ABSTRACT Persistent health disparities still exist in the U.S. despite decades of focus on the importance of prevention. Individual behaviors are the major contributor to oral health. By partnering and linking with community organizations, oral health professionals can expand their reach, overcome the obstacles to delivering effective prevention activities in dental offices and improve the oral health of the most underserved and vulnerable populations, who bear the greatest burden of dental disease.

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The need for an increased focus on prevention of dental disease as opposed to surgical treatment was described in the 2000 Oral Health in America: A Report of the Surgeon General, the national Healthy People goals, the Institute of Medicine’s (IOM) two 2011 reports on oral health, Advancing Oral Health in America and Improving Access to Oral Health Care for Vulnerable and Underserved Populations and many other reports. In addition, the 2010 National Prevention Strategy set forth a national goal of moving the U.S. health care system from a paradigm of sick care to one based on wellness and prevention. In spite of these efforts, the 2000 surgeon general’s report and the 2011 IOM reports describe the persistent profound health disparities that still exist in the U.S. population despite decades of focus on the importance of prevention. This paper will review factors that lead to health, some of the reasons traditional prevention efforts in oral health often fall short of their goals, current developments leading to new ideas about prevention and strategies for oral health prevention activities based on community engagement.

Factors That Lead to Healthy Lives

It has long been understood that the factors leading to long and healthy lives have less to do with interventions performed by health care professionals than with other considerations. In fact, as illustrated in the FIGURE, the contribution to health and longevity from interventions performed by health care professionals is about 10 percent of the total. The most important contribution, approximately 40 percent of the total, arises from personal behaviors performed at the discretion of the individual. These behaviors include choices about the use of alcohol and tobacco, exercise, diet and personal hygiene. About 30 percent of the total is ascribed to genetics,
which at present, we cannot do much about. The final 20 percent is related to the environment and public health measures, which, in some cases, we can do something about collectively. These measures include systems to produce clean water and food, reduce pollution, prevent injuries, fluoridate community water supplies and adopt societal norms and structures fostering healthy behaviors. 

While the data presented in the FIGURE come from studies about health in general, it is reasonable to assume that the conclusions also apply to oral health. Without appropriate individual behaviors practiced by patients outside the dental office, there is little that oral health professionals can do to maintain an individual’s oral health. These behaviors include a noncariogenic diet, use of fluoride and daily mouth care. With this in mind, it is clear that the most effective strategy for improving the oral health of the population is one that would result in changes in individual behaviors known to promote oral health.

Chronic Disease Management

One strategy, now widely applied in general health care, is referred to as chronic disease management. This idea was formalized in 1978 when the Robert Wood Johnson Foundation (RWJF) began its Improving Chronic Illness Care program. In 1994, RWJF funded a study to synthesize what had been learned about the care of chronically ill patients in the previous several decades. The findings indicated that:

- The typical primary care office was set up to respond to acute illness rather than to anticipate and respond proactively to patients’ needs.
- Chronically ill patients, however, needed the latter approach in order to avoid acute episodes of illness.
- Chronically ill patients were not sufficiently informed about their conditions, nor were they supported in self care beyond the doctor’s office.
- Physicians were too busy to educate and support chronically ill patients to the degree necessary to improve their health.

An additional evaluation by the Rand Corporation indicated that application of the chronic care model could lead to:

- Organizations that were able to improve their ability to manage disease.
- Patients with diabetes whose risk of cardiovascular disease was significantly reduced.
- Patients who were more knowledgeable about, and more often adhered to, recommended therapy.
- Thirty-five percent fewer hospital days.
- Patients participating in asthma and diabetes pilot programs who were more likely to receive appropriate therapy.

These results led to the development and spread of the chronic care model, which has had a major impact on care for people with chronic illnesses in the subsequent decades. This model is now widely accepted and practiced in the medical care system. A 2012 IOM report, Living Well With Chronic Illness: A Call for Public Health Action, emphasizes the need to develop and use cross-cutting coordinated strategies to help Americans with chronic illnesses live well.

