ORIGINAL ARTICLE

Attributes of an ideal oral health care system

Scott L. Tomar, DMD, DrPH[1]; Lois K. Cohen, PhD[2]

1 University of Florida College of Dentistry
2 Paul G. Rogers Ambassador for Global Health Research

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Correspondence
Dr. Scott L. Tomar, University of Florida College of Dentistry, Department of Community Dentistry and Behavioral Science, 1329 SW 16th Street, Suite 5180, PO Box 103628, Gainesville, FL 32610-3628. Tel.: 352-273-5968; Fax: 352-273-5985; e-mail: stomar@dental.ufl.edu. Scott L. Tomar is with University of Florida College of Dentistry. Lois K. Cohen is a consultant and the Paul G. Rogers Ambassador for Global Health Research.

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Abstract

Objectives: The sense of urgency concerning the inadequacies of the current U.S. oral health care system in better preventing oral diseases, eliminating oral health disparities, and ensuring access to basic oral health services has increased in recent years. This paper sought to articulate the attributes that an ideal oral health care system would possess, which would be consistent with the principles of the leading authorities on the public's health.
Methods: The authors reviewed policy statements and position papers of the World Health Organization, The Institute of Medicine, The American Public Health Association, Healthy People 2010 Objectives for the Nation, and the American Association of Public Health Dentistry.
Results: Consistent with leading public health authorities, an ideal oral health care system would be have the following attributes: integration with the rest of the health care system; emphasis on health promotion and disease prevention; monitoring of population oral health status and needs; evidence-based; effective; cost-effective; sustainable; equitable; universal; comprehensive; ethical; includes continuous quality assessment and assurance; culturally competent; and empowers communities and individuals to create conditions conducive to health.
Conclusions: Although there are some attributes of an ideal oral health care system on which the United States has made initial strides, it falls far short in many areas. The development of an oral health care delivery system that meets the characteristics described above is possible but would require tremendous commitment and political will on the part of the American public and its elected officials to bring it to fruition.

Introduction

Issues surrounding access to oral health care services, models for delivering those services, and related workforce concerns are garnering increased attention in the United States. Although many of the discussion topics have been bandied about for decades, the sense of urgency concerning the inadequacies of the current system in better preventing oral diseases, eliminating oral health disparities, and ensuring access to basic oral health services has increased in recent years. A number of high-visibility events likely contributed to this heightened awareness and concern, including

- The release of *Oral Health in America: A Report of the Surgeon General* (1), the first and only report on oral health issued by the US Surgeon General. That report, and its subsequent *National Call to Action to Promote Oral Health* (2), highlighted disparities in oral health status and access to services.
- Erosion of state Medicaid programs, including reduced reimbursement rates, widespread declining participation by dentists, and little or no adult oral health coverage in many states (3,4).
- The 2006 lawsuit brought against the Alaska Native Tribal Health Consortium (ANTHC) by the American Dental Association (ADA) and Alaska Dental Society over the training and employment of Dental Health Aide Therapists, and the subsequent Alaska Superior Court ruling in favor of ANTHC and the settlement reached between the ADA and ANTHC (5).
- High-profile tragedies related to poor access to oral health care services, such as the death of 12-year-old Deamonte Driver in Maryland in 2006 due to an untreated dental infection (6).
- Sharply increased attention on health care reform by the executive and legislative branches of the federal government beginning with the 2008 presidential campaign. Heated

Congressional debate concerning health care reform is currently underway while this paper is being written.

While solutions to the access crisis remain elusive, there is nearly universal recognition that the *status quo* in the United States is unacceptable and unsustainable. Despite spending more money on health care per capita and as a proportion of gross domestic product than any other nation, our key health outcomes generally do not rank highly, huge disparities persist, and a large proportion of our citizens cannot access basic health services. If one goal of a society is to ensure optimal health of its population, attention must be given to its public health system, not just its health care delivery system. This paper will not attempt to solve the problems of continued high incidence of largely preventable diseases and widespread disparities in health status and access to services, but aims to identify a set of principles that may help guide proposed solutions. We first review the principles of health, health care, and public health as expressed by national and international authorities on the health of populations. We then present our vision of the characteristics that would be embodied by an ideal system for delivering oral health care services.

