980s. Nearly all the increase occurred in urban counties with populations >50,000. There was little diffusion of medical subspecialty care to Iowa counties with a <50,000 patient threshold (Table 2).

Some rural states have established academic health science centers to address rural core issues. Most have vertical systems, although most patients arrive by referral. The 34-unit University of Georgia system is located in Augusta, and 105 of the state's 159 (66%) counties are classified by the State Health Planning Agency as medically underserved. Six counties do not have a physician, and more than half have no obstetrician. In some counties, the infant mortality exceeds that of many developing countries.
Cardiologists are primarily located in urban areas; 0.5% of American College of Cardiology (ACC) members responding to a recent survey reported populations <10,000 within 25 miles of the office (58). It is not possible to state with precision the extent to which patients living in rural areas are underserved for cardiovascular care, but cardiologists are rarely located in regions with populations <25,000.

One important consideration with regard to rural cardiology work force issues is the extent to which cardiovascular specialists provide primary, as opposed to specialty, care in rural versus urban settings. Age was a much stronger correlate than geography with whether or not ACC members provided a high percentage of primary care in 1985; ACC members ≥56 years of age were much more likely to provide primary care to >75% of their patients, whereas only 3% to 4% of ACC members aged ≤40 years in 1985 provided primary care to >75% of their patients at that time.

**Pediatric Issues**

Since 1912, when the Maternal and Child Bureau was inaugurated, the federal government has recognized a societal interest in the health of children. Under Title V of the Social Security Act of 1935, the U.S. government has provided leadership to those serving the needs of children and families and has worked to assist in the health care of underserved women, infants, children and youth. Recent amendments in 1989 to the Title V Maternal and Child Health Care Grant have mandated state Children With Special Health Care Needs Programs, and these have provided resources in developing community-based systems of services for children with special health care needs and their families (59). Indeed, Objective 17.20 of the Year 2000 National Health Promotion and Disease Prevention Objectives deals with improving services for children with or at risk for chronic disabling conditions (60).

The relatively low incidence of heart disease in children (numbering <1 million for both congenital and acquired problems) presents unique barriers to access to care, including geographic and financial factors (61,62). Federal, state, and private funding sources have been utilized to create regional facilities (offices and clinics) for assessment and referral for cardiac diagnosis and care. In rural and urban areas, the emergency care of critically ill neonates, infants and children is accomplished by ambulance transport, frequently by air, when required and funded by the sources previously noted. Successful regionalization and the low population density in rural areas means that full-time pediatric cardiologists are not needed and should not be supported. Likewise, there is little evidence to support the notion that children identified with heart disease lack access to skillful pediatric cardiac care (including cardiac catheterization and surgery) in a timely fashion in significant numbers (63–66).

Nevertheless, in urban and rural settings primary care may be inadequate to initiate referrals for children, and referrals may be delayed by lack of transportation and language barriers. Frequently, for those recognized to have heart disease, lack of insurance to pay for medication or long-term care remains a significant deterrent to optimal or even adequate care (Jenkins KJ, personal communication; Williams R, questionnaire to pediatric cardiologists, personal communication) (67).

Children in the underserved populations include those of indigent and homeless families, homeless children and those who are uninsured for various reasons. In some circumstances, inpatient care is covered but not outpatient care. Improved access to care will depend on improving the availability of pediatricians, family health providers or competent paraprofessionals to detect the signs and symptoms of congenital or acquired heart disease and the provision of adequate funding for long-term comprehensive care for chronically ill children with heart disease and the multihandicapped. Effective preventive cardiac care will require additional resources, but only a modest increase in pediatric cardiology specialty services will be required to provide the needed additional services (68–76).

**Goals and Strategies for Improving Care to the Underserved**

On the basis of the preceding definitions of the problem and of the personnel deficits in underserved areas, this Task Force focused on several goals to improve care to the underserved as well as on strategies to achieve these goals. The overriding consideration in defining these goals and strategies has been to correct work force deficits in underserved populations. This Task Force strongly recommends that in each case, the implementation of the strategies be accompanied by appropriate outcomes research to evaluate whether or not the implemented changes result in progress toward the goal of improving the provision of cardiovascular care to the underserved.

**Academic Health Centers**

**Responsibility and Opportunities**

Academic health centers may play a major role in improving the availability of personnel to provide cardiovascular care to underserved populations. As the major resource for the training of health care providers, the development of new diagnostic and therapeutic modalities and expansion of knowledge of the mechanisms of cardiovascular disease, academic health centers have a unique role in solving future personnel needs in underserved communities (51).