Edelstein, in a paper commissioned for the IOM’s 2011 report Improving Access to Oral Health Care for Vulnerable and Underserved Populations, indicated that, like medical care in the 1970s, dental care in the U.S. still emphasizes surgical repair of the effects of disease. However, there is increasing awareness that dental diseases are primarily chronic conditions which are not cured by acute surgical interventions. In the same way that a physician will not “cure” his or her patient’s diabetes in a visit to the medical office, dentists cannot “cure” dental caries or periodontal disease through a patient’s visit to a dental office. The need for a broader emphasis on influencing individuals’ daily behaviors through health promotion activities and community organizations was recognized in the surgeon general’s report in 2000. Edelstein reviewed the literature on the science of “chronic disease management” employed in general health care delivery and concluded that this strategy holds promise for improving the oral health of the population.

The TABLE describes some characteristics of an acute care/surgical model and one that emphasizes chronic disease management. The acute care/surgical system tends to be provider-centric, with care delivered in fixed offices and clinics. Both treatment and payment are based on discrete episodes of
habitual behaviors is extremely difficult. But influencing people to change is among the most important factors leading to health. As indicated earlier, these are among the most important reasons account for this challenge. It is unreasonable to expect people to change behavior, it is clear that behavior change is a difficult and complex challenge. It is unreasonable to expect that people will change their behavior easily when so many forces in the social, cultural and physical environment conspire against such change.17

Providing information, even when it results in increased knowledge, does not necessarily lead to behavior change.15,16 In fact, a 2000 report on social and behavioral research from the Institute of Medicine stated, “To prevent disease, we increasingly ask people to do things that they have not done previously, to stop doing things they have been doing for years, and to do more of some things and less of other things. Although there certainly are examples of successful programs to change behavior, it is clear that behavior change is a difficult and complex challenge. It is unreasonable to expect that people will change their behavior easily when so many forces in the social, cultural and physical environment conspire against such change.”17

A number of approaches have been described to improve health communication in dental offices.20 Unfortunately, evidence indicates that these techniques are not widely used.21 However, even if they were more widely adopted, dental offices would still not be the best places to deliver oral health education messages in order to improve the health of many segments of the population. A major factor is that the people with most of the dental disease do not take advantage of the traditional office- and clinic-based dental care system and are therefore not commonly found in dental offices.1,3,4 And a dental office is not the best place to educate even those who do visit because most people are nervous, if not afraid, in that environment.22 They may be worried about what is going to happen on the way in, and how they feel when they are on the way out. Even though dental professionals generally perceive their offices as friendly environments, many of their patients see them as surgical suites and not a place where they feel open to receiving and incorporating new information. Providing the traditional short lesson

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### Care for Chronic Oral Diseases

<table>
<thead>
<tr>
<th>Acute Care/Surgical Intervention</th>
<th>Chronic Disease Management</th>
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<tr>
<td>Provider-centric model</td>
<td>Patient-centric model</td>
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<tr>
<td>Care delivered in fixed offices and clinics</td>
<td>Care delivered where people are, to the extent possible</td>
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<tr>
<td>“Treatment” based on discrete procedure-based episodes of care</td>
<td>“Management” based on maintaining health across the life cycle of a condition</td>
</tr>
<tr>
<td>Payment based on discrete procedure-based episodes of care</td>
<td>Payment based on value of health improvement across the life cycle of a condition</td>
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<tr>
<td>Emphasis on surgical interventions</td>
<td>Emphasis on risk assessment, prevention and early intervention using biological, medical, behavioral and social tools</td>
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Influencing Oral Health Behaviors: Is the Dental Office the Best Place?

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on oral hygiene or even a longer “anticipatory guidance” session at the end of a dental appointment may not have any impact on the subsequent behavior of the individual or on the caregivers for dependent children or adults.19,23

Oral health professionals are not the best people to deliver oral health education messages designed to change behaviors for many segments of the population. Although some communication techniques, such as motivational interviewing, have shown positive results, there is inadequate training in this or other behavior change techniques in the crowded curriculum of oral health professional education programs.21

Even if oral health professionals had additional training and were in contact with those individuals with the greatest health disparities, a cultural gap often exists between the two groups.24 Oral health professionals are generally not skilled at determining the literacy level of patients and caregivers and delivering messages at the appropriate level. In the 2010 census, just over one-third of the U.S. population reported their race and ethnicity as other than non-Hispanic White alone. This group, referred to as the “minority” population, increased from 86.9 million (30.9 percent) to 111.9 million (36.3 percent) between 2000 and 2010, a growth of 29 percent over the decade.25 In California the “minority” population grew from 18.1 million (53.3 percent) in 2000 to 22.3 million (59.9 percent) in 2010. California is one of four states with a “majority-minority” population (i.e., more than 50 percent of the population is composed of minorities). This distribution is markedly different from the composition of dentists in the U.S. The cultural divide that many groups of people experience results in their not fully understanding what the oral health professional says, their being embarrassed to talk about personal behaviors with oral health professionals and their concluding that oral health professionals don’t understand their lives or the challenges they face in implementing the recommendations they are given.