Principles of health, health care, and public health

An extensive review of all that has been written about the principles of health, health care, and public health is beyond the scope and page limitation of this paper. Instead, we highlight the principles and policy statements on these topics articulated by several widely recognized leading national and international public health agencies, organizations, and initiatives. We adopt a public health orientation because public health remains the only element of the health sector focused primarily on the health of populations.

World Health Organization

The World Health Organization (WHO) is the directing and coordinating authority for health within the United Nations system. Established in 1948 in the aftermath of World War II, WHO produces health guidelines and standards, helps countries to address public health issues, and supports and promotes health research. The WHO Constitution articulates the organization's nine basic principles regarding health (Table 1). Among those principles are the concepts that the highest attainable standard of health being a fundamental human right, and the responsibility of governments to ensure the health of their people by providing adequate health and social measures.

The WHO, in collaboration with the US Public Health Service and other participating national ministries of health, undertook two large studies in an attempt to better understand elements of nationally developed oral health care delivery systems that appear to be effective and efficient in improving the oral health of their respective populations. The International Collaborative Study of Dental Manpower Systems in Relation to Oral Health Status (ICS I) was conducted in seven countries in 1973-1981 and was supported by the US Public Health Service to meet its expressed need for objective data on effective health system elements that could be incorporated into a US national health care program (8,9). The Second International Collaborative Study of Oral Health Outcomes (ICS II), conducted in 1988-1992, provided data on temporal changes in several of the ICS I sites, added several new sites, and substantially broadened the scope of factors to be examined (10). Perhaps, the major findings from these studies concerning oral health care systems and oral health outcomes are: a) systems with a relatively strong preventive orientation experienced less disease; b) those with highly organized school oral health services had very low levels of untreated disease in children; and c) a shift from a child-centered to a family-centered emphasis may have led to the great improvements in oral health status among adults observed in one of the sites.

WHO's most recent action plan for oral health was confirmed by the Member States of the Sixtieth World Health Assembly in 2007 (11). Recognizing the common risk factors for oral diseases and many chronic diseases and the intrinsic

Table 1 The World Health Organization Basic Principles of Health (7)

1. Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.
2. The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition.
3. The health of all peoples is fundamental to the attainment of peace and security and is dependent upon the fullest co-operation of individuals and States.
4. The achievement of any State in the promotion and protection of health is of value to all.
5. Unequal development in different countries in the promotion of health and control of disease, especially communicable disease, is a common danger
6. Healthy development of the child is of basic importance; the ability to live harmoniously in a changing total environment is essential to such development.
7. The extension to all peoples of the benefits of medical, psychological and related knowledge is essential to the fullest attainment of health.
8. Informed opinion and active co-operation on the part of the public are of the utmost importance in the improvement of the health of the people.
9. Governments have a responsibility for the health of their peoples which can be fulfilled only by the provision of adequate health and social measures.

Table 2 The Institute of Medicine's Five Key Principles on Health Insurance (13)

1.	Health care coverage should be universal.
2.	Health care coverage should be continuous.
3.	Health care coverage should be affordable to individuals and families.
4.	The health insurance strategy should be affordable and sustainable for society.
5.	Health insurance should enhance health and well-being by promoting access to high-quality care that is effective, efficient, safe, timely, patient centered, and equitable.

links among oral health, general health, and quality of life, the action plan calls for incorporation of oral health promotion and oral disease prevention into an integrated programs of chronic disease prevention and treatment. Among the 13 actions that member states were urged to adopt were: the provision of essential oral health care to the population; incorporation of evidence-based approaches for prevention and control of oral diseases; and increasing the capacity to produce oral health personnel, including dental hygienists and nurses, to work at the primary care level.

IOM

Established in 1970, the IOM is the health arm of the National Academy of Sciences, which was chartered in 1863. The Charter of the IOM described the purpose of the Institute and included the following statement: "Rising expectations of better health and of improved quality of life for all members of our society now include good health care as a universal human right and as a goal of this society." The IOM issued a consensus report in 2004 that articulated its five key principles on health insurance (Table 2) (12).

