Oral Health Literacy

ISBN
978-0-309-26289-7

125 pages
6 x 9
PAPERBACK (2013)

Maria Hewitt, Rapporteur; Roundtable on Health Literacy; Board on Population Health and Public Health Practice; Institute of Medicine

ORAL HEALTH LITERACY

WORKSHOP SUMMARY

Maria Hewitt, *Rapporteur*

Roundtable on Health Literacy

Board on Population Health and Public Health Practice

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

THE NATIONAL ACADEMIES PRESS
Washington, D.C.
www.nap.edu

THE NATIONAL ACADEMIES PRESS 500 Fifth Street, NW Washington, DC 20001

NOTICE: The project that is the subject of this report was approved by the Governing Board of the National Research Council, whose members are drawn from the councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

This study was supported by contracts between the National Academy of Sciences and Aetna, the Agency for Healthcare Research and Quality (HHSP233200900537P), the American College of Physicians Foundation, America's Health Insurance Plans, GlaxoSmithKline, the Health Resources and Services Administration (HHSH25034004T), Humana, Johnson & Johnson, the East Bay Foundation (Kaiser Permanente), Merck and Co., Inc., the Missouri Foundation for Health (09-0290-HL-09), and the UnitedHealth Group. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the organizations or agencies that provided support for this project.

International Standard Book Number-13: 978-0-309-26289-7
International Standard Book Number-10: 0-309-26289-5

Additional copies of this report are available from the National Academies Press, 500 Fifth Street, NW, Keck 360, Washington, DC 20001; (800) 624-6242 or (202) 334-3313; http://www.nap.edu.

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Printed in the United States of America

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Suggested citation: IOM (Institute of Medicine). 2013. *Oral health literacy: Workshop summary*. Washington, DC: The National Academies Press.

"Knowing is not enough; we must apply.
Willing is not enough; we must do."
—Goethe

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This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the National Research Council's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the process. We wish to thank the following individuals for their review of this report:

Patrick McGarry, American Academy of Family Physicians
Dionne J. Richardson, Mississippi State Department of Health
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Although the reviewers listed above have provided many constructive comments and suggestions, they were not asked to endorse the final draft of the report before its release. The review of this report was overseen by **Hugh Tilson,** University of North Carolina at Chapel Hill. Appointed by the Institute of Medicine, he was responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this report rests entirely with the rapporteur and the institution.

Acknowledgments

Without the support of the sponsors of the Institute of Medicine Roundtable on Health Literacy it would not have been possible to plan and conduct the workshop on oral health literacy which this report summarizes. Sponsorship for the Roundtable comes from Aetna, the Agency for Healthcare Research and Quality, the American College of Physicians Foundation, America's Health Insurance Plans, GlaxoSmithKline, the Health Resources and Services Administration, Humana, Johnson & Johnson, the East Bay Foundation (Kaiser Permanente), Merck and Co., Inc., the Missouri Foundation for Health, and the UnitedHealth Group.

The Roundtable wishes to express its appreciation to Congressman Elijah Cummings for taking the time from his busy schedule to give an inspiring keynote presentation that set the stage for the remainder of the day. The roundtable is also grateful to the speakers at the workshop who provided presentations that stimulated discussion and encouraged exploration of issues surrounding oral health literacy. The speakers are RADM William Bailey, Marsha Butler, Mary Lee Conicella, Kimon Divaris, Ralph Fucillio, Alice M. Horowitz, Amid Ismail, Matt Jacob, Dushanka Kleinman, Gregory B. McClure, Kathy O'Loughlin, Gary Podschun, Lindsey Robinson, and Scott Wolpin.

The Roundtable would also like to thank the members of the workshop planning committee for their efforts in developing an excellent workshop agenda. Members of the planning committee were Sharon Barrett, Benard P. Dreyer, Alice M. Horowitz, Clarence Pearson, and Rima Rudd.

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Introduction[1]

Health literacy is the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health care decisions (IOM, 2004).

The Institute of Medicine (IOM) Roundtable on Health Literacy focuses on bringing together leaders from the federal government, foundations, health plans, associations, and private companies to address challenges facing health literacy practice and research and to identify approaches to promote health literacy in both the public and private sectors. The roundtable serves to educate the public, press, and policy makers regarding the issues of health literacy, sponsoring workshops to discuss approaches to resolve health literacy challenges. It also builds partnerships to move the field of health literacy forward by translating research findings into practical strategies for implementation.

The Roundtable held a workshop March 29, 2012, to explore the field of oral health literacy. The workshop was organized by an independent planning committee in accordance with the procedures of the National Academy of Sciences. The planning group was composed of Sharon Barrett, Benard P. Dreyer, Alice M. Horowitz, Clarence Pearson, and Rima Rudd. The role of the workshop planning committee was limited to planning the workshop. Unlike a consensus committee report, a workshop

[1]This workshop was organized by an independent planning committee whose role was limited to identification of topics and speakers. This workshop summary was prepared by the rapporteur as a factual summary of the presentations and discussions that took place at the workshop. Statements, recommendations, and opinions expressed are those of individual presenters and participants, and are not necessarily endorsed or verified by the Roundtable or the National Academies, and they should not be construed as reflecting any group consensus.

summary may not contain conclusions and recommendations, except as expressed by and attributed to individual presenters and participants. Therefore, the summary has been prepared by the workshop rapporteur as a factual summary of what occurred at the workshop.

Oral health and oral health literacy are the focus of interest at the national level as demonstrated in the recommendations from two recent IOM reports and in the objectives of Healthy People 2020 (HHS, 2010a; IOM, 2011a,b). Although the field of oral health literacy is less well developed than health literacy, the roundtable was interested in exploring findings from research in this area and how such findings are being translated into oral health practice. In addition, the Roundtable was interested in the intersection between oral health literacy and health literacy. It has been established that limited health literacy is associated with inaccurate knowledge about preventive measures such as water fluoridation, dental care visits, dental caries severity, and oral health–related quality of life. For example, nationally only "44 percent of adults with less than basic health literacy skills had a dental visit in the preceding year compared with 77 percent of those with proficient health literacy skills" (Rozier, 2012).

The public and health care providers are largely unaware of the basic risk factors and preventive regimens for many oral diseases. For example, the fact that dental caries is both infectious and preventable is not generally known by the public and most health care providers (Fejerskov, 1997; Isong et al., 2012; Roberts-Thomson, 2002). The relationship between good oral health and overall health and well-being is also not well understood (DeStefano et al., 1993; HHS, 2000b; Jackson et al., 2011). Oral disease is expensive in terms of teeth, time, and money and results in pain, disfigurement, loss of school and work days, and even death when left untreated (Dye et al., 2007; Jackson et al., 2011; Petersen and Kwan, 2011; Petersen et al., 2005; Seirawan et al., 2012). There are profound disparities in oral health with morbidity and mortality concentrated among the most vulnerable; those who are poor, have a limited level of education, racial ethnic minorities, and the elderly (Dye et al., 2007; Edelstein, 2002; Mouradian, 2000). These are essentially the same individuals who have low levels of health literacy (Eichler et al., 2009; IOM, 2004; Weiss, 2003).

The workshop on oral health literacy was moderated by Roundtable chair, George Isham, and featured presentations from invited speakers. These presentations make up the chapters that follow. Each topic (chapter) includes one or more presentations that are followed by a group discussion led by Roundtable members. Chapter 2 presents a summary of the keynote address on the importance of oral health literacy. Chapter 3 provides background on the issue of oral health and the role of health literacy in addressing oral health problems. Chapter 4 examines how oral

health literacy can be assessed within care systems and within the environment. Chapter 5 summarizes the experience of several effective oral health literacy programs. Chapter 6 describes three state-based oral health initiatives. Chapter 7 provides an overview of national activities in oral health literacy. The report concludes with Chapter 8, a general discussion of the day's proceedings.

2

Keynote Address

THE IMPORTANCE OF ORAL HEALTH LITERACY

Congressman Elijah E. Cummings

Congressman Cummings noted the importance of regular preventive dental care in assuring good general health, but pointed out that many individuals, including some health professionals, do not understand the significance of the relationship between oral health and general well-being. This lack of understanding can have profound and unfortunate ramifications.

Congressman Cummings quoted his mother, a former sharecropper with a very limited education, who used to say, "There is nothing like a person who don't know what they don't know." In the context of oral health literacy, there is much work to be done to let people know about what they need to know. Families need to be educated about the importance of oral health, and have access to dental services.

Cummings observed that the average American wants to have good health and access to good healthcare, including dental care. However, while some progress is being made, budget deficits have led to cuts in many programs. The tragic death of Deamonte Driver, a 12-year-old boy from Maryland, highlights the importance of access to dental care. Deamonte could not access a dentist to treat an abscessed tooth and the infection spread to the boy's brain. This tragic death motivated Congressman Cummings to become involved in oral health care issues and he began to advocate for better dental health care coverage. At the fed-

eral level, a guaranteed dental benefit was secured in 2009 for children enrolled in the Children's Health Insurance Program. And in 2010, President Obama signed into law the Patient Protection and Affordable Care Act. Congressman Cummings said he is a proud supporter of this landmark legislation and then highlighted some of the legislation's provisions to promote children's dental health. Pediatric dental care is fully covered as an essential health benefit in every insurance package that qualifies for inclusion in health insurance exchanges.[1] Standalone dental plans must meet all certification standards that apply to qualified health plans without annual or lifetime limits. The Affordable Care Act also authorizes funding to launch a dental information campaign, to educate new parents and those who live in traditionally underserved areas.

Congressman Cummings observed that just as death is a part of life, "a part of life is death." Deamonte Driver's mother, who had been struggling as a result of her son's death, received training and has become a dental assistant. She works in a dental office and is reminded of her son's death as she promotes dental health. Cummings mentioned this as a moving example of something positive coming out of the family's tragic experience.

A large segment of the American public, even the well-educated, lacks basic knowledge about oral health. Parents may be very well-intentioned but not provide good dental care for their children. Congressman Cummings cited a friend, a psychiatrist, who said, "a person could have good parents, but that does not necessarily mean that what that parent does is good for them." He noted that if parents lack information, and therefore the ability to teach their child about dental health, it is certainly not good for the child. It is critical to teach parents the importance of dental care. To illustrate this point, Congressman Cummings recounted an encounter he had at a hospital. When introduced to a young child about 2 years old, Congressman Cummings noticed that the child's smile was marred by a little tooth that was completely decayed. When he advised the mother to take the child to a dentist, the mother said that she did not have to because "these teeth are going to fall out anyway."

Congressman Cummings suggested that people's behavior is motivated by two things, to enjoy pleasure or to avoid pain. He stated that parents who truly love their children would do anything to make sure that their child avoids pain. But if they do not know how to avoid dental pain, there is a problem. In his view, the goal is to have a nation of knowledgeable parents that are equipped to protect their children.

[1]Under the Affordable Care Act, state health insurance exchanges are being created as marketplaces where individuals and employees of small businesses can shop for a range of health insurance choices.

Congressman Cummings recounted a story about dental education that was, he said, told to him by Senator Ben Cardin. The senator had visited a school and a 5-year-old student who had recently participated in a school-based dental health program informed him that she knew how to brush her teeth. The senator asked the child to describe the process and she proceeded to discuss the steps needed to keep teeth clean and healthy, for example, brushing for a sufficient amount of time. The senator was about to leave and the little girl came up to him and said, Senator, I forgot to tell you one thing. I also have to brush my tongue. Cummings found this story amusing and instructive. Knowledge acquired at a young age is very significant, because it results in children growing up educated, and then being able to teach their children proper dental hygiene. With sufficient education, there will be generations knowledgeable about dental care, the importance of flossing, the benefits of dental sealants, and that dental pain is preventable.

Congressman Cummings said he grew up thinking that you were supposed to have toothaches, that they were a part of life. He described the four items in his family's medicine cabinet to address dental issues—toothpicks, turpentine, Orajel, and cotton balls. If a family member had a cavity, turpentine-soaked cotton was inserted into the cavity with a toothpick. If that did not dull the pain and money was available, Orajel could be purchased to deal with the pain. Congressman Cummings noted that there are people who believe that such remedies are what constitute dental care. They lack knowledge and resources.

The results of this lack of fundamental knowledge about the importance of oral health are evident, Cummings said. Tooth decay remains one of the most prevalent diseases among young people, even though it is entirely preventable. He added that poor oral health can have many negative effects on a person's overall well being and recounted an episode from his daughter's life. When she was about 7 years old, she brought home her class pictures. All the children in the picture were smiling, but his daughter was frowning. When he asked why she was frowning, she said that it was because her tooth had not fully grown in. The dentist corrected it, and a year later, she was smiling for her class picture. This story, as told by Cummings, illustrates the relationship between dental health and self-esteem. In his view, self-esteem is significant and many problems can be traced to a lack of self-esteem. If young people do not feel good about the way they look, he said, then more than likely they are going to feel bad about who they are.

Cummings indicated that many children suffer needlessly because too many parents lack information about the importance of healthy teeth and gums. These children do not reach their potential in school, and they suffer all of the other negative effects of tooth decay. He is support-

ing a statewide dental health campaign in Maryland that is similar to those in California, Delaware, and North Carolina and recently joined the Maryland Dental Action Coalition to launch a "Healthy Teeth, Healthy Kids" campaign. This coalition, made up of public and private advocates for children's dental health, has recommended many of the important improvements implemented in Maryland during the last 5 years, from expanded Medicaid coverage and reimbursement to improvements in the state's public health infrastructure.

The Maryland Dental Action Coalition campaign, headed by Mr. John Welby of the Maryland Department of Health and Dental Hygiene, recognizes the importance of education in addressing the causes of oral disease. The coalition encourages healthy behaviors by providing information and working with public health advocates in Maryland and across the country. Cummings described the coalition as an important catalyst for constructive change, which has helped inform lawmakers on all levels about shortfalls in dental health. The coalition is also educating the public about the importance of healthy oral habits for moms, infants, and children.

Congressman Cummings commended state-level efforts and individuals who are committed to furthering dental health for a generation of children. In his opinion, young people will live their lives with the confidence that comes with a healthy smile. He noted that the nation's children are the living messages we send to a future we will never see. The question he posed was, "Will we send them to a future healthy and smiling, with high self-esteem?"

