Partnering to Unlock the Mysteries of Oral Diseases and Injuries

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The Task Force on Community Preventive Services (the Task Force) has thoughtfully, systematically, and methodically reviewed the best available evidence of community-based interventions to prevent dental caries, oral and pharyngeal cancers, and sports-related craniofacial injuries. Of the five interventions evaluated, only two are “strongly recommended.” The Task Force could not find sufficient evidence to make positive recommendations about the remaining three interventions.

What is academia’s role in light of the Task Force findings? It is disturbing to note that less than a quarter of the 77 studies reviewed across the five interventions met sufficient standards for inclusion. Too frequently, studies were deemed useless because of design flaws such as insufficient data, lack of effect measure, and execution limitations. Of the 19 studies that examined population-based interventions for early detection of pre-cancers and cancers, only seven measured sensitivity, specificity, and predictive value — the basic accuracy measures recognized widely in public health. And, only one of the five identified statewide or community-wide sealant intervention studies met inclusion criteria, despite the fact that at least 120 such community-based programs were found in operation in a 2-year period. Regrettably, it appears that the interventions for common, costly, and very preventable oral health diseases and injuries have been poorly studied and underexamined. Revealing truth through state-of-the-art research remains a fundamental charge to the academic community and policymakers.

The Task Force not only revealed gaps in knowledge but also has specified which questions should be answered to close this gap. Nearly 40 critical questions are posed in this report. These serve as the basis of a rich research agenda for consideration by both the academic community and those agencies that provide the financial support essential for community-based research. And, it will take financial support. The reality of today’s financial constraints in higher education makes research sponsorship by government agencies and foundations a prerequisite for significant movement on this research agenda.

Academia can fulfill its mission by answering the nearly 40 “questions of the day” listed in this report. But academia also must derive the critical questions not on this list. An area of examination to augment the research agenda should be examinations of those innovations that blend the “clinical” and “public health” approaches. There is simply insufficient manpower to rely primarily on a “clinical” approach in which professionals, dentists, and hygienists deliver one-on-one prevention interventions. On the other hand, the “public health” approach involving mass marketing has limitations, as a “one size fits all” marketing campaign misses large population segments that for a variety of reasons do not find appeal in the message. Behavioral research indicates that an individual’s willingness to change unhealthy behaviors or adopt healthier behaviors depends on where one rests on a broad continuum ranging from “highly willing” to “highly unwilling” as well as on other individual factors.

Effective interventions should be tailored according to an individual’s current knowledge and state of willingness to change behaviors. Ideally, an individual face-to-face behavioral intervention can do this but it is impractical. Modern interactive computer technology lends itself to development of customized interventions that factor in someone’s current knowledge, potential to change, culture, education and other factors that should be taken into consideration. This technologic blending of a tailored individual or “clinical” intervention and a community-based or “public health” approach is worthy of examination for prevention of oral diseases and interventions.

Academia and policymakers have responsibilities beyond discovery of new knowledge. It must impart this knowledge to those on the frontlines who have direct responsibility for the public’s oral health. And, those on the frontlines are not restricted to those dentists and hygienists who provide prevention and care interventions. At current manpower strength, these groups cannot meet the demand and need, especially among those groups who are at greatest risk for oral diseases. The current private market for dentists’ services is very robust. Dental public health residency programs have difficulty filling training slots given the high opportunity costs of training and lower public wages compared to other specialty selections with more lucrative in-
comes. While support of these programs should still remain a priority, it is time to think seriously about imparting knowledge to those other health professionals and paraprofessionals who encounter populations at high risk for oral disease and injury. As a dean of a school of public health for several years, I often found public health graduates who ended up working in public health programs like the U.S. Department of Agriculture’s Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), where they had opportunities to incorporate oral health prevention programs into the array of ongoing health promotion programs for a population typically vulnerable for oral diseases. Maximizing this opportunity seemed to vary. Some were more knowledgeable than others when it came to oral health. Many graduates expressed a desire to quickly access state-of-the-art intervention materials and approaches for immediate use in the field. Many worked in situations where access to dental professionals with knowledge in community-based interventions was extremely limited. Busy, frontline workers who live in a “ready, shoot, aim” world need ready access to effective interventions that prevent diseases that have implications for a lifetime.

I believe that new and innovative foundation- or government-sponsored training programs targeting these health professionals and others should be considered. The recent anthrax attacks in this country revealed the power of distant learning. Within days of the first anthrax case, the Centers for Disease Control and Prevention was able to use Internet-based education to reach millions of clinicians and public health practitioners with the latest information in clinical recognition, treatment, and prevention. An asynchronous web-based oral health prevention education program for dental and public health practitioners could be accessed at the convenience of the participant. A web-based program can be easily updated. It could begin with a basic short course and eventually be enhanced with more advanced offerings. It could combine web-based learning with other forms of instruction like satellite broadcasts. It could encourage team learning and approaches through case-based learning that encourages joint participation by clinicians, health education specialists, and public health practitioners. Of course, this innovation requires an investment but it could be a more cost-effective program compared with our current traditional health profession education programs.

As societal scouts, informed academics have another responsibility to speak out and bring attention to oral health diseases and injuries. As we witnessed in infectious diseases, the interest by the public and policymakers in oral diseases waned over the past decades as we presumed it was fast becoming a relic of the past. I recall the cover of a *Forbes* magazine in the mid-1980s revealed the power of distant learning. Within days of the first anthrax case, the Centers for Disease Control and Prevention was able to use Internet-based education to reach millions of clinicians and public health practitioners with the latest information in clinical recognition, treatment, and prevention. An asynchronous web-based oral health prevention education program for dental and public health practitioners could be accessed at the convenience of the participant. A web-based program can be easily updated. It could begin with a basic short course and eventually be enhanced with more advanced offerings. It could combine web-based learning with other forms of instruction like satellite broadcasts. It could encourage team learning and approaches through case-based learning that encourages joint participation by clinicians, health education specialists, and public health practitioners. Of course, this innovation requires an investment but it could be a more cost-effective program compared with our current traditional health profession education programs.

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We cannot afford to be paralyzed by analysis while we await more conclusive guidance on the research questions raised by the Task Force. We must act using the best information we have. “Insufficient evidence” should not translate into dismissal of these yet unproven interventions. It requires intervention with the best information we have but with rigorous evaluation components so we can capture knowledge that will be useful for subsequent users of these interventions. If it did not work in one situation we need to know why so that the program, if appropriate, can be altered to be effective in another setting. We also must recognize that complex problems usually involve the interface of many complex factors. These problems do not lend themselves to simple solutions. I recall that early research of interventions to reduce tobacco use seemed to reveal the ineffectiveness of specific prevention strategies. I heard how the Surgeon General decades ago persuaded the toy manufacturer of “Mr. Potato Head” to omit a pipe from the array of devices a child could use to transform a potato into a personality. I am certain no research could reveal that this single step significantly, along with numerous other single-faceted interventions, alone curbed tobacco use. Even so, tobacco use began to decline. I do not believe that the answer to preventable oral disease and injuries rests in a single intervention. Unlocking the mysteries of the interdependent factors responsible for oral diseases and injuries and translating this evidence into effective interventions requires a partnership of academia, organized dentistry, public health, foundations, and the private sector.

**References**