The IOM's first report specifically focused on improving oral health was issued in 1980 (13). Thirty years later, some of the report's major conclusions still hold: "Americans have a substantial unmet need for dental care . . . At the same time, proven methods exist for preventing and reducing dental diseases . . ." The IOM committee that conducted the study recommended inclusion of dental services in any national health insurance plan. The committee recommended that highest priority be given to a system that assures the delivery of preventive dental services to all children and adolescents, followed by comprehensive services for all children and adolescents, preventive services for adults, and comprehensive services for adults. Furthermore, the committee considered the data on safety, effectiveness, and cost-effectiveness from a large number of prevention demonstration projects and recommended that dental hygienists and dental assistants with appropriate training be used to directly provide school-based preventive care without supervision by a dentist. In a separate comment appended to the report, committee member Dr. Lois Cohen noted that the report excluded the considerable literature on the importance of the family as a determinant of health care utilization and the appropriate focus of attention rather than developing separate systems for delivery of care for children and for adults.

IOM also issued several key reports on public health. In its landmark 1988 report, IOM defined the mission of public health as fulfilling society's interest in assuring conditions in which people can be healthy (14), and described public health as vital function of government. As noted in IOM's subsequent report, *The Future of Public Health in The 21st Century* (15), for Americans to enjoy optimal health – as individuals and as a population – they must have the benefit of high-quality health care services that are effectively coordinated within a strong public health system.

Healthy People Objectives

Healthy People 2010 is the most recently released edition in a series of national objectives for health promotion and disease prevention that began in 1979 (16) (draft objectives for *Healthy People 2020* are under review at the time this is being written). Although it was issued by the US Department of Health and Human Services, Healthy People 2010 represented the collective input of hundreds of interested organizations and agencies and thousands of individuals. The two overarching goals of the *Healthy People 2010* initiative are to: a) increase quality and years of healthy life; and b) eliminate health disparities. *Healthy People 2010* also includes 10 leading health indicators, 28 focus areas, and 467 specific objectives. One of those focus areas is oral health, which includes 17 objectives supporting the stated goal of preventing and controlling oral and craniofacial diseases, conditions, and injuries and improving access to related services.

In its description of its systematic approach to health improvement, *Healthy People 2010* includes its Perspective on Achieving Equity: "Healthy People 2010 is firmly dedicated to the principle that – regardless of age, gender, race or ethnicity, income, education, geographic location, disability, and sexual orientation – every person in every community across the Nation deserves equal access to comprehensive, culturally competent, community-based health care systems that are committed to serving the needs of the individual and promoting community health."

American Public Health Association

The American Public Health Association (APHA) is the oldest, largest, and most diverse organization of public health professionals in the world (17). Founded in 1872, APHA's stated mission is to improve the health of the public and

Table 3 American Public Health Association's Principles of Ethics in Public Health (18)

1. Public health should address principally the fundamental causes of disease and requirements for health, aiming to prevent adverse health outcomes.
2. Public health should achieve community health in a way that respects the rights of individuals in the community.
3. Public health policies, programs, and priorities should be developed and evaluated through processes that ensure an opportunity for input from community members.
4. Public health should advocate for, or work for the empowerment of, disenfranchised community members, ensuring that the basic resources and conditions necessary for health are accessible to all people in the community.
5. Public health should seek the information needed to implement effective policies and programs that protect and promote health.
6. Public health institutions should provide communities with the information they have that is needed for decisions on policies or programs and should obtain the community's consent for their implementation.
7. Public health institutions should act in a timely manner on the information they have within the resources and the mandate given to them by the public.
8. Public health programs and policies should incorporate a variety of approaches that anticipate and respect diverse values, beliefs, and cultures in the community.
9. Public health programs and policies should be implemented in a manner that most enhances the physical and social environment.
10. Public health institutions should protect the confidentiality of information that can bring harm to an individual or community if made public. Exceptions must be justified on the basis of the high likelihood of significant harm to the individual or others.
11. Public health institutions should ensure the professional competence of their employees.
12. Public health institutions and their employees should engage in collaborations and affiliations in ways that build the public's trust and the institution's effectiveness.

achieve equity in health status. APHA developed a code of ethics for public health practice (18) that contains 12 concise principles (Table 3).

APHA has adopted a number of policy statements of direct relevance to considerations of ideal attributes of an oral health care system. Among these are support for the principles and application of evidence-based dental care (Policy 9706) and support for Alaska Dental Health Therapists and the use of other innovative and effective programs to improve access to preventive and therapeutic oral health services for underserved populations in the United States (Policy 20064).

During the US national discussion of health care in 2009, APHA issued its Agenda for Health Reform (19). That document highlighted the changes viewed by APHA as the most critical to improve the public's health, based on the Association's long-standing policies and what it considered to be the best current evidence. Universal coverage for health care, which has been promoted by APHA since the early 1900s, was viewed as essential but insufficient to optimize the nation's health. The specific recommendations and principles articulated in that document are summarized in Table 4.