The public health system, providers, communities, and schools must continue to spread the message about the importance of good oral health. Fear remains a powerful impediment limiting access to care for far too many children, said Cummings. This barrier can be overcome with improved health literacy in communities and in schools. Cummings stated that the Affordable Care Act recognizes the important relationship between children's health and the school system. The law authorizes grants to school-based health centers and expands programs to all 50 states. The Affordable Care Act addresses children's needs where they spend much of their time, in school-based programs such as Head Start.

The importance of education is not limited to children, Cummings said. The next generation of dental providers must also be addressed. Young adults of all backgrounds should be encouraged to consider a career in dentistry. The Patient Protection and Affordable Care Act authorizes grants to fund Title IV assistance for pediatric training programs. It also creates incentives for teachers to train residents of underserved communities and for medical students to work in areas of greatest need.

Congressman Cummings expressed his gratitude for the support for these initiatives from the President and the Congress. He observed

that real lasting change requires the continued commitment and collaboration of the oral health community. He commended the Institute of Medicine for bringing together so many of the partners who have supported dental health initiatives, representatives of the universities and health centers, advocates from business and professional communities, and members of government and nonprofit institutions. Congressman Cummings observed that investments made in children's oral health will last a lifetime. Children, as they grow into adulthood will benefit from actions taken today.

Cummings stated that improvements made to increase access to fluoridated water and dental care must be sustained. He added that the progress already made must be protected, even in difficult budget times. Furthermore, continued investments in sealants and fluoridation are needed, as is support for efforts to grow and diversify the dental workforce. He emphasized the obligation to reach the nation's families and stressed the importance of oral health, the power of prevention, and the importance of regular screenings.

Congressman Cummings concluded by saying that improvements in oral health literacy depend on policy and on a moral commitment to the nation's children and communities. From his perspective, there is a moral responsibility to ensure that no child suffers. Health literacy is key to change, but that change is not possible without the engagement of parents and families. Furthermore, children's health is not possible without dental health.

3

Overview and Statement of the Problem

BACKGROUND OVERVIEW: EXPLORING THE INVISIBLE BARRIER TO ACHIEVING ORAL HEALTH

Dushanka Kleinman, D.D.S., M.Sc.D.
University of Maryland School of Public Health

Kleinman noted that health literacy provides the foundation for oral health literacy, as it does for any other area of health. Furthermore, the definition of health literacy developed by Ratzan and Parker (2000) is applicable in the context of oral health literacy with minor adaptation. Kleinman defined oral health literacy as the degree to which individuals have the capacity to obtain, process, and understand basic oral and craniofacial health information and services needed to make appropriate health decisions.

The IOM framework for health literacy found in the report *Health Literacy: A Prescription to End Confusion* (IOM, 2004) can also be adapted for use in the context of oral health literacy (Figure 3-1). According to this framework, oral health literacy exists within the context of culture and society, the education system, and the interaction that individuals have with the health system, knowing that oral health literacy then leads to, and complements health, oral health, and health outcomes and costs.

Several national and state efforts have highlighted the need for oral health literacy and strategies to achieve it. *Oral Health in America: A Report of the Surgeon General* (2000) concluded that oral health is essential to general health and well-being, but that not all Americans are achieving

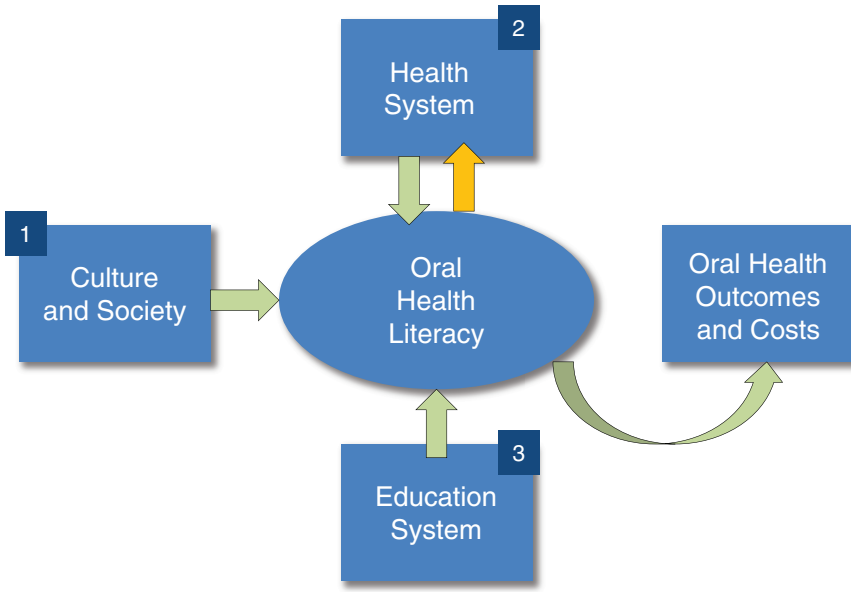

FIGURE 3-1 Oral health literacy framework.
SOURCE: Adapted from IOM, 2004.

the same degree of oral health. The report described the silent epidemic of oral diseases that affect the nation's most vulnerable members. The report also concluded that although common dental diseases are preventable, not all members of society are informed about or are able to avail themselves of appropriate oral health promoting measures. Similarly, not all health providers may be aware of the services needed to improve oral health. Improvements in oral health will require educating the public, providers, and policy makers about the science-based interventions that prevent oral diseases.

In 2003, specific actions to promote oral health were identified in *A National Call to Action to Promote Oral Health* (HHS, 2003). This report, which resulted from a public–private partnership between the Office of the Surgeon General and various organizations, identified five major actions that are needed:

1. Change perceptions of oral health.
2. Overcome barriers by replicating effective programs and proven efforts.
3. Build the science base and accelerate science transfer.
4. Increase workforce diversity, capacity, and flexibility.
5. Increase collaborations.

For each of these actions, the need for oral health literacy was highlighted. For example, in the area of workforce capacity, training in communication and counseling was viewed as critical. The *National Call to Action* report concluded that there is a perception that oral health is less important than, and separate from, general health. The report discussed how activities to overcome this perception can start at grassroots levels and then lead to a coordinated national movement to increase oral health literacy.

A workgroup sponsored by the National Institute of Dental and Craniofacial Research was convened to set a research agenda for oral health literacy. This research agenda was published in the *Journal of Public Health Dentistry.*[1] The research agenda was structured around three questions:

1. What types of literacy tasks do people need to perform within the context of oral health (descriptive studies)?
2. Is literacy a good predictor of oral health outcomes above and beyond the level of education (correlational studies)?
3. How can we improve the practice of communicating oral health information (intervention studies)?

This workgroup focused on functional oral health literacy and examined variables that allow individuals to make decisions about personal health, health system navigation, and community program participation. The group enumerated the many skills necessary for effective decision making (i.e., reading, writing, speaking, listening, numeracy, interpreting visuals) and identified participants that need to be engaged (e.g., health care providers, the public, policy makers, and health system leaders). Communication was emphasized throughout the report as a means of furthering functional oral health literacy. The report from this group posed several questions to guide research and recommended that a taskforce be formed to define a detailed agenda.

The first set of questions concerned **measurement.** How can oral health literacy be measured? How would methods proposed by the group relate to measures of health literacy?

The **role of providers** was another area for which questions were developed. What are providers doing to improve health literacy? What roles can they play to increase health literacy? What are the best procedures for them to use when assuming these roles?

In **preparing the workforce,** the report included the following questions: What are dental health professions education institutions doing to

[1]The title of the 2005 article is "The Invisible Barrier: Literacy and Its Relationship with Oral Health" (*Journal of Public Health Dentistry* 65(3):174-182).

prepare the workforce to contribute? What methods are being used to teach communication skills to our providers? What are the best teaching methods?

Finally, in terms of the **ultimate outcome,** the report authors asked, "What role does health literacy play in oral health outcomes?"

Progress has been made since the workgroup convened in 2005, Kleinman said. For example, some measurement issues have been addressed and aspects of how oral health literacy affects health outcomes have been explored. Support from government agencies and foundations have contributed to the oral health literacy research agenda. Examples of funded projects include the following:

- Examination of oral health literacy in public health practice
- Health literacy and oral health knowledge
- Latinos' health literacy, social support, and Oral Health Knowledge, Opinions and Practices (OH-KOP)
- Development of an instrument to measure oral health literacy
- Culture and health literacy in a dental clinic
- Health literacy and oral health status of African refugees
- State oral health literacy models and programs

The dental profession, state oral health programs, and the dental industry have also been taking action, said Kleinman. For example, the American Dental Association's Health Literacy in Dentistry Action Plan 2010-2015 (ADA, 2009) includes a strategic plan to improve oral health literacy. Two IOM reports gave visibility to oral health literacy (IOM, 2011a,b). The Health Resources and Services Administration (HRSA) commissioned these IOM reports. Part of the charge to the IOM committee that produced *Advancing Oral Health in America* (IOM, 2011a) was to explore ways of improving health literacy for oral health. That IOM report concluded that oral health literacy of individuals, communities, and all types of health care providers remains low. Kleinman stated that this conclusion was based on results of statewide and national surveys that show the public lacks understanding about how to prevent and manage oral diseases; the impact of poor oral health; how to navigate the oral health system; and the best techniques in patient-provider communication.

The report recommended that all relevant agencies of the Department of Health and Human Services undertake oral health literacy and education efforts aimed at individuals, communities, and health care professionals. These efforts could include

- community-wide public education on causes of oral diseases and effectiveness of preventive interventions,

- community-wide guidance on how to access oral health care, and
- professional education on best practices in patient-provider communication skills.

The second IOM report, *Improving Access to Oral Health Care for Vulnerable and Underserved Populations* (IOM, 2011b), concluded that poor oral health literacy contributes to poor oral health and lack of access to care.

Based on her review of major national reports on oral health literacy, Kleinman concluded that

- research workshops and national reports have identified areas that warrant attention,
- funding agencies and foundations are providing initial support, and
- to address recommendations and streamline efforts a comprehensive plan to address oral health literacy through research, education, services, and policy is needed.

STATEMENT OF THE PROBLEM—WHY IS ORAL HEALTH IMPORTANT AND WHAT ROLE DOES HEALTH LITERACY PLAY IN THE ETIOLOGY OF DENTAL/ORAL DISEASES?

Amid Ismail, B.D.S., M.P.H., M.B.A., Dr.P.H.
Temple University

Dr. Ismail has spent nearly 20 years focused on understanding the determinants of dental caries in subgroups of the U.S. population. Over the previous 3.5 years he has been a dean of the Maurice H. Kornberg School of Dentistry, which is located in North Philadelphia, an area with a heavy concentration of low-income, minority-group individuals. The dental school provides care to about 22,000 residents of the community annually and plans are for the clinical service to expand to serve 50,000 individuals. The care delivery paradigm is changing to include a focus on oral health literacy.

Ismail said that innovation requires thinking about what is needed in the future. Henry Ford was quoted as saying, "If I had asked customers what they wanted, they would have told me a faster horse." Innovation is key for moving forward to reduce inequalities and disparities in health in the United States. He added that innovation involves thinking outside of the current box and considering new multifaceted approaches. The American Dental Association (ADA) defines oral health literacy as the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appro-

priate oral health decisions. Obtaining and processing information may be difficult for people who do not have levels of literacy that would allow them to manage and navigate a health care system. A major task, then, is translating the definition of oral health literacy into actions that enable individuals to obtain and process oral health information.

One major barrier to promoting oral health is the lack of oral health literacy on the part of health care providers. Policy makers must also become oral health literate, said Ismail. So too must communities because they also need to obtain, process, and understand information in order to take actions that promote good oral health. Oral health literacy has to become part of the community culture.

Ismail presented a model framework for understanding oral health literacy that includes social, behavioral, and economic determinants (Figure 3-2). Oral and dental diseases have very strong social, behavioral, and economic determinants and yet systems are not designed to address these factors. The Kornberg School of Dentistry at Temple University has a philosophical rule that states, "If a patient comes to the clinic with pain, they do not leave the clinic with pain." The care model in urban and rural communities in the United States where access to care is problematic requires systems that are tailored to the needs and demands of the population. People should not have to conform to a traditional way of providing care that does not address their needs. This care model should guide how the social and economic differences that contribute to poor oral/dental health are addressed, Ismail said.

In the model displayed in Figure 3-2, oral health knowledge, oral health behaviors, and self-efficacy are important components of the oral health literacy framework. Self-efficacy is the belief in one's ability to organize and execute the courses of action required to manage prospective situations (Bandura, 1994). Also central to the model is education, a key determinant of oral and dental disease prevalence and severity.

Many factors are involved in the access and quality of care cluster of the model. For example, in the area of caries diagnosis and management, the more technology that is introduced into the system, the more the focus is on filling cavities instead of preventing the progression of non-cavitated carious lesions. In part, this reflects the current system of economic incentives related to coding and reimbursement for dental providers.

Although biological risk factors have a significant role to play, Ismail stated that in his opinion 70 percent of the problems in oral health literacy can be traced to the factors in the boxed area of Figure 3-2 (e.g., social, economic, cultural factors, self-efficacy). Relatively few investments have been made in these areas to address these determinants of disparities of oral and dental health.

Data on the burden of oral and dental disease from the National

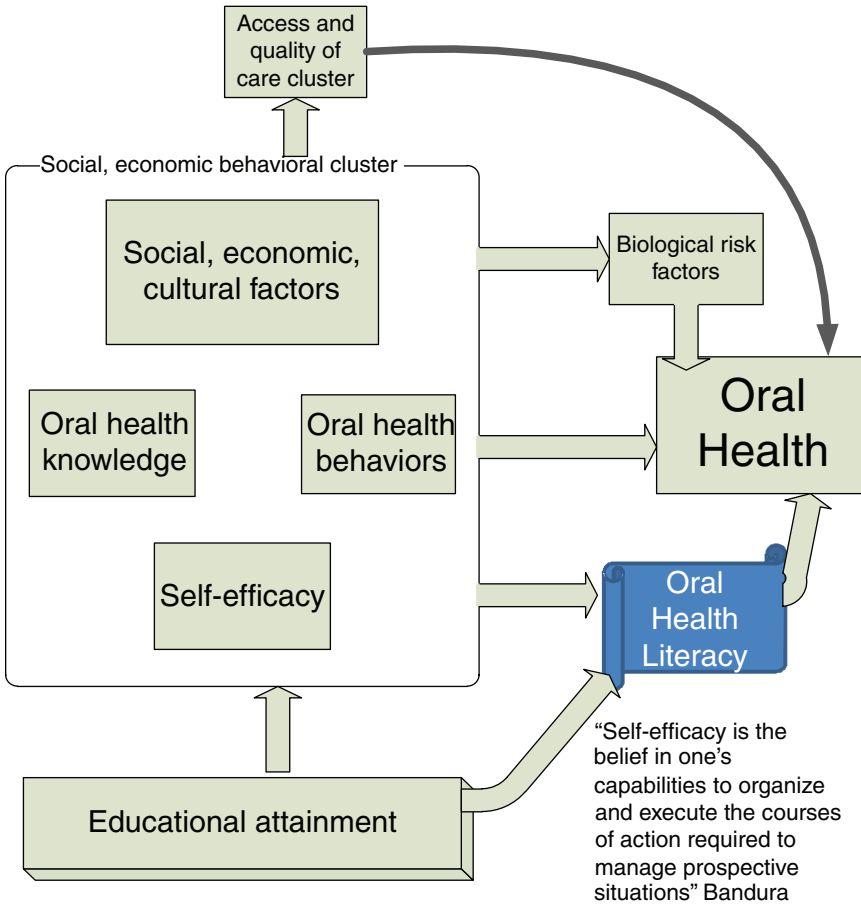

FIGURE 3-2 Framework for understanding oral health literacy.
SOURCE: Ismail, 2012.