Finally, delivering dental health messages in dental offices may not involve the optimal timing for some segments of the population. Those with the greatest burden of dental diseases do not visit dental offices at all or do so infrequently.26 Therefore, messages delivered in dental offices are not delivered repeatedly to these groups and not at a time when they are most receptive to considering changes in their behavior.

The most effective messages are those that are delivered by people considered trusted members of an individual’s own community, delivered by multiple people on multiple occasions and incorporating a feedback system so people who run into challenges can obtain additional instruction and coaching over time.27 The ability to employ these principles is enhanced by delivering oral health information and coaching in places where people receive educational, social or general health services on a regular basis.28-30 Thus, the best opportunity for oral health professionals to influence the preventive practices of many underserved populations is through partnerships with organizations that deliver educational, social and general health services.

Using Community Engagement to Promote Oral Health Activities

The virtual dental home (VDH) is a community-based system of care that uses geographically distributed, telehealth-facilitated oral health teams to provide preventive and early-intervention oral health services to people who do not take advantage of the traditional oral health care system.31 This strategy is being demonstrated by the Pacific Center for Special Care at the University of the Pacific, Arthur A. Dugoni of School of Dentistry, and multiple resources and reports about the system are available on the organization’s website.32 The VDH concept has been implemented in Head Start preschools, elementary schools, residential facilities for dependent adults and nursing homes.

The VDH emphasizes the integration of oral health awareness and behaviors into the structure and activities of educational, social and general health organizations in which the system functions, with particular focus on health promotion and education. The intention is to raise the level of awareness and understanding of oral health issues among administrators and staff at these facilities. These individuals, who are seen as trusted members of the community, then act to promote activities that improve oral health among parents, caregivers and individuals who use their services.

The term virtual dental home refers to the fact that this system delivers all the components of the health home model.
services.33-35 Some descriptions of a health home that include oral health activities, or a dental home, portray them as located in and managed through a dental office.36 However, these services are not confined to a dental office in the VDH model, but are delivered using geographically distributed teams based primarily in community locations, including dentists via telehealth technologies.

The VDH system has demonstrated that community partnerships between oral health professionals and community organizations can reach people who do not take advantage of the traditional dental care system and can provide prevention and early intervention services for them.37 The important lesson from the VDH concept in the context of this paper is that, by partnering and linking with community organizations, oral health professionals can expand their reach, overcome the obstacles to delivering effective prevention activities in dental offices and improve the oral health of the most underserved and vulnerable populations, who bear the greatest burden of dental disease.

The VDH system is not unique in using community engagement to reach underserved populations and emphasize prevention in community settings. However, it offers a unique combination of community-delivered prevention procedures, telehealth-facilitated teams and the integration of oral health awareness and messaging using staff at Head Start preschools, elementary schools, residential facilities for dependent adults and nursing homes.

**Conclusions**

Persistent profound health disparities still exist in the U.S. despite decades of focus on the importance of prevention. The methods used to promote behavior change in dental offices are largely ineffective, particularly among those who do not regularly visit dental offices, have
the highest rates of dental disease and face cultural gaps in relation to most dentists. Behavior change leading to improved oral health is more likely to occur in settings where people feel more comfortable and open to receiving information, when messages are delivered by trusted members of their community and when information is repeated multiple times by multiple people. These conditions are most likely to be found in education, social and general health service settings.

Adopting community engagement strategies in dental care will require a significant redesign of dental education programs, retraining of existing dental personnel, reform of oral health payment systems to reward these activities and a major emphasis on integrating oral health activities into educational, social and general health systems.

By using systems like the VDH, oral health professionals have an opportunity to extend their practices into community sites, engage populations of people who do not traditionally visit dental offices and use the tools of chronic disease management and community engagement to prevent dental disease and improve oral health.

REFERENCES

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