American Association of Public Health Dentistry

Founded in 1937, the American Association of Public Health Dentistry (AAPHD) is the nation's largest organization dedicated to the vision of optimum oral health for all. AAPHD membership is open to all individuals concerned with improving the oral health of the public. AAPHD adopted a policy statement on national health reform in 1993 and its policy statement on access to dental care in 2008. These policies were reflected in AAPHD's 2009 Principles for Health Reform (20) (Table 5). Among those principles were universal access to personal oral health services, increased investment in community-based oral disease prevention, and workforce regulation that would allow the most cost-effective use of oral health care personnel.

Ideal attributes of an oral health care system

An ideal oral health care system would be consistent with the principles and policies of the nation's and world's leading

Table 4 The American Public Health Association's 2009 Recommendations for Health Reform (18)

- Support Population-based Services That Improve Health
  - Invest in population-based and community-based prevention, education and outreach programs that have been proven to prevent disease and injury and improve the social determinants of health.
  - Address the chronic underfunding of the nation's public health system.
  - Account for the real cost savings and cost avoidance of preventive and early intervention services at the individual and community levels
    through more accurate fiscal scoring methods.
  - Develop, expand and monitor programs to reduce disparities in health.
  - Require methods to assess the impact federal policies and programs have on public health.
  - Establish health goals and outcomes and require an annual "State of the Nation's Health" report to hold ourselves accountable.
- Reform Health Care Coverage and Delivery
  - Comprehensive health care coverage for all.
  - Strong public programs.
  - Access to affordable and high-quality health care for all.
  - First dollar support for evidence-based clinical preventive services.
  - Expand the public health and primary care workforce.

Table 5 American Association of Public Health Dentistry's 2009 Principles for Oral Health Within Any Health System Reform (19)

- As highlighted in the Surgeon General's Report on Oral Health in America, oral health and general health are inextricably connected. Any reform of the U.S. health care system must include reform of the oral health system.
- The primary goal of oral health reform should be optimal oral health of all Americans and the elimination of oral health disparities.
- High quality and affordable personal oral health services should be available for all Americans.
- Federal, state and local dental public health programs must receive adequate funding to ensure they can provide the core public health functions of assessment, policy development, and assurance, as described by the Institute of Medicine and the Association of State and Territorial Dental Directors.
- Oral health reform should include greater investment in effective, evidence-based community preventive services, including but not limited to community water fluoridation, community and school based dental sealant and fluoride programs, mouth guard programs, and tobacco control.
- There should be adequate resources devoted to training the dental public health workforce, including support for graduate education in public health and incentives for state and local governments to employ appropriately credentialed dental public health personnel.
- Communities of color are severely underrepresented among the nation's dentists and dental hygienists. To increase its cultural competence and reduce barriers to care, resources should be devoted to increasing the racial and ethnic diversity of the oral health workforce.
- There should be greater investment in research for oral disease prevention and health service delivery.
- Regulation and licensure of oral health care personnel should allow the most cost-effective use of the oral health workforce.

authorities on the public's health. It would also incorporate the most current science on clinical and public health practice. The attributes of such an ideal oral health care system are listed below. Table 6 provides cross-reference of the attributes and the organizations or initiatives that have explicitly espoused them in their policy statements or reports. The absence of check mark on that table does not necessarily mean that the organization does not support that principle, but simply means that we had not found an explicit statement in that organization's writings.

Integrated with rest of health care system

As was concluded in the Surgeon General's Report on Oral Health in America (1) and the World Health Organization's Oral Health Action Plan (11), oral health and general health are inextricably linked. Effective prevention and control of oral disease frequently entails social, behavioral, or medical interventions that are beyond the scope and expertise of oral health professionals. In the coming decades, the US population will continue to shift toward an older age distribution and an increasing number of Americans will reach their golden years with relatively intact dentitions, chronic disease, and multiple medications. Yet, oral health care coverage is typically distinct and separate from medical insurance and the education of dentists generally occurs in isolation from the education of physicians and nurses. Patient care would be far more holistic and comprehensive if the oral health care system, including payments mechanisms, were more fully integrated with the rest of the health care system. Because of the tremendous overlap of risk factors that threaten oral health and those that increase the risk for other chronic diseases (21), an integrated system may be able to reap broader benefits from health promotion and disease prevention.