Health and Nutrition Examination Survey (NHANES) survey show a significant gradient by education for untreated caries (Figure 3-3). There are large differences between those with and without a high school education.

The relationship between untreated caries and education is troubling. A troubling statistic is that in many areas of the country the majority of high school students do not graduate from high school, which leads one to expect an increased burden of chronic diseases in this population.

Studies have shown that, in general, individuals who are health literate have better health outcomes than individuals with low health literacy. However, well-designed research studies on oral and dental health and health literacy are lacking and are needed (Berkman et al., 2011).

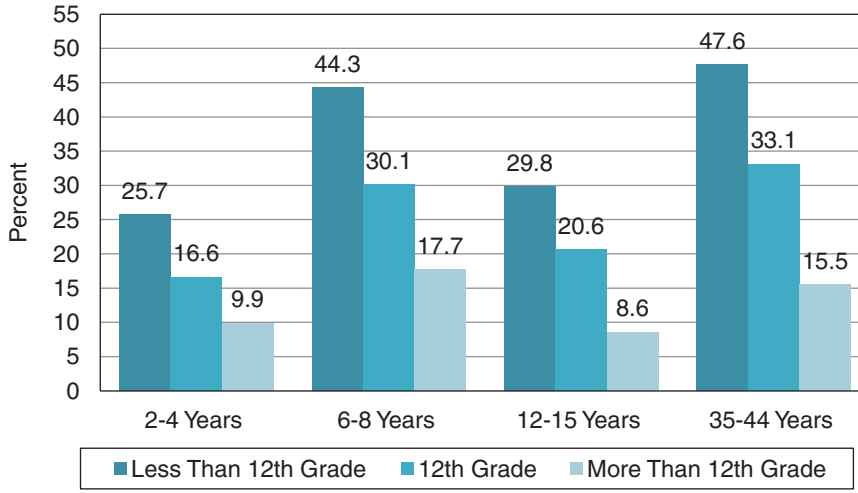

FIGURE 3-3 Untreated caries prevalence by education and age group.
SOURCE: Ismail, 2012.

National survey data provide evidence of a relationship among oral and dental health, general health, and quality of life (Seirawan et al., 2011). These data show that 20 percent of the population reported having dental pain in the last year (Table 3-1). Ten percent of the population reported that life, in general, was less satisfying because of dental problems.

Ismail said that there is evidence that populations experience persis-

TABLE 3-1 The U.S. Population Responses to Selected OHIP-7 Questions, NHANES III (n = 6,183)

Oral Health Impact	Often/Occasionally
How often during last year have you had painful aching anywhere in your mouth? (Physical Pain)	19.9%
How often during last year have you felt life in general was less satisfying because of problems with your teeth, mouth, or dentures? (Handicap)	10.1%
How often during last year have you avoided particular food because of problems with your teeth, mouth, or dentures? (Physical Disability)	15.3%
How often during last year have you been self-conscious or embarrassed because of your teeth, mouth, or dentures? (Psychological Disability, Psychological Discomfort)	12.6%

SOURCE: Seirawan, 2011.

tently high levels of oral and dental disease because key determinants of health have not been addressed. He added that the current model of care and reimbursement will not succeed in controlling dental diseases. For example, 60 percent of Alaska Native children have extensive dental disease (Riedy, 2010) and according to Ismail, the real determinants of this epidemic are not being addressed.

Poor oral and dental care takes a considerable economic toll. In Philadelphia, $11 million was spent to treat dental caries in young children under general anesthesia or IV sedation, Ismail said. One in five of these children will return for in-hospital dental care within the year. The impact of treatment for early childhood caries under general anesthesia is significant. According to one British study, 90 percent of parents reported that their child experienced pain, and a significant proportion had difficulties with chewing or talking (Olley et al., 2011). In addition, children were reported to have emotional and social functioning problems related to their dental disease. According to this study, the socioeconomic status of the parent was predictive of the burden associated with dental caries. When the parents of children who had received dental care in the hospital were asked what kinds of supports would be helpful in future, they reported wanting tooth brushing education programs in schools, oral health education, community-based interventions, and home visits. Ismail said there is a tendency to pay for procedures, not outcomes, and there is a misplaced focus on dental care by professional providers, rather than on community-based approaches to promoting health.

Data from a study conducted in Nova Scotia, Canada, showed that the prevalence of dental caries and the progression of the disease in children varied by parental educational attainment, even though there was universal access to a publicly financed dental care program (Ismail et al., 2001). The study's authors concluded that disparities in oral health status cannot be reduced solely by providing universal access to dental care and that focused efforts by professional and governmental organizations should be directed toward understanding the socioeconomic, behavioral, and community determinants of oral health disparities. In a 2010 study undertaken in New Zealand, the prevalence of untreated caries in school-age children was highest among those children living in the most deprived neighborhoods. The disparities exist despite a system of public health that reaches children in the school and provides them with preventive services. These studies illustrate the need to address oral and dental health from a wider community or public health perspective, not just from the perspective of what dentists or health providers can accomplish, Ismail said.

Significant disparities in dental disease exist in the United States. Data from the NHANES between 1971 to 1975 and 1988 to 1994 show an

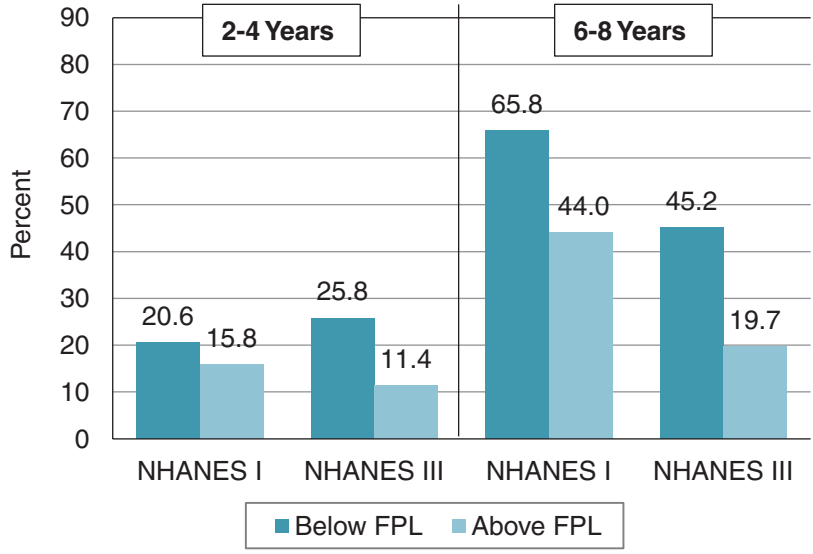

FIGURE 3-4 Trends in untreated decay in the United States.
SOURCE: Ismail, 2012.

increase in entry to decay among children ages 2 to 4 living below the federal poverty level (Figure 3-4).

Education and poverty are important determinants of periodontal disease, oral cancer, and caries. For oral cancer, there are significant variations in rates of disease by race/ethnicity, Ismail said. Existing attempts to address these disparities tend to be piecemeal in nature and lack a necessary focus on systems of care. There is, Ismail said, a need to create a new national strategy that focuses on health promotion.

Ismail concluded by saying that literacy is an important foundation for health. In order to achieve literacy, interventions must range from the global to the community, to the family, and to the individuals within the family.

DISCUSSION

Roundtable member Patrick McGarry began the discussion of the session presentations by noting that family doctors sometimes have a difficult time convincing parents to vaccinate their children because of misinformation about vaccine safety. He asked the panel how to address opponents of public water fluoridation programs. Kleinman said that a focus on the science base, for example, research that supports water

fluoridation as safe and effective, is necessary to counter misinformation. Some of the controversy and uncertainty surrounding public water fluoridation programs stems from a lack of ongoing community education for individuals, families, and policy makers about this communitywide preventive measure. In addition to developing new disease preventive interventions, accurate information about existing effective prevention programs needs to be reinforced, Kleinman said.

Ismail added that communication technology has fueled the fluoridation controversy. There were debates about water fluoridation when it was initiated in the 1940s and 1950s and continuing throughout the 1960s and 1970s. In an Internet search on water fluoridation, Ismail found that about 80 percent of the coverage is negative. Ismail indicated that it is very difficult to judge which sites are credible. He added that even some professions, including dentists, are misled by information obtained on the internet. The health community and public health organizations need to use the same tools to disseminate the known benefits of effective health interventions such as water fluoridation. Water fluoridation works and no measureable adverse health effects have been identified at the levels of fluoridation that are used. Communication strategies need to be developed to successfully deliver this message.

Roundtable member Ruth Parker asked the panel, "If you could give three messages to everyone about oral health, what would they be? What are the three things that everybody should know?" Kleinman responded with three messages:

1. The key intervention to prevent the most common oral disease, tooth decay, is water fluoridation.
2. Fluoride used in the home, along with dental sealants, effectively counters tooth decay.
3. Early screening and diagnosis for oral cancer and periodontal disease reduces morbidity and mortality.

She added this simple message, "Oral and dental health are important for your happiness, enjoyment, and pain-free life."

Roundtable member Cindy Brach asked Ismail how consumers of oral and dental health services can judge whether or not their provider is actually recommending treatments that are appropriate and needed. Her question arose from his comment that dentists sometimes fill caries when a restorative approach could be taken. In addition, she asked how dental health consumers could become advocates for appropriate care for themselves and their families. Ismail said that the reason dentists opt for a more aggressive approach is because dental students and the providers who graduated from dental school have learned to drill in response to

caries. The payment system encourages this practice. He pointed out that caries occur in stages, and that there are stages that require filling and other stages that do not. Unfortunately, reimbursement systems do not provide payments for the more restorative approach.

Consumers can start to ask questions and seek providers who adhere to a philosophy of conservatism. He noted that it is better to be conservative and attempt to preserve healthy tooth structure, than to put a foreign material into a tooth when it is not needed. A dental student may complete an excellent restoration, but if the restoration is placed in a tooth that should not have been filled, this practice represents the lowest level of quality of care. Ismail mentioned that he is organizing a workshop to shift the paradigm from automatically filling a cavity to a focus on prevention. Some tooth decay can be arrested, re-enameled, or filled in a very conservative way. Plans are under way to develop a protocol that incorporates this more conservative approach accompanied by a video that illustrates this method. Ismail added that, in addition to educational interventions, different payment mechanisms are needed for the management of oral and dental disease that reflect and support evidence-based practice.

Roundtable member Susan Pisano asked the panel if key questions have been developed that consumers should ask when they interact with their dental providers. She observed that consumers may not be aware of treatment options for caries and that a set of key questions could help bring about a discussion of the treatment options Ismail is promoting. Ismail was not aware of the development of key questions, but thought that this would be very helpful. He observed that health insurance plans have a key role to play in terms of the change process in collaboration with the medical, dental, and pharmacy schools.

Roundtable member Paul Schyve observed that individuals have access to information through the Internet and elsewhere, but may lack the critical thinking skills necessary to understand the information. He asked the panel to address this issue which is central to achieving health literacy. Kleinman said that education at all levels, not just in the health professions, needs to be examined. Undergraduate public education has shifted its core curriculum to focus on critical thinking. Social networks and the Internet will be a major tool to foster critical thinking, but in addition, enhancements to health education are needed at all levels, from kindergarten through college and professional school. Decision models might be needed as aids to assist people. Ismail agreed that critical thinking needs to be ingrained into educational programs, including those for health providers. He added that there also needs to be a focus on research to answer questions that the public is asking, and

in addition, a mechanism to translate research into messages that the public will understand.

Mary Lee Conicella of Aetna addressed the high rate of general anesthesia use among children being treated for dental problems in Philadelphia. The data on 2- to 5-year-olds covered by Aetna's dental plans, suggest that only 0.13 percent of this group is being treated with general anesthesia. She said that having a benefit that improves children's oral health likely reduces this practice. She asked the panel how the use of such aggressive treatment of children relates to health literacy. In other words, "Does having a dental insurance benefit help children and parents with health literacy?" She also asked the panel, "How can we improve health literacy even for children who do not have a dental insurance benefit?"

Ismail responded that one explanation for the relatively low use of general anesthesia among children is that Aetna's program for Medicaid started very recently. General anesthesia and IV sedation in severe early childhood caries is a treatment covered by Medicaid. Education is a key variable in this population. According to the NHANES data, children of highly educated parents receive three to four times more sealants than children with parents of lower educational attainment. When preventive services are not provided to children in low socioeconomic environments, disparities in dental health are perpetuated.

Roundtable member Laurie Francis thanked Ismail for including self-efficacy and social determinants in his discussion of oral health literacy. She pointed out the importance of having information that is patient-centered and asked Ismail how self-efficacy, patient priorities, experience, and confidence levels can be incorporated into the health literacy conversation. She observed that these concepts often seem to be left out of the conversation. Ismail described how the dental school at Temple University is redefining its outcomes statement. The Commission on Dental Accreditation requires dental schools to demonstrate that they provide patient-centered care, evidence-based care, and comprehensive care. The students will learn how to work according to these three concepts. When measuring quality of oral health care, outcomes need to be included in the measurement set to gauge improvements in knowledge, health, and quality of life. Self-efficacy could be incorporated into an outcomes measure along with patient behaviors and practices. Change is inevitable when accreditation depends on the demonstration of such outcomes. Schools may need guidance or a formula for how to incorporate these concepts into their curriculum.

