Afterword

Reviews and Recommendations to Prevent Dental Caries, Oral and Pharyngeal Cancers, and Sports-Related Craniofacial Injuries

James J. Crall, DDS, ScD

The papers that compose this supplement to the American Journal of Preventive Medicine are the products of a process organized by the Centers for Disease Control and Prevention (CDC) to systematically review relevant available literature and develop recommendations on community interventions to prevent common dental, oral, and craniofacial conditions. As such, they become an important part of a more extensive set of reviews and recommendations issued by the Task Force on Community Preventive Services (the Task Force) on population-based interventions to promote health and to prevent disease, injury, disability, and premature death, appropriate for use by communities and healthcare systems.

The context for this process is a growing emphasis on evidence-based recommendations driven by the confluence of an “explosion” of information, heightened awareness of the significance of health promotion and self-care activities, and mounting pressures to use resources more efficiently. Although the findings and recommendations produced by this effort are important in their own right, an understanding of what they mean and, perhaps equally as important, what they do not necessarily mean in a larger sense is also essential. This afterword provides a perspective toward that end.

Process and Findings

The subject of this review is a set of relatively prevalent, yet diverse conditions — dental caries, oral and pharyngeal cancers, and craniofacial trauma — linked primarily by anatomical proximity and having variable distribution across groups within the population. The inherent diversity presented a rather daunting task of assembling and evaluating evidence regarding conditions having widely different underlying etiologies, an extensive and dissimilar array of risk factors, and a wide range of methods for preventing or minimizing the impact of their respective occurrences. Those and other overarching considerations undoubtedly contributed to a focus on selected interventions that met the general guidelines for the Task Force effort. Nevertheless, decisions concerning which interventions to include and exclude in the reviews and how evidence on sometimes disparate aspects of the same general condition were to be handled are likely to have had important implications in terms of subsequent findings and recommendations.

Dental Caries

With respect to dental caries, the review and recommendations reaffirmed the effectiveness of community water fluoridation and school-based or school-linked sealant delivery programs. The stated rationale for including school-based or school-linked programs but excluding other methods geared toward increasing applications of the same technology via other types of programs (e.g., insurance coverage) was that “unlike a clinical preventive service that primarily benefits an individual, a community preventive service is an intervention (activity) that prevents disease or injury or promotes health in a group of people.” However, this distinction seems somewhat arbitrary, and the decision to exclude other related programs could lead users of the report to erroneous conclusions about the effectiveness of sealants applied in other settings or the merits of other approaches to increasing use of sealants. Similarly, several interventions that have been recognized in other evidence-based reviews as being effective in reducing the prevalence and incidence of dental caries, especially in populations at elevated risk for this disease (e.g., use of fluoride toothpaste, fluoride mouth rinses, fluoride supplements), were not included — presumably for valid reasons. But the issue of potential misinterpretation of recommendations by users as a result of their exclusion still pertains.

Oral and Pharyngeal Cancers and Craniofacial Trauma

The reviews regarding these conditions led to the conclusion that there was insufficient evidence from which to develop recommendations concerning com-
community or population-based interventions to either prevent or control oral and pharyngeal cancers or prevent or control sports-related craniofacial injuries. Yet underpinning these conclusions are citations from various sources such as the following two statements from the recent U.S. Surgeon General’s report on oral health\(^2\) (another extensive evidence-based document), which seemingly are at variance with the global conclusion: “Health education and injury prevention campaigns addressing the need for protective gear in sports and cycling activities can increase awareness and use. . . . and face masks reduce oral-facial injury by 50 percent; addition of mouthguard reduces risk to less than 1 percent.” Examples such as this raise a series of questions. For example, to what extent did the process and criteria inherent in these reviews or the imperative to develop global conclusions concerning sets of diverse conditions and circumstances diminish or obscure important findings concerning the evidence and advisability of more narrowly defined interventions? To what extent are the recommendations and conclusions that emerge from this activity an inevitable consequence of previous research funding priorities? Thus conscientious interpretation of these findings and recommendations are warranted.

**Meaning and Utility**

The search for truth and efforts to achieve progress in improving various aspects of the population’s health through the use of evidence-based analyses is an arduous process subject to limitations that are not easily overcome in the near term (e.g., weaknesses in existing literature and published reports). Nevertheless, failure to pursue an evidence-based approach most certainly leads to unnecessary reductions in effectiveness and efficient use of resources. Thus, in spite of their limitations, the reviews and recommendations embodied in these publications need to be recognized as important components of a foundation of knowledge and source of direction for future efforts to improve oral health through community or population-based interventions.

Accordingly, the (strong) recommendations regarding water fluoridation and school-based or school-linked sealant programs should provide guidance and assurance for those seeking sound approaches for reducing the prevalence, incidence and severity of dental caries. At the same time, these recommendations should not be construed to represent the full array of effective community or population-based interventions or technologies for minimizing the occurrence and impact of this disease. Likewise, the broad statements regarding the general evidence concerning interventions to prevent or control oral and pharyngeal cancers and craniofacial trauma should not overshadow the relevance of evidence regarding interventions that have been used in specific circumstances or for various elements within the general population. Above all, perhaps, the information contained in these publications should provide a source of direction for establishing future research priorities that can lead to a more robust basis for subsequent evidence-based analyses.

**Challenges and Opportunities**

There is growing recognition that although these and other common oral diseases and craniofacial conditions have a significant impact on the lives of millions of Americans, they are not manifested as uniformly as they were several decades ago and are unevenly distributed across communities and sociodemographic groups within the population. As a result, future efforts to design and implement effective community or population-based interventions will undoubtedly need to be based on a fuller understanding of the risk factors and underlying biological and environmental determinants that apply to diverse groups and on more targeted approaches. Major efforts to understand the basis for disparities in the distribution of these and other diseases and conditions, and to develop more-effective targeted interventions have only recently been initiated by the National Institute for Dental and Craniofacial Research, the Health Resources and Services Administration, and the Centers for Disease Control and Prevention. These oral health disparities research programs and other population-based initiatives (e.g., improved monitoring of oral and craniofacial diseases and conditions across and within individual states) should expand the relevant knowledge base necessary to enhance the breadth and depth of the substance upon which future evidence-based reviews will depend. And, more importantly, such efforts should foster the translational research and development necessary to more effectively and efficiently extend current and future interventions to all segments of the population.

**References**