**Priorities**

Patient care, education and research are traditionally stated as the major priorities of academic medical centers. For underserved populations it is dramatically evident that
health care is the highest priority. Integrating the educational and research agendas of academic medicine should be the major focus in improving the availability of physicians and medical personnel in underserved areas. Programs to provide medical students, residents and other trainees with experience in caring for disadvantaged populations is essential. Research programs designed to identify the most effective and valuable cardiovascular care would satisfy several priority areas (50).

Community-Based Programs

Enhancement of the quality and quantity of personnel for the provision of cardiovascular care to underserved communities should involve community resources. Programs to ensure that the ethnic and racial representation of students, trainees and faculty in medical school programs is proportional to the ethnic and racial proportions in the community served is an important principle. Interaction with local community organizations, schools and agencies may offer new opportunities for personnel support. Training experiences in local practices, clinics and neighborhood health centers, as well as in research projects, could be sponsored through the academic institution (52,53).

Integrated Health Care Systems

Teaching institutions in the inner city offer largely untapped resources of additional health care providers for underserved areas. The functioning of these institutions can be materially strengthened by careful restructuring of their roles in underserved areas. A well structured plan of integration of the faculty, trainees and students in academic institutions may be favorably tailored to the needs of underserved areas, particularly in urban environments, where many medical schools are located (51).

The academic medical center may serve as the hub of care for the underserved, with links to municipal or community hospitals, neighborhood primary care centers and local physician offices. Through well designed regionalization plans, based on community needs and using community residents, tertiary, secondary and emergency care can be efficiently provided by the fully integrated academic medical center. Academic and community providers would function throughout the system, participating in clinical care, research and educational programs. Community-based health care providers would have status comparable to that of the faculty at the medical center, ensuring recognition of their contribution to the total mission of the academic center. This would serve to minimize the "we/they" phenomenon, which often pervades the affiliated but nonintegrated system (50).

Role of Primary Care

Because academic health centers are focusing not only on the training of basic researchers but also on the training of primary care physicians and generalists, medical schools are turning toward the community for educational experiences in ambulatory care. The community-based primary care practice assumes greater importance as a part of an integrated academic health care system, serving as a source of referrals for secondary and tertiary care and as a site for teaching ambulatory medicine. As students, trainees and faculty become competent and comfortable in caring for the underserved, there is a greater likelihood that some physician-trainees will choose to build a career in such communities. As relationships mature between the medical school students, trainees and the community, other local provider groups may be included.

Information Distribution Using New Telecommunications

Technology

In rural areas the delivery of medical care, patient education and training of physicians and other health care workers is hampered by large distances and low population density. One solution to this set of problems is to exploit modern telecommunications technology for the delivery of a variety of information types. Clinicians have long utilized telephonic transmission of electrocardiograms for consultation in their interpretation. Similarly, satellite-based transmission of images have been used for educational and clinical purposes in several locations. The availability of fiberoptic communications technology permits the extremely rapid transmission of data using the broad bandwidth of this newer technology. The bandwidth permits extraordinarily rapid transmission of all types of digital data, including video data. Several opportunities will be afforded by the presence of fiberoptic communications connections: 1) alphanumeric data transmission (including patient records); 2) static image transmission (including chest X-ray films and microscopic images); 3) dynamic image transmission (including echocardiograms and angiograms). These data may then be used for educational or patient care purposes, or both, reducing the professional isolation of practitioners as well as permitting consultation with experts not available in the immediate area. Although the technology is relatively new, promising examples of its utilization are already available.

New Technology for Patient Care

New technology and therapeutics agents must be assessed in terms of value added to clinical cardiovascular health care. Physician demand for new technology may stimulate industry to increase the quantity of more costly devices. Also, new technology can potentially influence the demand for more physicians and other health care workers.

Several studies have documented a reduced utilization of both medical and surgical cardiac procedures in black patients and low socioeconomic status white patients. Further,
other studies suggest that reduced utilization of resources occurs in those patients without insurance or who are underinsured.

Scientifically controlled studies to determine the added value of new technology and the use of medical guidelines for appropriate patient access are both cost-effective and ethical (77).

Financing

This Task Force endorses reform of the current health care financing system to ensure coverage of all persons in need of cardiovascular health care and to increase provider access to deliver appropriate health care. The reform should include concepts of financial incentives and should respond to market forces rather than relying primarily on regulation. Appropriate reform of financing cardiovascular health care will enhance the patient-provider relationship, despite ethnic diversity or socioeconomic status (53,78–82).