Kleinman added that tools—for example, the patient health record—allow patients to bring signs and symptoms that are noticed at home into

the conversation with their provider. Accountable Care Organizations[2] also allow providers to reach beyond those who seek care, to the community at large. Examining hospital readmission rates and emergency room use broadly, not just in the oral health area, can be very instructive, but these are indicators of a failing system.

Roundtable member Leonard Epstein recalled Congressman Cummings' story of his family's use of turpentine, cotton balls, and Orajel to manage dental problems. He asked the panel if collaborative activities between oral health and pharmacy had taken place, especially at the retail level in underserved and disadvantaged communities. In these neighborhoods, pharmacists are often the primary points of care. Ismail agreed that this is a very promising approach and that the discussion between the dental community and pharmacists has just started. Pharmacists could be particularly helpful in the age group that dental providers often miss, children up to age 5, because pharmacists often interact with parents regarding the care of young children. Pharmacists could provide a prescriptive health message about how to prevent early childhood caries.

Kleinman provided information on a past survey she conducted as part of a student class project on what retail pharmacies offer to treat oral and dental problems such as tooth pain, mouth sores, and herpes simplex. The survey found that oral and dental products in the pharmacy are extensive and with little or no guidance for the public seeking relief. Many people are dealing with mouth sores superficially and not seeking diagnostics and treatment early in the course of the disease. There are opportunities across the age spectrum to intervene with oral and dental health information. It is critical to reach children because of the opportunities for prevention, but adults are also a key audience in terms of the prevention of oral cancer. Kleinman noted that a partnership between pharmacists and dental providers, to her knowledge, has not yet been formalized, but that such a partnership is an important one to pursue.

Roundtable member Will Ross highlighted the problem of children's early and frequent exposure to sugary food and drinks which contribute to the development of caries right after primary teeth come in. He asked the panel about opportunities for formal collaboration with dietary and nutrition services and providers, both locally and nationally. Kleinman noted that the American Dental Association has brought a number of professional groups together over the years to foster collaborative efforts

[2]"Accountable Care Organizations (ACOs) are groups of doctors, hospitals, and other health care providers, who come together voluntarily to give coordinated high quality care" to their patients. https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/ACO/index.html?redirect=/ACO/ (accessed June 15, 2012).

related to diet and nutrition. It is likely, however, that these efforts need to be revisited and reenergized.

Ismail recounted a successful collaboration between medical students at Drexel University and the dental school at Temple University. A group of about 15 to 20 medical students from Drexel comes to the dental school to learn about oral surgery, dental and craniofacial diagnosis, dental radiology practices, and pediatric dentistry. Other dental schools have similar collaborative programs. Perhaps trained medical students could receive some sort of board certification as a medical student in dental training, he said. The dental professionals need to reach out to all health professions.

Roundtable member Cindy Brach asked the panel to describe what health literate consumers of oral health do, not what they know, but what they do. Ismail said that an oral health literate consumer should question all information that is provided to them. He added that in order for successful communication between patients and providers, providers need to be trained to accept questioning and to provide appropriate health education. Kleinman added that consumers need to be particularly diligent about asking questions about any tissue removal. She cited the importance of new evidence regarding disease processes in dentistry and the relatively new focus on conservation. It is now possible to intervene once the disease process has started and reverse it. The practice of remineralizing teeth is not familiar to parents and other adults who received much of their dental care as children 20 to 40 years ago. There is a new focus on promoting health, and not just preventing disease.

Roundtable chair George Isham highlighted the importance of asking questions of dental care providers. Some of the same questions that are relevant in the medical context are appropriate for dental providers, for example, how many procedures they have performed and the frequency of complications. It is also helpful to ask providers to explain why a procedure needs to be performed. A provider may be offended by such questions, but consumers are entitled to this kind of information. Developing a series of questions for consumers for general dentistry and specialty dental services could be quite helpful according to Isham. The Agency for Healthcare Research and Quality (AHRQ) has developed similar materials for medical encounters and procedures. Brach added that AHRQ has a program called "Questions Are the Answer." Dental oriented materials could be developed through this program.

Isham concluded the discussion by reiterating the need to educate and train dental and health professionals to encourage questions from their patients, and to be open and receptive to questions.

4

What Should One Look for in an Oral Health Literacy Assessment?

ASSESSMENT OF ORAL HEALTH LITERACY: ONE APPROACH

Alice M. Horowitz, Ph.D.
University of Maryland School of Public Health

Dr. Horowitz discussed her experiences while performing a statewide assessment of oral health literacy in Maryland. A guiding thesis for this activity is that health literacy is inextricably linked to improving oral health, especially among low-income groups. Health literacy, as was reported in the IOM report, is the interaction between skills of individuals and demands of the health care system. Horowitz stated that the challenge is to address the mismatch between demands of the health care system and the skills of those using and working in the health care system. To overcome this challenge, Horowitz described that consumers and patients need to

- know how to locate and navigate a health facility;
- read, understand, and complete many kinds of forms to receive treatment and payment reimbursement;
- articulate their signs and symptoms;
- listen to providers;
- know about various types of health professionals and what services they provide and how to access those services;
- trust the provider;

- know how and when to ask questions or ask for clarification when they do not understand;
- understand their options in all procedures; and
- understand that oral health is part of total health and that individuals can keep their mouths healthy.

Horowitz discussed the steps of the oral health literacy assessment undertaken in Maryland:

1. Establish local and state needs.
2. Determine public knowledge regarding caries prevention and early detection.
3. Determine the public's perceptions of providers' communications skills.
4. Determine what other public services, for example, Head Start and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), know and do regarding caries prevention and early detection.
5. Determine what health providers know and practice regarding caries prevention and early detection.
6. Determine communication techniques of health care providers.
7. Conduct environmental scans of dental facilities.

Data collection activities conducted as part of the oral health literacy assessment included surveys and focus groups to seek information about current oral health attitudes, behaviors, and practices. Mail surveys of dentists, dental hygienists, physicians, and nurse practitioners collected information on knowledge and practices related to preventing tooth decay. In addition, the surveys included questions about the routine use of communication techniques used by these health providers. A mail survey of WIC programs was conducted and a Head Start survey is now being fielded. A survey of adults, ages 18 and older and with children ages 6 and younger in the home was conducted. To obtain qualitative information, focus groups and one-on-one interviews were conducted with all of these groups. Focus groups among low-income individuals included both English and Spanish speakers.

Horowitz also said that the Agency for Healthcare Research and Quality (AHRQ) Health Literacy Universal Precautions toolkit was valuable in conducting environmental scans of community based dental clinics in Maryland.

Results of these efforts indicate that the general public does not understand how to prevent tooth decay. This is especially true among those with low incomes and those on Medicaid. Furthermore, the findings

indicate that the public does not know what fluoride is or what it does, and they do not know what sealants are or what they are used for. The appropriate use of fluorides and sealants can essentially eliminate tooth decay. In addition, the survey results show that many children do not drink tap water. Water can be fluoridated, but it does not benefit children if it is not consumed. Horowitz concluded that the public does not understand these important dental health messages.

There are also discouraging results from health care providers, according to Horowitz. Many providers, including dentists and dental hygienists, do not have a good understanding of how to prevent tooth decay. Most providers surveyed do not provide dental sealants, and they do not use the recommended communication techniques.

Clear messages about interventions and next steps have emerged from the surveys and focus groups. The findings have also laid the groundwork for conducting environmental scans in community-based dental clinics. This next step, the conduct of health literacy environmental scans in community-based dental clinics, is needed because approaching a health facility for some can be an onerous task. The purpose of conducting environmental scans is to determine if the clinics are user-friendly and patient-centered. These scans are currently going on in federally-qualified health centers and county health departments in Maryland.

The environmental scans consist of phone interviews with the clinic director to obtain information on the demographic characteristics of the clinic attendees, and a review of the clinic websites and phone system. Some telephone systems are very frustrating for clients, with no person available to provide individual attention. Some of the clinic websites are outstanding while others are "outstandingly awful," Horowitz said. She concluded that there are many practical things that can be done in these areas to improve client services and to enhance access to information.

The clinic environmental scan also includes a review of signage, educational materials, and posters, for example, whether there are educational materials that relate to the prevention of dental caries. Personal interviews are conducted with patients to determine their perceptions of their care and the quality of their communications with clinic providers. Dentists and dental hygienists practicing in the clinics are surveyed regarding their use of communication skills. Horowitz said that the response of the federally-qualified health centers is very positive and that most directors are motivated to improve their dental services.

Data collected from the environmental scan will inform plans to design, implement, evaluate, and revise, when necessary, interventions for specific groups. To illustrate the connection between health literacy and oral health, Horowitz recounted some findings from focus groups that included parents of young children. All of the parents were from

low-income groups and all were either on Medicaid or had no health insurance. Parents were amazed to learn that they could prevent tooth decay, even though how to prevent tooth decay has been known for decades. The primary preventive measures include the appropriate use of fluoride and the use of sealants. Horowitz concluded that disparities in oral health can be greatly reduced by increasing oral health literacy and using health promotion to give parents the tools to promote and protect their children's oral health.

DISCUSSION

Roundtable member Margaret Loveland began the discussion by asking Horowitz if the status of oral health literacy in the state of Maryland is representative of the nation as a whole and whether there are states that are doing better or worse than Maryland in terms of their oral health literacy. Horowitz stated that while their study is conducted throughout the state of Maryland, there are some limitations to the inferences that can be drawn. The phone survey of adults may not have had a representative pool of respondents. For example, a majority of respondents had a college level of education and it is likely that their educational attainment is associated with higher levels of knowledge regarding oral health. Putting this limitation aside, Horowitz speculated that findings from Maryland are generalizable to the nation and these findings are consistent with older national survey data reported in the Surgeon General's report on oral health.

Roundtable member Leonard Epstein asked Horowitz how culturally and linguistically appropriate oral health care issues are factored into a statewide assessment. Horowitz replied that the IOM health literacy model is applied, where culture and society are integral to practice. Any program would not be health literate if it did not also include cultural competency.

Laurie Francis, Roundtable member, asked about the status of the evidence base used to support knowing what interventions translate into behavior change on the part of individuals or communities. In addition Francis asked whether the Reach Out and Read program,[1] a literacy intervention supported by medical providers, could be adapted by the oral and dental community as an intervention tool for literacy. Horowitz replied that educational interventions must be multi-pronged to reach the public, especially pregnant women during prenatal care and parents with

[1]Reach Out and Read prepares America's youngest children to succeed in school by partnering with doctors to prescribe books and encourage families to read together (http://www.reachoutandread.org).

children age 6 and younger. With interventions targeted to these groups, prevention can be achieved. Horowitz added that the oral and dental health community needs to act to prevent any more tragic deaths, such as that of Deamonte Driver. Oral health literacy concepts need to be integrated into both professional school curriculum and board examinations.

5

Oral Health Literacy Programs

COMMUNITY PERSPECTIVE ON THE IMPORTANCE OF ORAL HEALTH LITERACY

Scott Wolpin, D.M.D.
Choptank Community Health Center

Wolpin practices dentistry at the Choptank Community Health Center, a federally qualified health center located in a medically underserved area on the rural Eastern shore of Maryland. The health center includes eight doctors' offices, three of them with dental offices. Each of the offices is about 30 miles away from the others. The center, with a staff of 140, provides primary care services in offices, schools, migrant camps, and a hospital. In 2011, the center had 85,000 visits and 15,000 of these visits were dental visits.

The clinic serves a low-income group of dental patients, many of whom are watermen or employees of the many poultry farms in the area. Many young children present to this clinic with dental or oral disease. In this community and elsewhere, disparities in oral health occur by socioeconomic status and race and ethnicity. Many of the children living in the area are state-insured and do not have a dental home. The clinic is participating in an environmental scan to better understand why effective preventive practices are not succeeding in the community.

A recent *New York Times* article described the use of general anesthesia to treat extensive dental disease in preschoolers.[1] In Wolpin's view,

[1] "Preschools in surgery for a mouthful of cavities," *New York Times*, March 6, 2012.

the rise in the number of children in need of such treatment is evidence of poor oral health literacy. Children with complex and extensive dental disease can often be treated in a clinic setting; however, if the disease is located in multiple quadrants of the mouth, treatment can be lengthy and challenging. Children are often in pain and they are scared. Children with severe behavioral problems usually need to be hospitalized and sedated, which is an approach as a last resort. In most cases, the need for hospitalization can be avoided with the use of prevention and early intervention strategies.

In the health center's school-based oral prevention program, dental hygienists work in the 30 public schools in the 9-county area, providing preventive services and oral health education. The center's philosophy is to bring services to the patients, because patients often have a difficult time accessing care at the center. When children are identified with untreated dental disease and they do not have an established dental home, they are referred to the closest center dental office. Children with extensive needs or children with special health needs may have to seek care at the local hospital.

The center's patients represent 20 percent of the population, but have 80 percent of the community's dental disease. The disease is often advanced and requires complex treatment. The patients have difficulty navigating the local health care system and case management services are used to facilitate appropriate care. Many of the patients have relatively low literacy skills and difficulty understanding how to enroll in or use Medicaid. For example, many of the pregnant women seen at the center do not take advantage of their Medicaid insurance. Some patients are not able to articulate their signs and symptoms of disease. Other problems arise because patients do not adhere to treatment recommendations. Wolpin said that this might be a sign of distrust of providers and described how many clients do not know when or how to ask questions about the treatment options that are present for them or for their children.

Wolpin provided an illustration of the impact of low oral health literacy. The center serves many Spanish-speaking migrant agricultural workers. These workers often live in multifamily dwellings. In order to assure that the working men of the household get a good night's sleep, mothers will put babies to bed with a bottle of sweet liquid, or they will give babies a pacifier sweetened with honey. The result is that many of the children have early childhood caries, and have to be treated in a hospital.

Wolpin described his early approach to education as preaching. He accepted the need for the baby to have a bottle at bedtime, but asked mothers to fill the bottle with fluoridated water. His patients seemed to be in agreement with his advice during their visits, but did not change their behaviors. It is possible that they were not changing their behaviors

because they were afraid that the tap water was harmful. An interpreter brought this to Wolpin's attention when he was working with a family. Some families, many of them poor, were buying bottled water. Wolpin could identify with this concern because when he visits other countries, he worries about the safety of the drinking water. However, in this case, a lack of knowledge about the safety of the water supply was harming both budgets and the dental health of young children in the community.