Table 6 Linking the Ideal Attributes of an Oral Health Care System to the Principles and Policy Statements of Major Public Health Authorities and Initiatives

Attribute	WHO	IOM	HP 2010	APHA	AAPHD
Integrated	✓	✓	✓	✓	✓
Emphasis on health promotion and disease prevention	✓	✓	✓	✓	✓
Monitors population oral health status and needs	✓	✓	✓	✓	✓
Evidence-based	✓	✓	✓	✓	✓
Effective	✓	✓	✓	✓	✓
Cost-effective	✓	✓		✓	✓
Sustainable		✓		✓	
Equitable	✓	✓	✓	✓	
Universal	✓	✓	✓	✓	✓
Comprehensive		✓	✓	✓	
Ethical				✓	
Continuous quality assessment and assurance		✓		✓	
Culturally competent			✓	✓	
Empowers individuals and communities	✓		✓	✓	

AAPHD, American Association of Public Health Dentistry; APHA, American Public Health Association; HP 2010, Healthy People 2010; IOM, Institute of Medicine; WHO, World Health Organization.

Emphasis on health promotion and disease prevention

A system focused primarily on treatment of disease in individuals is not economically sustainable, socially desirable, or ethically responsible. The technology exists to prevent a very large proportion of oral diseases (22,23), and community-based prevention generally is cost-saving compared to a treatment-focused approach, particularly for communities and individuals at high risk for disease (24-26). Oral disease prevention also reduces the probability of social impacts, such as missed school days or work days, and may improve oral health-related quality of life (27). An ideal oral health care system would create an environment conducive to optimal health, prevent the occurrence of disease, and intervene as early as possible in disease processes.

Monitors population oral health status and needs

Assessment of the health status of populations is the first of the core functions of public health (14). As with other public health programs, effective programs for dental public health monitor the health of communities and populations to identify emerging and existing risk factors, health problems, and priorities for targeting interventions. Ongoing assessment is also an essential component for evaluation of programmatic or policy interventions.

Evidence-based

Evidence-based medicine or dentistry is the formalized process of identifying and interpreting the results of the best scientific evidence, which is considered in conjunction with the clinician's experience and judgment, the patient's preferences and values, and the clinical circumstances when making patient care decisions (28). This paradigm has been extended to evidence-based public health practice, which has been defined as "the development, implementation, and evaluation of effective programs and policies in public health through application of principles of scientific reasoning, including systematic uses of data and information systems, and appropriate use of behavioral science theory and program planning models" (29). An ideal oral health care system must incorporate interventions found to be effective in clinical and public health practice and eliminate those that are not.

Effective

An ideal oral health care system must be able to consistently demonstrate improvements in health outcomes over time and be able to sustain optimal levels of oral health of individuals as well as communities.

Cost-effective

All societies have resource limitations and competing needs. An ideal oral health care system would use the least resource-intensive, socially acceptable approach to reach its desired health outcomes. Inherent in the issue of cost-effectiveness is consideration of the specific services to be rendered, as well as to the least expensive type of personnel trained to deliver those services safely and competently. These care delivery models should be monitored over time for performance as well as costs because the circumstances, materials, supplies, workforce supply and demand, and other factors also may change. The most resource-intensive personnel should be focused primarily on the most complex and difficult types of services.

Sustainable

The models for care delivery, types of health care personnel, and payment mechanisms should be able to be maintained in the future. Continuous monitoring of system performance and experimental measures to reduce the costs and need for reinforcers in the environment would be essential. Additionally, to avoid dependence or reliance on a specific system of delivery when other options may become available over time such as improvements in self-care or a community-based intervention, attention to needed changes for the future must be part of the strategic plan for sustainability.

Equitable

Consistent with the vision of all leading public health authorities, an ideal oral health care system would provide every person in every community across the nation with equal access to comprehensive, culturally competent, community-based oral health care. To assess for equitable distribution of services, it is necessary to measure reductions in health disparities.

Universal

As reflected by the position statements of all major public health authorities, every member of a society should have health care coverage. Because oral health is integral to overall health and oral health care is an essential type of primary health care, access to oral health care coverage should be universal.

Comprehensive

An ideal oral health care system would provide for preventive, restorative, and rehabilitative oral health services.