Professional Training

Cardiovascular health care may be provided in different settings by cardiovascular specialists; by primary care providers, such as internists and family practitioners; or by nonphysician providers, such as physician assistants, nurse practitioners and clinical nurse specialists. The optimal blend of these providers may be influenced by acuity and complexity of disease, but geography and the availability or regulation of nonphysician providers may also be factors (51,77).

Cardiovascular training programs must be site specific. They should meet the needs for training different types of providers as well as addressing the specific characteristics of the patient population. Cardiology training programs should provide the opportunity for noncardiologists to obtain intensive training in cardiovascular medicine where appropriate (81,82).

The maldistribution of cardiovascular health care is only partly related to financial disincentives. There should be greater emphasis on ethnic diversity among the cardiovascular providers in clinical practice and among medical school faculty. Trainees from inner city and rural settings are more likely to return to these underserved areas to practice. However, all cardiovascular personnel should have training in ethnic and cultural diversity tailored to their local population needs and should provide culturally sensitive care (32).

With the potential for an increasing role of noncardiologist providers, emphasis on establishing organized health care delivery teams is more important than ever (77,81).

Patient Education

Risk factor assessment and modifications have been demonstrated to be effective for both primary and secondary prevention of cardiovascular disease. These include but are not limited to cigarette smoking, hypertension, diabetes, obesity, elevated low density lipoprotein and low high density lipoprotein cholesterol, sedentary life-style and alcohol and cocaine abuse.

Hence, a primary goal of cardiovascular health care personnel (cardiologists, generalists and nonphysicians) must be to expand patient education and participation in issues pertinent to risk factor modification and life-style adjustment that will reduce the incidence and prevalence of cardiovascular disease. Appropriate research to determine the optimal educational strategies to accomplish these goals is necessary (49,52,57,82).

Summary

The ACC has affirmed its commitment to universal access to health care.

Underserved populations exist in urban and rural centers. Common to each is a paucity of personnel trained in cardiovascular care and a lack of access to preventive and highly technologic services. These factors contribute to a poor health outcome (75).

Part of the rural problem can be corrected by the transfer of information to local providers by the use of new information systems. Included would be real-time electronic consultation, on-site subspecialty visits and the appropriate use of nonphysician providers (15).

The urban problem requires changes in priorities and responsibilities of the academic health centers toward the communities they serve. Curricula changes of cardiovascular specialists, internists, generalists and nonphysician health care personnel must include diversity in training, physician training of ethnically matched providers in addition to technical excellence and research into methods of patient education and motivation for a healthier life-style (51).

Reimbursement must appropriately reward those caring for underserved patients and those providing evaluation and management services (43,52).

Recommendations

1. The principle of appropriate access to cardiovascular care for all citizens is reaffirmed.
2. Adequately trained personnel to serve urban and rural populations are required.
3. Adequate facilities to serve urban and rural populations are required.
4. Service to rural populations for health education and care will be enhanced by new information systems and advanced transportation means.
5. Service to urban populations can be enhanced by care systems organized around academic centers.
6. Reimbursement systems must recognize the special circumstances of rendering care to underserved populations.
7. Outcomes monitoring should be conducted to determine success in providing care to the underserved.

References


2. In Ref. 1: 11-33.

3. In Ref. 1: 37-84.


5. In Ref. 1: 345-75.


Task Force 2: Academic Health Centers

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Introduction

After the Flexner report, academic medical centers differentiated themselves from other patient care institutions because they seriously undertook the task of training the next generation of physicians. After World War II the tremendous advances in medicine led to subspecialization so that physicians could both master all of a narrower field and commit to understanding the physiology and pathophysiology of an organ system. This highly specialized training has led to dramatic changes in the way that cardiac disease is diagnosed and managed and has enabled the wide availabil-

ity of these techniques. A decrease in mortality due to cardiovascular disease in the United States resulted.

In the past, the three roles of teaching, research and provision of patient care were largely the purview and responsibility of the academic center. Most consultant cardiologists 25 years ago were housed in academia, and they spent a good amount of time teaching students, primary specialty residents and a few cardiology fellows. They taught a cognitive discipline based on physiology but with few technical instruments beyond the stethoscope and the electrocardiogram (ECG). Former students referred their problem patients back to the professor for the definitive diagno-