Wolpin described the worst case of dental caries in a child that he has ever treated. He had to remove all of the teeth of a 3-year-old. This child had to live without teeth until the permanent teeth fully emerged at about age 6 and, in the interim, it was very difficult for the child to eat. Surgeries in such cases are very expensive, as much as $1,500. If restorative work is completed, the cost of surgery can rise to $4,000. Yet, these cases and their associated costs are generally easily preventable.

The need for follow-up and wellness visits can also be misunderstood by parents who often only bring children in when there is extensive disease and symptoms.

Another clinical experience illustrates the need for clear communication. The family of a little girl who was having surgery for multiple caries was given preoperative directions. Because she would be treated in an operating room, she was to have nothing by mouth after midnight. Yet when she came to the presurgery room with her parents the next day for her parents to sign the general anesthesia consent the surgery had to be canceled because the child was eating a donut. The family understood that "nothing by mouth" meant that all of the girl's teeth were going to be removed. They worried that she would be very hungry after the operation so they thought she needed to have something to eat in the morning. Wolpin pointed out that providers need to ensure that patients understand what is being said.

The environmental scan at the center included an informal interview with Wolpin and another center dental provider. The research team walked through the offices to evaluate the user-friendliness of the center. This provided excellent information for the center staff. The research team also examined the center's printed materials to see if they were health literate-sensitive. Some of the centers patients were interviewed, and the interviews are ongoing. A mail survey is planned that will go out to dental providers and cover communication techniques.

Several important lessons resulted from the environmental scan process, Wolpin said. First, the dental community is not going to be able to adequately respond to the crisis in dental health in the community because there are too few dentists taking care of families with Medicaid insurance and those who are uninsured. In his view, the dental community needs to be able to rely on the medical community. With training,

medical providers can conduct dental risk assessments, offer preventive interventions, and link children with untreated dental disease with a dental home. Second, there is a need to know and practice according to current evidence-based science. It is just as important to ensure that patients and the public have this understanding and, in turn, want these interventions. One approach is to employ culturally appropriate lay health workers to provide oral health, nutrition information, dental sealants, and fluoride to underserved families. Messages need to be kept simple and use plain language.

Finally, training in health literacy for all dental staff is essential according to Wolpin. Support staff, hygienists, and assistants often have extensive interactions with patients. There are many opportunities to share messages throughout the clinic experience. Center staff working in school settings can be sensitive and share important messages in a health literate way.

ORAL HEALTH LITERACY: HOW CAN WE IMPACT VULNERABLE POPULATIONS?

Marsha Butler
Colgate-Palmolive Company

Marsha Butler, vice president of global oral health at Colgate-Palmolive Company, discussed a children's oral health promotion campaign that has been implemented globally, the Colgate Bright Smiles, Bright Futures program. The objectives of the program are to

- empower children to practice good oral hygiene;
- partner with government and the profession to improve oral health;
- help reduce prevalence of dental caries worldwide; and
- give back to communities where Colgate-Palmolive does business.

There is a long history of oral health education at Colgate-Palmolive, beginning in 1911 when there was a program for teachers, "Good Teeth and Good Health." Since the 1940s, the company has provided oral health school-based programs globally. Colgate's Bright Smiles, Bright Futures was launched in 1991 as a comprehensive oral health initiative targeted to the most vulnerable and underserved communities in the United States.

The Bright Smiles, Bright Futures program was initiated in recognition of the toll that oral disease was taking as the most prevalent health problem in the United States. Children from families who are poor and those who are members of racial and ethnic minority groups are known to

suffer disproportionately. The Surgeon General's 2000 report, *Oral Health in America*, reported that 52 million school hours are lost annually due to oral health-related disease. The World Health Organization's 2003 report concluded that good oral health is critical to the overall health. The 2007 *Trends in Oral Health Status* report from the U.S. Centers for Disease Control and Prevention reported the following:

- Prevalence of dental decay increased in primary teeth from 24 percent in 1988-1994 to 28 percent in 1999-2004 (2-5 years old).
- Prevalence of dental decay in permanent teeth has decreased significantly during this period from 25 percent to 21 percent.
- Among non-Hispanic black youth, 6 to 8 years, dental decay has increased during this period from 49 percent to 56 percent.

A recent *New York Times* report (March 6, 2012) discussed an increase in the number of preschoolers with extensive dental disease requiring in-hospital treatment under general anesthesia. Interviews with some of the parents whose children were treated this aggressively suggested that they were not told basic information on how to address caries, when to go to the dentist, or when to start using fluoride toothpaste for very young children, 2 to 5 years old.

Butler cited the definition of oral health literacy from *Healthy People 2010:* "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services necessary to make appropriate health decisions" (HHS, 2000a) and enumerated some of the instructive findings from the health literacy literature:

- Thirty percent of U.S. parents have difficulty understanding and utilizing health information (Yin et al., 2009).
- Lower health literacy skills often lead to poorer health status, unhealthy behaviors, and poor health outcomes (Lee et al., 2011).
- Factors at both the individual and community level, such as socioeconomic status, age, sex, ethnicity, and health insurance coverage can affect the relationship between literacy and health outcomes (Butler, 2012).
- Self-efficacy and self-care can mediate the effect of health literacy on health status (Osborn et al., 2011).

The Bright Smiles, Bright Futures program in the United States is offered in schools and includes a curriculum for preschool through third grade. There is a teacher's guide, audio-visual materials to engage the children, and parent communication materials that go home with each child. The goals of the program are to

- increase children's knowledge of preventive oral health measures;
- increase understanding of nutritional foods and drinks for good oral health;
- instill proper oral hygiene skills for healthy teeth and gums;
- relate good health to high self-esteem;
- increase family awareness and knowledge of the benefits of oral health; and
- increase low-income family linkages to oral health providers.

It is important to develop children's oral health consciousness so that they can have confidence about accepting responsibility for their personal oral care at the earliest possible age, Butler said. The program aims to modify oral health habits by using colorful, fun, and engaging multimedia and multicultural activities. An example is a comic book adapted from a program video.

The prekindergarten materials were developed in partnership with Head Start. The materials promote self-esteem and self-efficacy. With the program, Head Start teachers and health coordinators become advocates for good oral health. Parent involvement is an important critical part of the program. A program to prevent early childhood caries that targets pregnant women and caregivers with babies and toddlers, developed in collaboration with Early Head Start program, has been well-received by health coordinators, said Butler. A parent checklist simplifies CAMBRA[2] recommendations from the University of California, San Francisco, in a colorful graphic with simple language that can be easily understood by Early Head Start parents (Figure 5-1). In addition to print materials, many Bright Smiles, Bright Futures resources are available online for both parents and children. There are games for children and materials for health educators.

Implementation studies have been conducted in collaboration with the University of Maryland. Results show that families believe the program taught students responsibility for their own oral health. Children exposed to Bright Smiles, Bright Futures relative to nonparticipants had increased knowledge of oral health, higher frequency of visits to the dentist, brushed their teeth morning and night, and had better brushing skills.

The Bright Smiles, Bright Futures program uses eight mobile vans to take the program to where children live, and where vulnerable populations reside. These mobile vans have traveled to more than 160 cities. The program operates in partnership with thousands of volunteer dental professionals to educate students and school staff, and refer children

[2]CAMBRA stands for CAries Management By Risk Assessment.

FIGURE 5-1 A checklist to prevent dental caries.
SOURCE: Butler, 2012.

to providers. Partner organizations include dental associations, dental schools, neighborhood health centers, and hospitals.

A partnership with the school of dentistry at the University of California, Los Angeles, takes oral health awareness to an infant care program. The program, led by Dr. Francisco Ramos-Gomez, provides counseling to patients with infants and toddlers at a community clinic. Materials are used that are designed to reach individuals of low literacy.

Raising the awareness of the community also benefits oral health. Bright Smiles, Bright Futures partners with national and local community-based groups, as well as religious, fraternal, and civic organizations in fun and engaging ways. The program participates in large community festivals and multicultural events. In addition, partnerships have been formed with the media and public relations groups to promote oral health literacy.

Colgate-Palmolive launched Hispanic Oral Health Month in partnership with the Hispanic Dental Association. This effort promotes awareness of oral health in Hispanic communities, using bilingual resources to educate families. A joint outreach effort in 12 Hispanic communities involves retailers, including pharmacy, community-based organizations, and Hispanic Dental Association volunteers.

A partnership has also been formed with Univision, a Spanish language multimedia company. This partnership has led to the integration of oral health information and education into Spanish programming. Oral health messages were incorporated into a reality television program, Nuestra Belleza Latina, that features young women who are competing to be on Univision television.

As part of a partnership with the Walmart Corporation, Bright Smiles, Bright Futures mobile dental vans visit participating Walmart stores to provide oral health education. Diagnostic screenings are available as are referrals for treatment. An online resource, "Building Smiles Together," is available to Walmart customers. Participating Walmart stores are located throughout the country and some of them are in areas that do not have ready access to dental care and information.

Another campaign, "A Hundred Million Smiles," builds awareness of oral health in ethnic and poor communities. "Brush-a-thons," involving hundreds of young children brushing their teeth at the same time, raise awareness of oral hygiene. Partnerships have also been forged with Boys and Girls Clubs, YMCAs, and faith-based organizations. These partnerships provide opportunities to share the Surgeon General's "Seven Steps to a Bright Smile," which was created in partnership with the U.S. Public Health Service. Celebrities have also been recruited to serve as dental role models.

The Bright Smiles, Bright Futures program has reached more than 650 million children in 80 countries since 1994. The program's materials

have been translated into 30 languages. There are in-school programs and Web-based interventions. Many collaborating countries, including Brazil and China, have been successful in raising oral health awareness. In China, 100 million children have been reached over a 10-year period, and thousands of teachers have been trained and educated through their nationwide oral health promotion program, "Love Thy Teeth."

In a school-based program in South Africa, Mama Colgate, a nurse, goes into rural areas to educate families and children. A dental mobile van provides treatment and on the Phelophepa[3] health train Colgate sponsors a dental car where nurses and dental students educate individuals in oral care in rural areas of South Africa.

In India, Colgate partnered with the Anganwadi rural program that uses primary health care workers to deliver primary health, nutrition, and education for children and mothers. This program operates in partnership with the Indian Government and targets mothers and children 3 to 6 years old in rural areas. Colgate provided training to the primary health care workers so that they could teach basic oral health. To date, Butler reported, 118,000 workers have been trained and several million children have been reached with simple educational materials, lectures, slide presentations, flipcharts, and materials.

Butler concluded by highlighting important lessons learned from Colgate's many oral health initiatives. First, preventive oral health education and promotion represent significant steps toward achieving positive oral health outcomes. Second, partnership with local and community-based organizations is a critical component for success. Third, more research is needed to better understand the impact of grassroots approaches to promote oral health literacy at both the individual and community level.

DENTIST-PATIENT COMMUNICATION TECHNIQUES USED IN THE UNITED STATES: THE RESULTS OF A NATIONAL SURVEY

Gary Podschun
American Dental Association

Podschun presented the results of a recent national survey sponsored by the American Dental Association (ADA) that was conducted among member and nonmember dentists in clinical practice to identify commu-

[3]"South Africa's custom-built 'health train,' Phelophepa I, delivers health services to remote areas of the country, reaching over 180,000 patients a year" (http://www.southafrica.info/about/health/health-train-160312.htm [accessed October 10, 2012]).

nication techniques routinely used by dentists and how their use varied.[4] The ADA is the professional association that represents the interest of dentists and also works to advance the oral health of the public.

Podschun acknowledged the contributions of the following groups and individuals who guided the design and execution of the survey:

- ADA National Advisory Committee on Health Literacy in Dentistry
- Dr. R. Gary Rozier, University of North Carolina at Chapel Hill, Gillings School of Global Public Health
- Dr. Alice M. Horowitz, University of Maryland at College Park, School of Public Health
- Brad Petersen, ADA Health Policy Resources Center
- John Cantrell, University of North Carolina at Chapel Hill, Gillings School of Global Public Health

The definition of oral health literacy adopted as ADA policy in 2006 is "the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate oral health decisions." This definition was adapted from a definition of health literacy formulated at a 2004 National Institute of Dental and Craniofacial Research (NIDCR) workshop. An alternative definition, "the ability to access, understand, appraise, and communicate information to engage in the demands of health contexts to promote health,"[5] is also an important continuation of the definition of health literacy. This definition takes into account the demands that are placed on the public by health care providers in the health care system.

The ADA has adopted policies acknowledging that limited health literacy is a possible barrier to oral disease management and that effective communication skills are essential to the practice of dentistry. Podschun added that the lack of communication skills of health professionals often impedes the public's health literacy. Podschun noted that much effort has been devoted to the assessment and development of skills among patients and the public in health literacy, but very little attention has been paid to the development and testing of communication skills of dental and other health care professionals. Because of the lack of information about the communication skills of dentists, or about the dentist/patient communication interaction, the 5-year ADA Health Literacy in Dentistry

[4]The results of the survey are published: R. G. Rozier, A. M. Horowitz, and G. Podschun. 2011. Dentist-patient communication techniques used in the United States: The results of a national survey. *Journal of the American Dental Association* 142(5):518-530.

[5]This definition can be found in the article I. Rootman and B. Ronson. 2005. Literacy and health research in Canada: Where have we been and where should we go? *Canadian Journal of Public Health* 96(Suppl 2):S62-S77.

Action Plan 2010-2015 (ADA, 2009) calls for additional studies to assess the health communication perceptions and practices of dentists and their team members, including dental hygienists and dental assistants. The action plan also calls for the advancement of interventions for oral health professionals to improve their communication skills.

The purpose of the ADA survey was to (1) determine techniques used by dentists and dental team members to ensure effective patient communication and understanding; and (2) identify the variation in routine use of these techniques according to factors that might be targeted with interventions. In his presentation, Podschun focused on dentists. Data were collected for the entire dental team and he mentioned that there will likely be manuscripts developed describing the techniques used by dental team members.

Staff from the ADA survey center selected a simple random probability sample from approximately 179,594 member and nonmember professional active dentists (general and specialists) in the United States. Questionnaires were mailed to 6,300 sampled dentists and two mail and one telephone follow-ups were conducted to improve response rates.