Ethical

Any oral care system should adhere to tenets of professional ethics, both at chair side and at the population level, that is, it needs to consider not only the ethical principles involved in patient–provider interactions but also those guiding public health practice. Ethical guidelines and codes of conduct primarily focused on the interaction of individual professionals with their patients have been issued by professional organizations such as the ADA (30), the American College of Dentists (31) and the American Dental Hygienists Association (32). As was discussed earlier, APHA developed a code of ethics for public health practice (18).

Continuous quality assessment and assurance

The ideal oral health care system would have an ongoing mechanism for monitoring critical dimensions of the structure, process, and outcomes of care for populations and individuals. An effective mechanism would be in place to ensure that the care provided reflects current science and best practices, maximizes benefits, minimizes risks, meets the needs of patients and communities, and would be transparent to consumers. Continuous quality assessment and assurance requires that valid and reliable quality measures be available, which thus far are fairly rare in oral health care (33).

Culturally competent

The United States has a culturally and linguistically diverse population, which is one of the nation's great strengths. Meeting the needs of that diverse population also presents considerable challenges. Consistent with APHA's principles of ethics in public health, an ideal oral health care system would be able to effectively interact with people of all cultures. The system would include a set of behaviors, attitudes, and policies that enables it to work in cross-cultural situations. The ideal oral health care system respects and takes into account the individual's and the community's cultural background, cultural beliefs, values, and needs and incorporates them into the way oral health care, health promotion, and community-based prevention are delivered.

Empowers individuals and communities

The factors involved in oral health promotion and the prevention and control of oral disease are strongly intertwined with environmental, political, social, behavioral, economic, educational, and cultural factors. An ideal oral health care system must provide communities and individuals with the tools to effectively mitigate the threats to general health and oral health and to promote an environment conducive to health. Among those tools are health literacy, information, and advocacy skills, including the ability to effect change in public policy. Individuals and consumers would also be empowered to understand and evaluate the services they are offered, such as through quality reporting.

Where are we?

There are some attributes of an ideal oral health care system on which the United States has made initial strides. Most notably, the United States was the pioneer and remains the global leader in the adoption of community water fluoridation for the prevention and control of dental caries. Public health surveillance for basic measures of oral health has been incorporated into national surveys for decades, and data on children's oral health status are now available for most states. Recognition of the importance of evidence-based dental practice continues to grow in this country, and is being championed by the dental education and dental practice communities.

Unfortunately, the current US oral health care system falls short on many of the attributes of an ideal system. Oral health education, service delivery, and financing are largely independent of the rest of the US health care system. Although there have been some advances in oral disease prevention, dental education in the United States remains focused primarily on treatment and financing mechanisms incentivize restoration and rehabilitation rather than primary prevention and population health status. Oral health surveillance is nearly nonexistent at the local level, the level at which most programs and services are organized and delivered. Research on models of maintaining oral health and delivering oral health care services has received scant funding or attention. Access to the oral health care system in the United States is neither universal nor equitable, and the services available to many communities and individuals, particularly those that bear the greatest burden of disease, are far from comprehensive.

How oral health workforce issues relate to these attributes

Discussions surrounding the oral health workforce cannot be separated from the broader conversation concerning the type of system that would optimize the oral health of the American people. Aspects of the workforce such as education, credentialing, licensure, distribution, and financing must be considered in the context of the ideal oral health care system described above. For example, the ideal attribute of

evidence-based care requires that we look to the highest level of existing evidence for individual- and population-level outcomes in guiding decisions on types of providers that could provide care, rather than basing decisions primarily on opinions or perceptions. The ideal attribute of cost-effectiveness suggests that we must examine whether types of providers who are less expensive than dentists to train and employ can be used in a manner that would achieve a specified outcome with fewer resources.

Setting the stage

The papers in this special issue of the *Journal of Public Health Dentistry* explore the current status of the US oral health care system and a range of models and proposals to address some of its shortcomings. If history is any guide, whatever system emerges will be uniquely American. That is to be expected, because any health care system must be congruent with the culture of the society it serves. The development of an oral health care delivery system that meets the characteristics described above is possible, but we recognize that there are substantial barriers if not open hostility to attaining some of the attributes that we consider ideal. Undoubtedly, whatever system emerges will involve trade-offs among cost, access, comprehensiveness, and political feasibility. It remains to be seen whether the American public is ready to demand the type of system that has been described or whether its elected officials have the political mandate and will to bring it to fruition.

Conflicts of Interest

The authors have no conflicts of interest to declare.

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