The questionnaire included 86 items that were developed by the ADA National Advisory Committee on Health Literacy and Dentistry. The final questionnaire included 18 communication items for which participants indicated on a 5-point Likert scale, from never to always, how often during a typical work week they used certain techniques. The 18 questions covered the following five domains:

1. Understandable language (5 questions)
2. Teach Back method (2 questions)
3. Patient-friendly materials (4 questions)
4. Help understanding (5 questions)
5. Patient-friendly environment (2 questions)

These communication techniques were recommended to the ADA by the American Medical Association (AMA) because they were included in an AMA survey of health providers (Schwartzberg et al., 2007). Major parts of the questionnaire were pilot tested with dental providers at the 2007 ADA annual meeting.

The primary outcome variable for the analysis was the count of routine techniques used by the dentists. Routine was defined as "most of the time" or "always" as opposed to "never," "rarely," or "occasionally." Predictor variables that were listed in the analysis included the following:

- Provider characteristics (i.e., age, race/ethnicity, sex, U.S.-born/trained)

- Practice characteristics (i.e., patient characteristics, specialty, primary occupation, setting)
- Health literacy awareness
- Training in communication techniques
- Barriers to patient understanding (i.e., "none," "lack of time," "awkward," "can't simplify language any more," "patient language," "patient non-adherence")
- Practice-level change
- Outcome expectancy (18-item scale: low, medium, high)

Podschun explained the nature of the last item listed, outcome expectancy. As part of the survey, dentists were asked whether they thought each of the 18 communication techniques were effective. A scale was created by summing the yes responses to each of the 18 techniques. A categorical variable, called outcome expectancy, was created based on the variable's distribution (i.e., low, medium, high). Outcome expectancy includes both one's confidence in performing the task, as well as, the expectation that the task will actually have the intended outcome.

Podschun mentioned that because the intent of the survey was to understand providers' communication practices, the analysis was limited to dentists who were involved in clinical care. A number of analyses were conducted:

- Count of routine use of techniques (e.g., "most of time" and "always" vs. "never," "rarely," and "occasionally")
- Comparison of mean number of techniques used routinely, by predictor variables (analysis of variance)
- Confirmation of association of predictor variables with number of techniques used routinely with regression analysis (ordinary least squares regression)

Two hundred and ninety-two of the 6,300 mailed questionnaires could not be delivered, leaving an eligible sample of 6,008. Of the eligible sample, 2,010 dentists returned their questionnaires for an overall response rate of 33.4 percent. The analytical sample included 1,994 dentists because 16 dentists were excluded who reported that they were not involved in clinical care any longer. Most questionnaires had complete answers (the item response rate was 87.1 percent).

Table 5-1 shows results for each of the items within the five domains of techniques. Podschun reported that less than one-quarter of dentists routinely used any of the techniques listed in the patient-friendly practice or teach-back method domains such as referring patients to the Internet or asking patients to repeat information or instructions back to them.

He pointed out that interpersonal communication and the teach-back method are considered by literacy experts as basic skills that every provider should use routinely. He described the other skills enumerated in Table 5-1 as additional techniques that are useful, particularly for those with limited health literacy.

The three techniques grouped within the patient-friendly domain were among the least frequently used. The five assistance techniques were among the most frequently used techniques by the dentists. The use of materials and aids were very popular strategies among the dentists surveyed, with printed materials and models or X-rays being two of the top three reported techniques used. The five interpersonal communication techniques were also among those techniques identified as basic. Of the

TABLE 5-1 Dentists' Routine Use of Oral Health Literacy Techniques

Technique	Percent Routinely Used
Patient friendly	
1. Ask patients how they learn best	4.9
2. Refer patients to Internet	11.1
3. Use interpreter	15.3
Teach back	
4. Ask patient to repeat information or instructions*	16.0
5. Ask patient to tell you what they will do at home to follow instructions*	23.5
Assistance	
6. Underline key points in printed materials	31.5
7. Follow up by phone to check understanding	35.1
8. Read instructions out loud	48.1
9. Ask staff to follow up on post-care instructions	53.3
10. Write or print out instructions	54.5
Materials	
11. Use video or DVD	15.8
12. Hand out printed materials	65.9
13. Use models or X-rays to explain	73.1
Communication	
14. Present only 2 or 3 concepts at a time*	29.8
15. Ask family member or friend to participate*	34.3
16. Draw or use pictures*	42.5
17. Speak slowly*	67.8
18. Use simple language*	90.6

NOTE: Techniques indicated by a * are considered basic techniques.
SOURCE: Podschun, 2012.

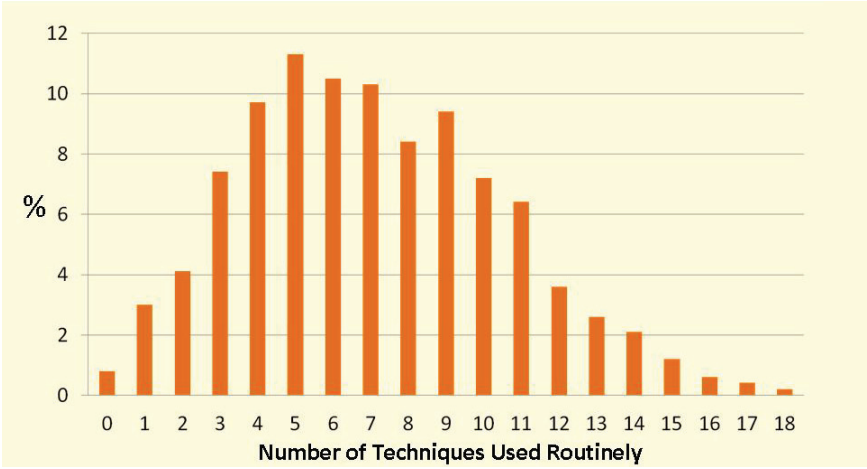

FIGURE 5-2 Percent of dentists and number of techniques used.
SOURCE: Podschun, 2012.

18 techniques, use of simple language was the most commonly reported strategy.

The highest number of communication techniques was reported by dentists who were either ages 36 to 45, black, female, and/or born outside or received their professional education outside the United States.

Figure 5-2 illustrates the number of dentists and the number of techniques used by the dentists. Podschun reported that only about one-third of the dentists used as many as one half of the techniques. Dentists reported routinely using an average of 7.1 of the 18 techniques and 3.1 of the techniques that were identified as basic.

As shown in Figure 5-3, with the exception of pediatric dentists, specialists were more likely to use more techniques than general dentists. The average number of techniques used by oral surgeons (9.6 techniques)—the highest users of the techniques—was significantly higher than those used by pediatric dentists (6.3 techniques) and general dentists (6.9 techniques)—the professionals who used the least number of techniques.

Figure 5-4 shows that the frequency of the use of the 18 techniques varied considerably across the five domains of techniques. This figure illustrates the average for each domain.

Podschun discussed how variables that measured some aspect of health literacy awareness, communication training, outcome expectancy, barriers, and practice-level change were also associated with the number of techniques used. One of the strongest predictors within this group of

Specialty	Sample Size	Mean No. Techniques
Oral surgery	38	9.6
Public health/pathology	5*	9.4
Periodontics	52	9.1
Endodontics	37	8.1
Orthodontics	87	7.4
General dentistry	1330	6.9
Prosthodontics	22	6.7
Pediatric dentistry	45	6.3

FIGURE 5-3 Practice characteristics and differences in mean numbers of techniques used.
NOTE: © American Dental Association, All Rights Reserved.
*Small sample size does not provide accurate estimate.
SOURCE: Podschun, 2012.

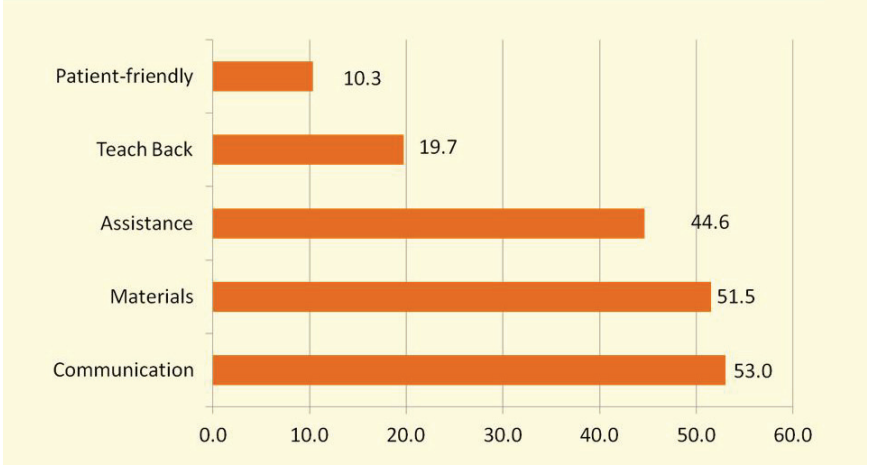

FIGURE 5-4 Percent of techniques used routinely.
SOURCE: Podschun, 2012.

variables was outcome expectancy. Dentists classified as having high outcome expectancy were routinely using 50 percent more techniques than those dentists classified as having low outcome expectancy.

Dentists reported that they thought an average of 11.7 of the 18 techniques and 4.8 of the 7 basic techniques were effective. The results of the regression analysis generally confirmed these findings.

Podschun described some of the limitations of the survey. First, he mentioned that the list of 18 techniques included in the survey was drawn primarily from medicine to measure communication techniques. Although the list reflects guidance about important communication techniques, the response scale was not tested for validity or reliability.

Second, there may have been reporting bias. The type and quality of communication could have been better determined by direct observation. Third, he stated that nonresponse bias could have influenced the findings. The response rate of 33.4 is low, but typical for a mailed survey of practicing health professionals. Lastly, Podschun discussed the lack of information on the quality of communication techniques used by the sampled dentists. He indicated that future studies are needed to assess this aspect of dentist/patient communication. The number of techniques needed might differ depending on how well they are performed.

Podschun summarized the four main findings of the survey:

1. The number of communication techniques used routinely varies greatly among dentists.
2. The routine use of techniques was similar to physicians, nurses and pharmacists for 10 of 14 techniques examined in both studies (Schwartzberg, 2007).
3. The ideal number and type of communication techniques that should be used when communicating with dental patients are not known, but the results of the survey suggested that dentists' routine use of these techniques is less than what is needed to meet the oral health needs of all patients.
4. There was limited use of the techniques recommended by health literacy experts and two-thirds of dentists use fewer than four of the seven basic techniques.

Podschun discussed recommendations that follow from the survey results. He stated that the dental profession needs to develop and disseminate communication guidelines and programs, such as continuing education courses and toolkits for practicing dentists and their team members. In his view, to advance dentist-patient communication effectiveness, oral health literacy tools need to be developed with a multidisciplinary research agenda. Lastly, Podschun stated that policies and

programs need to be implemented to assure that graduating dental care professionals and dentists already in practice are meeting the information needs of all their patients.

ORAL HEALTH AND PRIMARY PREVENTION

Matt Jacob
Pew Children's Dental Health Campaign

Jacob described the work of the Pew Charitable Trusts in the area of oral health prevention. The Pew Children's Dental Health Campaign was launched in 2008. It is one of many projects that are a part of the Pew Center on the States where there is a focus on state-based change and reform. Because so much of oral health policy is determined through state law and state regulation, it is appropriate for there to be a state-based focus on this issue.

Jacob discussed ongoing work on community water fluoridation. To lay the groundwork for their project, Pew several years ago attempted to ascertain what, if anything, the public thought about community water fluoridation and how issues related to water fluoridation were playing out in different communities. Phone surveys and several focus groups were conducted. In addition, online bulletin boards were created in an attempt to capture the segment of society without landline phones. In-depth interviews with oral health advocates were conducted in four communities: Wichita, Kansas; York, Pennsylvania; San Diego, California; and Palm Beach County, Florida. Each of those four communities had had a fairly intense fluoridation debate play out in the previous 4 to 5 years.

As background, Jacob, showed a map illustrating the penetration of fluoridated water across the United States (Figure 5-5). As of 2008, an estimated 74 million Americans on public water systems lacked access to optimally fluoridated water. The 10 states shown in orange/red are the worst states in terms of access to fluoridated water. Jacob reiterated that the map only refers to people whose homes are connected to public water systems. Millions of Americans live in rural areas where they rely on well water or other sources that are not fluoridated to the optimal level that prevents decay. The 10 states shown in teal green, many of them in the mid-Atlantic region, are the 10 best states in terms of access to fluoridated water.

Jacob described the contentious nature of water fluoridation projects. Grand Rapids, Michigan, in 1946 was the first community to initiate water fluoridation. A group called the John Birch Society claimed that this proposal was a communist plot. This controversy subsided and many communities subsequently opted for fluoridated water systems. Tremendous

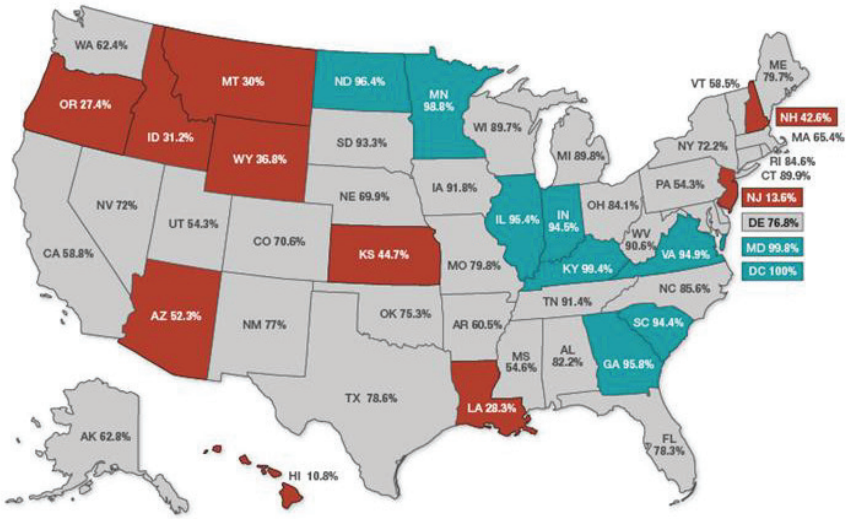

FIGURE 5-5 Penetration of fluoridated water systems.
SOURCE: Jacob, 2012.

progress has been made, according to Jacob. The progress was largely the result of a strategy that Jacob referred to as the "tiptoe" approach. Such an approach might involve quietly approaching a sympathetic city council member or a county commissioner to see if they would float a proposal to fluoridate the public water system. Next, a pediatrician or a dentist would be called on to testify. The goal was to bring the measure to a vote of the council or commission without the kind of loud, contentious public debate that could delay action for months or even years. According to Jacob, this "tiptoe" approach was quite successful. It has not been the approach used everywhere. In some areas, the issue was dealt with at the state level through state laws and state mandates. However, in many cases water fluoridation was considered a local community issue where this "tiptoe" approach worked quite well.

This approach, however, has had some unintended negative consequences for oral health literacy. Jacob reported results from a 2010 survey of Maryland residents. Despite the fact that Maryland is the most comprehensively fluoridated state in the country, almost 6 of 10 Marylanders could not identify why fluoride is adjusted or added to public drinking water. And according to a Pew-sponsored survey, 80 percent of Americans said that they were only somewhat informed, or not at all informed, about the issue of fluoridation. According to pollsters, when this many people

report being somewhat informed, or not at all informed, the proportion of the uninformed in the population is probably even higher.

On the surface, Jacob stated that promoting water fluoridation should be relatively easy. This is not an intervention where people need to be coaxed to come into dental offices. It does not involve trying to decide where to locate clinics. And yet, Jacob said, the one thing that has complicated the dynamic of community water fluoridation is that this issue, unlike other areas of dental health, has an opposition. According to Jacob, relatively few people oppose water fluoridation but these individuals are persistent, similar to the opposition organized around vaccines. Unfortunately, they have placed erroneous information about water fluoridation on the Web, he said.

According to Jacob, one of the weaknesses of the conventional approach described above to initiating water fluoridation (i.e., the "tiptoe" approach) is that it does not work well in an era when opponents can place such erroneous information on the Web. Furthermore, the conventional approach does nothing to build public understanding and buy-in. The conventional approach, to a large extent, bypassed the public. Jacob acknowledged that there are some excellent educational resources available to educate the public about water fluoridation, for example, the American Dental Association's Fluoridation Facts (www.ada.org/sections/newsAndEvents/pdfs/fluoridation_facts.pdf). The Centers for Disease Control and Prevention also has excellent Web resources on fluoridation that help people understand that it is safe and effective.

One of the findings of the Pew focus groups is that how the question of water fluoridation is framed is critically important. Jacob stated that if the conversation begins with a discussion of fluoride, support for fluoridation is likely to be more lukewarm. However, if the issue is put into the larger context of protecting teeth, individuals are more likely to positively view fluoridation.

Jacob cited a technology guru, James McGovern, who said, " a solution needs a problem. If the people required to change do not perceive there is a problem . . . you will never convince them to change." As Jacob sees it, fluoridation is a solution to a problem. Establishing the problem is crucial before the public and policy makers can be convinced that fluoridation deserves their support.

Jacob described further polling work conducted in Oregon. Pew's poll tested five messages to see how they affected existing support. The Oregon poll showed that the majority of the public supported fluoridating the water supply. The Pew group wanted to see what messages could be effective in strengthening the intensity of support among existing supporters. Five very different messages are shown in Table 5-2. Of these

TABLE 5-2 Results of Pew's Oregon Survey Designed to Test Messages That Would Bolster Support for Water Fluoridation

How Messages Affect Existing Support	Much More	Somewhat More	No Effect
More than 35% of children in Oregon have untreated dental disease.	60%	26%	12%
The CDC has called fluoridation 1 of the "10 great public health achievements of the 20th century."	39%	36%	21%
Studies prove that fluoride prevents and can even reverse the process of tooth decay.	47%	35%	13%
Communities have a moral obligation to ensure that all residents benefit from fluoride—something that is proven to improve oral health.	31%	36%	20%
The typical city saves $38 for every $1 invested in water fluoridation.	47%	38%	11%

SOURCE: Jacob, 2012.

five messages, the first, which is a statement of the problem, received an uptick in support.

To build public awareness, Jacob stated that it is critical to frame the issue of water fluoridation in the context of oral health. Pew is one of at least 30 organizations that have partnered to launch the Campaign for Dental Health. Its associated website is iLikeMyTeeth.org. Other partners include the American Academy of Pediatrics, the California Dental Association, and Voices for America's Children. Jacob indicated that the website represents an effort to reclaim some of the World Wide Web for accurate information on fluoridation.

Jacob pointed out that the use of clinical language can backfire. Sodium fluoride is a chemical, but there is no need to refer to it as such. The use of such technical terms can needlessly scare people and play into the fear-based arguments used by fluoridation opponents. When a mother of a 3-year-old hears the word "chemical," she does not feel reassured.

Dental sealants are another prevention strategy that Pew supports, viewing sealants as a very cost-effective strategy to prevent caries. Sealants prevent 60 percent of decay at one-third of the cost of filling a cavity.

And yet, Jacob reported in 2010 seven states had no school-based sealant programs to reach at-risk children. This represents a concern to the Pew Children's Dental Campaign, because without such programs, it will be difficult for states to reach the goal of *Healthy People 2020*, to increase the proportion of children aged 6 to 9 years who have received dental sealants on one or more of their permanent first molar teeth.

Building awareness in this area is vital according to Jacob. He cited a 2010 study indicating that parents' low level of health literacy was linked to a lower rate of sealant use by children (Mejia et al., 2011). Jacob reported that roughly 20 states have rules restricting sealant application that do not reflect the latest clinical evidence.

Although public awareness is crucial in this area, the Pew campaign has decided to focus their efforts on policy makers, state dental boards, and others that are shaping this issue. It is important for them to be aware of the latest clinical evidence and to understand that certain barriers, such as prior exam rules, can actually make it more difficult to deliver care to those who need it. Pew has plans to release a 50-state report card mid-2012 that focuses on prevention and emphases issues related to dental sealants.

The Pew report will grade all 50 states based on their policies to

1. alleviate unnecessary barriers to reaching more kids with sealants;
2. increase the percentage of high-risk schools with sealant programs;
3. participate in the National Oral Health Surveillance System (NOHSS); and
4. meet the sealant goals in *Healthy People 2010*.

On the last indicator, the report will document states' progress toward meeting the Healthy People 2010 goal because if states are behind on the 2010 goal, then they are probably not on track for meeting the Healthy People goals for 2020.

Pew is also very interested in the third indicator: participation in the NOHSS. Jacob pointed out that if data are not collected and reported, there is little information on how a state is doing, where problems reside, and the scope of problems.

DISCUSSION

Chairman Isham opened the discussion with an observation about the status of water fluoridation in the United States. Isham was stunned to learn that 74 million Americans are without access to fluoridated water. He observed that Minnesota has a high rate of water fluoridation and neighboring Wisconsin does too. In Wisconsin, the rural hospitals in one

county determined that the fluoridation of water is a major issue and have gotten together with the public health department to develop strategies to preserve or initiate water fluoridation.

The Internal Revenue Service (IRS) requires that hospitals quantify their community benefit in order to maintain their community benefit designation under the tax code. Hospitals have to conduct a community-based needs assessment. Hospitals are encouraged to conduct these assessments with their public health partners and then report on how they spend their community benefit money.

Isham observed that there are opportunities for partnership between hospitals and public health systems to meet the IRS requirements regarding community benefit. He also pointed out that there are lost opportunities in terms of collaboration between dentistry and primary care. He noted that the Institute of Medicine recently released a report on public health and primary care. Isham scanned the report to see if there was coverage of dentistry or health literacy. Dentistry appeared twice, and health literacy did not appear in the report.

Isham noted that much of the controversy surrounding water fluoridation stemmed from the public's perceptions of the role of government. If the issue is reframed in terms of the health of children, and the economic vitality of communities, then water fluoridation might have a more favorable appeal to the broader American public. Isham noted that the dental and oral health community has a tremendous role to play in starting this conversation.

Conicella suggested that the anti-fluoridation movement is a sign of health illiteracy. She asked the panel if members of this movement communicate with Pew, the ADA, or the states with their concerns about water fluoridation. If so, she asked how the oral health community is responding to their concerns. Jacob replied that Pew and its national partners received many e-mails in response to their Campaign for Dental Health and their website, ilikemyteeth.org. However, Jacob said, most of these e-mails were sent by a small group of anti-fluoride activists. Jacob mentioned the similarities between the anti-vaccine movement and the anti-fluoridation movement. Isham said that there are many opportunities for organizations to leverage their assets for educating the public and identified the different levels of intervention that are needed to meet the oral health literacy challenge. He noted that attention needs to be paid to both consumers and to policy makers.

Roundtable member Brach asked Podschun if there were oral health specific tools and resources available through the ADA, and if there were, if materials had been adapted from medical health tools and resources. Podschun said that the National Advisory Committee on Health Literacy and Dentistry recommended at their last meeting that a health literacy

toolkit be developed. In their review of what that toolkit might look like, they discussed the Agency for Healthcare Research and Quality (AHRQ) toolkit and the possibility of tailoring sections of that resource to the practice of dentistry.

Podschun said that the National Advisory Committee on Health Literacy and Dentistry discussed the development of an awareness-raising video targeting dentists and their team members. He stated that the American Medical Association found that the production of a health literacy video and its distribution to all of their members was the single most important factor in raising the consciousness of their member physicians. Podschun said that a similar approach might be useful in raising awareness of ADA members and others about the importance of oral health literacy.

Podschun pointed out that printed materials and brochures are the most often used educational strategies in dental practices and yet there is no assessment of the quality of those materials. The ADA would like to develop a rapid assessment tool that dental practices could use to assess the quality of the materials that they are purchasing for their offices. Brach mentioned that AHRQ is in the process of developing a health information rating system.

Ross asked Podschun about the interaction between race and literacy. He noted that the ADA survey results showed that dentists with low-outcome expectancies used fewer health literacy techniques. Ross asked, "Why did they have such low outcome expectancies? Was there some cultural bias inherent in the survey?" He further asked if it was possible to control for cultural competence in the analysis of the survey. Podschun clarified the survey results by pointing out that African American dentists and foreign-born dentists were more likely to use more health literacy techniques.

Roundtable member McGarry asked Jacob if Pew has analyzed the responses to the website that has been created. Jacob responded by pointing out that the website is a fairly nascent effort launched in November 2011. He described a major task relating to SEO (Search Engine Optimization). These are techniques to improve search rankings. Traffic to the ilikemyteeth.org site has grown slowly. A number of partners, including the AAP, the California Dental Association, and a variety of state and local foundations are supporting the Campaign for Dental Health and its Web presence.

Pew and its partners who launched the Campaign for Dental Health have learned how to optimize its website ranking. For example, the amount of content on a website influences whether searchers are directed to a particular site. The Campaign for Dental Health has hired consultants to assist with their Web development to ensure that it is accessible. The

Campaign has encouraged state health departments to link into the site. Links to Web content that include ".gov" improve a site's standing. These strategies are important because a website may have excellent content, but if no one is directed to it by Web browsers, it is not going to have an impact. In Jacob's judgment, the anti-fluoridation movement has done a very good job of giving their content the veneer of science.

Roundtable member Pearson observed that health literacy and oral health literacy have followed a similar trajectory as a field in its development phase. The initial work often involves designing evaluation and research programs to identify where problems exist in the community. He observed that such an orientation leads to "sick care," which in turn leads to a continuing focus on treatment. This can make it difficult to change the system's orientation to focus on prevention and integrative medicine. It may be that oral health literacy, because it is a younger field, may avoid this difficulty. He asked the panel members if they could imagine what research and evaluation tools and then intervention campaigns might look like if they focused on what works instead of what does not work. He asked, "How might that orientation change your strategy and possibly the outcomes?"

Jacob responded that with his background in messaging and public relations, it is important to focus on problems. He pointed out that every single day in America, hundreds of airplanes land safely and you never hear about it on the news and no one discusses it over coffee because it is not a problem. Problems tend to generate concern and get people talking. He suggested that there are ways to frame oral health problems in such a manner that it does not have a treatment focus. The Campaign for Dental Health does highlight the problem of tooth decay in America, but the focus is on fluoridation and sealants as preventive strategies to address the problem.

Roundtable member McGarry noted that there is a growing body of research on the association between oral health and chronic diseases. He asked the panel whether they had observed this association in their practices or research. Wolpin, from his clinical experience, highlighted the important interface between oral health care and medical care. He sees patients with difficult to manage diabetes with dental abscesses. These patients are at higher risk of infection because of their poorly controlled diabetes. Wolpin described a vicious cycle between the uncontrolled diabetes and infection. He stated that it is critically important for dental providers to work collaboratively with medical colleagues. The relatively new focus on the patient-centered medical home provides opportunities to take a transdisciplinary approach to health care. In Wolpin's community health center, the medical staff helps him gain access to the youngest children, because they are generally seen for well-child visits five times

the first year of life. This provides opportunities for anticipatory guidance and risk assessment. There are also opportunities for transdisciplinary approaches among older patients, according to Wolpin. If a medically underserved adult seeks dental care for a toothache, Wolpin is able to refer those with high blood pressure to his medical colleagues.

Roundtable member Ratzan asked the panel how to better integrate oral health literacy with broader prevention issues. In response, Horowitz, indicated that multiple approaches are needed. One very important approach is to have medical school curricula that include oral health issues. For too long, the disciplines have been separated and they should not be, in her view. Continuing education courses and training are also needed to reach those who have completed their education.

Horowitz added that having electronic records also fosters integration. County health departments and federally qualified health centers that have electronic records are able to cross-communicate. And when different services are provided under one roof, it is much easier to collaborate. Some facilities house medical and dental services and, in addition, have WIC and Head Start offices. A well-educated workforce and public are also essential to integration according to Horowitz.

Wolpin described innovative partnerships between academia and community health centers that provide opportunities for service learning. His community health center has an advanced education in general dentistry residency program. The dental residents shadow a primary care provider, so they learn about medicine.

Rush asked Wolpin to describe the content of the training that is provided to his staff on health literacy. Using excellent resources is key to a good training program according to Wolpin. When working with the WIC programs and the school-based programs, Wolpin has relied on tools similar to those developed for the Bright Smiles, Bright Futures campaign. Unfortunately, there is not a central and indexed resource for materials related to best practices. Consequently, finding good resources to share with the center's staff is sometimes difficult. Wolpin has found that sharing anecdotal experiences can be a powerful way to convey the relevance and importance of health literacy.

Wong asked the panel whether "positive deviant models" have been applied to oral health literacy. Here, individuals in the community who show positive deviance from the norm, in this case, children with good teeth or no cavities, are studied to see if their parents (or the children themselves) have identifiable practices that could be disseminated more effectively. Wong asked if there are examples of parents who are doing things differently and effectively, thereby keeping their children free from dental disease and away from the dental office. In reply, Butler discussed some of the ongoing research at Colgate-Palmolive. Best practices and

effective prevention programs are being examined in the United States and around the world to identify the ingredients of program success. These analyses include estimates of the potential to improve oral/dental outcomes as a result of programs that have incorporated education and the use of effective preventive treatments. Children and families who have adopted best practices are included in these reviews. Butler stated that the results are forthcoming and, when available, will be widely shared.

Wolpin in response to Wong's questions added that it is important to understand the motivations behind noncompliant behavior on the part of parents. There is an assumption that when families do not seek care for their children, they do not value oral health care. Wolpin pointed out that parents need to understand the importance of dental care before they can value it. Providing education to families is key to changing behavior.

Roundtable member Patel asked Wolpin if his community health center had an electronic health record that would allow him to track oral health patterns within the community he serves. In addition, she asked whether the electronic record, if present, is the same system used for dental and medical care. Wolpin replied that the center has an electronic health record, but it lacks sophistication. At present it is used primarily for completing the dental charting and clinical notes. In terms of record sharing with primary care, Wolpin stated that their record system is not integrated. The joint assessments that are done within the community health center are paper-based or e-mail/task correspondence. The records are not shared or colocated. Additionally, dentists are not yet utilizing diagnosis codes and this makes tracking oral health patterns more difficult.

Brach asked Wolpin what systematic changes were made at the health center as a result of his participation in the oral health literacy environmental scan conducted there. She also asked how other health centers that are not participating in a research study could identify shortcomings and find resources to assist them in addressing oral health literacy. Wolpin said that the intervention allowed him to rise above the focused perspective of a dentist and take a broader look at the meaning of his clinical experiences. This broader perspective allowed him to answer questions, such as why aren't my patients getting healthier? Why aren't they getting the message? In terms of systematic changes that have taken place at the clinic, the most important in his view has been raising awareness about oral health literacy and its link to patient outcomes among the staff. The center's consent forms have been rewritten in plain language. Other changes to the center are in progress. Wolpin said that he is working with the National Network of Oral Health Access. This network represents a tremendous resource for community health centers. The center is in the process of obtaining tools and resources to augment the adoption of best practices. Horowitz added that the environmental scan process had just

begun and it may be too early to expect systematic change within the center.

Pisano asked Wolpin how to address resistance on the part of some oral/dental providers to the idea that oral health literacy is important to the health of their patients. Wolpin said that a focus on outcomes would help overcome resistance. Most providers want to excel. If shown the evidence that addressing oral health literacy issues improves clinical outcomes, providers would become sensitized to the issue. In his view, monitoring clinical performance is a powerful tool to bring about changes in clinicians' behavior. Finding out that a colleague has better outcomes following the adoption of oral health literacy practices could motivate change.

Roundtable member Humphreys asked Butler how the materials developed for the Bright Smiles, Bright Futures campaign had to be adapted for use in different countries. She also asked whether the materials are available in multiple languages.

Butler replied that an expert board was convened from around the world to initially develop the materials. This group identified needs, gaps, and challenges. Local adaptations to the materials took place once the program was launched in a country. The materials have been translated into at least 30 languages. In India, the materials have been translated into 10 local languages and adapted to reflect urban and rural issues. The materials developed for use in the United States are available on the U.S. website in English and Spanish. Materials developed for other countries are available on local websites.

Humphreys discussed the great demand for good materials in languages other than English in the United States. The U.S. population is very diverse, and often, extended members of a family can only communicate in a foreign language. Humphrey suggested that Colgate-Palmolive consider making the Bright Smiles, Bright Futures materials that are available in so many languages available to practitioners in the United States. Butler agreed that this was a good idea.

Roundtable member Pleasant observed that there is general agreement on the benefits of applying what has been developed in health literacy to the oral/dental health field. He asked if there are findings or interventions that have been developed within the oral/dental health community that should be adopted by the health literacy community. Horowitz explained that oral health literacy research is a relatively new area, and not as well developed a field as general health literacy. She indicated that it is too early to tell if there are unique insights to convey from health literacy. There is a growing body of literature in oral health literacy and eventually, it may be appropriate for AHRQ to support an evidence-based review on this topic.

Horowitz added that oral health literacy should be a part of general health literacy. These areas have distinct foci, but should be integrated. Practices that are recommended in health literacy should be applied to oral health literacy. Butler agreed with Horowitz and added that it is important to look at oral health as a part of overall health. In practice, pediatric providers are essential in recognizing oral/dental issues early and ensuring that referrals to dental providers occur.

Roundtable member Schyve commented that much of the workshop focused on getting information to consumers and ensuring their understanding of the information. He asked the panel how rewards or incentives that are necessary to actually change behavior and create new habits could be incorporated into oral/dental interventions. Schyve noted that there are several habits that the public should adopt, for example, brushing, flossing, drinking fluoridated tap water, using tap water in the bottle at bedtime, eating healthy snacks, and making regular dental visits. Schyve's question about incentives was prompted by his reading of a recent book by Charles Duhigg, *The Power of Habit: Why We Do What We Do in Life and Business*. According to Schyve, this book describes three antecedents to behavior change: people need a cue, they need to take action, and then they need a reward for the action. Schyve noted that in the area of oral/dental care, there are few, if any, immediate rewards. For example, there are no immediate rewards for brushing your teeth. However, Duhigg in his book uses Pepsodent as a case study. To motivate people in the early days to adopt the habit of brushing their teeth, Pepsodent promoted the idea that people would be happier after brushing their teeth because the film on their teeth that had accumulated overnight would be gone after brushing. This campaign was apparently successful in getting people to start brushing their teeth with toothpaste.

In reply, Horowitz suggested that incentives or rewards would likely have to vary for different groups, based on age and other factors. The avoidance of pain and financial cost could be considered rewards, but in some cases, these may not be immediate rewards. At this point, there is strong evidence that many people simply do not have the knowledge or understanding that is needed to prevent tooth decay. They do not have the option to act without such understanding. She stated that with the knowledge and the tools necessary to act, people can be empowered to adopt healthy behaviors. She added that, in some communities, extreme financial barriers have to be overcome. Some parents cannot afford toothbrushes and toothpaste.

Roundtable member Loveland recounted her experience of taking a mobile van into communities to provide services to individuals with asthma. A major challenge was adequate staffing and record keeping. Without a physician on site, patients did not receive follow-up. In

response to this issue, Butler stated that partnerships have been key to the success of their programs. The Colgate-Palmolive sponsored programs partner with community health centers and other practitioners to provide education and treatment services. These partnerships help build trust, and individuals receiving care have the opportunity to meet with local providers who might share some of their characteristics. The use of partnerships for the past 20 years has ensured the provision of care to the children served in the Colgate-Palmolive programs.

Roundtable member Alvarado-Little asked the panel how oral health professionals can create practice environments that engender trust. Most patients need to feel comfortable before they are able to ask questions of their providers, especially if there are socioeconomic, cultural, or language barriers. In response, Wolpin described some progressive workforce models that involve mid-level dental providers. These providers are often from the same cultural background as the patients they serve. Another approach is to identify a "cultural broker" that can effectively communicate with clients and members of the oral/dental team. Wolpin found that many of the children who were having extensive dental procedures performed at his local hospital came from the same largely Spanish speaking small town. The mother of one of his patients became an oral health champion within the community. Case managers are also invaluable in terms of providing linkages to care. Case managers conduct environmental scans, identify barriers to care, and work with families to overcome these barriers. Horowitz agreed that case managers and health navigators are critical to facilitating appropriate care, especially among low-income groups. Butler added that involving community members in programs is key to success. Sometimes, the messenger is as important as the message.

Isham identified three themes from the workshop. First, there was a call for more integration of dental and medical care. Second, while it may be too early to tell what distinguishes oral health literacy from health literacy in general, the important focus at this time is on implementing evidence-based findings. Third, the incorporation of evidence-based practice into dental practice seems to be an issue.

Isham discussed the potential of integrated electronic medical records. HealthPartners has a large dental practice and a large dental plan. Its medical plan serves individuals covered by Medicaid and commercial insurance products. A common dental and medical record has been a challenge. And yet, the opportunity to address prevention across medical and dental care is tremendous. From Isham's perspective, the dental profession can make progress in terms of developing measures of quality, coding and data systems, and monitoring systems.

Horowitz, identified a unique attribute of oral health literacy. She suggested that oral health is uniquely and summarily ignored. She observed

that new mothers are taught to bathe and clean the baby, except the mouth. She speculated that the neglect of oral/dental health stems from the fact that dental disease is often a silent disease. An arm infection cannot be ignored, but periodontal disease is often ignored. She indicated that the oral/dental health community may have to work even harder than the medical community to make progress. That said, Horowitz concluded that incorporating oral health messages into general health literacy is very helpful.

Wolpin described the evolution of dentistry during the past 20 years. He stated that 20 years ago it was common practice to provide everyone with cleanings and fluoride every 6 months. There was no risk-based approach to dentistry and no evidence to support the practice. In Wolpin's view, dentistry is catching up with medicine in terms of practicing according to evidence and adopting health literacy principles.

Butler stressed the importance of integration, but expressed frustration that although we know what to do, we are not doing it. The tools are available, but many do not know where they are. In her view, there needs to be a pulling together of stakeholders. She suggested that this pulling together could occur as part of an online initiative, or perhaps through a collaborative development of materials that could be used by both health and dental providers. She added that it may be necessary to create a central resource, where information on oral health and its relationship to health could be easily accessed.

Isham brought to the group's attention a report from the Commonwealth Fund on quality by hospital referral region across the country. The report discusses some very interesting variations in the quality of medical care. AHRQ has had state snapshots of quality of care as part of their national quality and disparity reports. Isham asked whether oral health issues are included in these studies. These comparative studies often engage communities and policy makers and can provide leverage points for change. Brach said that the AHRQ state snapshots and the National Health Care Quality and Disparities Report do include basic dental access information such as whether a child of a certain age has had a visit to the dentist in the past year. But, she said, until there are validated, reliable quality measures, AHRQ and others do not have material to include in these reports.

Isham raised an issue related to access to dental care. In Minnesota, there is a new profession referred to as "dental therapist" that has a very carefully defined scope of practice that includes education and prevention-related activities. The development of this new profession is in response to serious access problems, especially for individuals at lower socioeconomic levels. Wolpin commented that this area is very contentious and is being debated within the dental profession in the

United States. Isham acknowledged the controversial nature of this new profession, but wanted to be able to address the issue. He stated that throughout the day's proceedings the problem of access to dental care among the traditionally underserved community was raised. There are clearly well defined remedies to many of the problems within this community. He asked if there are new ways to educate the public, to reach out and engage them.

Wolpin agreed that the model of care currently in place needs improvement and the dental profession may need to be pushed in order to bring about change. Many dentists have opted out of participating in the Medicaid and Medicare programs. He said that rewards for clinical outcomes may be necessary to change professional behavior. At the present time, he pointed out that a dentist benefits financially if he or she does more surgery. In Wolpin's opinion, this reward system has to change. He suggested that incentives be put in place to keep people healthy. If financial incentives to encourage prevention were in place, then the private-sector dentistry community may change course. Wolpin added that dental care optimally is a partnership and the patient should be made to realize that there are benefits to prevention, in terms of cost savings and prevention of pain and suffering.

Horowitz added that there needs to be better access to primary prevention, rather than just treatment. Dental disease can be prevented and this is where attention needs to be focused. She said that the creation of a new dental profession such as the dental therapist will not address the problem unless the incentive structures are changed. Unless there are incentives for prevention, the emphasis on drilling our way out of this disease will not stop. Horowitz emphasized the need focus on prevention. She recommended starting with mothers and teaching them how to care for their children's oral health needs. In her view, mothers are the first educator, the first doctor, and perhaps the first dentist.

With her international experience, Butler agreed that the focus needs to be on prevention. In her view, a model will emerge, the incentives will arise, and providers and payers will engage in change. From a global perspective, for example, the strategy of drilling your way out will not be effective in countries with few dentists per population. A focus on education and prevention is a beginning.

Ismail encouraged the workshop participants to move beyond reports with recommendations and urged the participants to act. He stated that one action that could improve oral health literacy is the development of a tool for the assessment of literacy and a list of interventions that have been proven to change environments and organizations. He added that perhaps accreditation standards could be augmented to include issues related to oral health literacy. In his opinion, this is an intervention that could greatly motivate change.

6

State Activities in Oral Health Literacy

ORAL HEALTH LITERACY ACTIVITIES IN STATE ORAL HEALTH PROGRAMS

Gregory B. McClure, D.M.D., M.P.H.
Delaware Division of Public Health

McClure provided a perspective on state-based oral health literacy programs. His state of Delaware has developed an oral health campaign, Healthy Smile, Healthy You. McClure said that most dental disease is preventable, yet dental caries is the most common chronic disease among children. He said that oral health literacy is needed to close the gap in oral health status, especially among lower socioeconomic groups, minorities, and ethnic populations.

McClure focused his remarks on oral health literacy initiatives that are developed, funded, or managed by states. There is no single model for state oral health programs and, according to McClure, they vary by state. One constant is that nearly all states (about 95 percent) have a full-time dental director. Staffing dental health programs has been a challenge for some states, however. In terms of funding, most state programs receive federal support, for example, from Maternal and Child Health (MCH) grants, Centers for Disease Control and Prevention (CDC) prevention block grants, and Health Resources and Services Administration (HRSA) grants. These federal funds are essential in Delaware, because there is no state line item budget for oral health.

State dental health programs can be located within the Department of

Health or in a Department or Division of Public Health. The location of the program makes a tremendous difference in terms of communication with the state health officer, McClure said.

The responsibilities and priorities of state oral health programs varies according to resources and the partnerships that are made. McClure noted that Maryland has a rich set of dental resources to help move things forward. State oral health programs often rely on nongovernmental partners, for example, professional associations such as the American Dental Association, the American Dental Hygienists Association (ADHA), universities, dental schools, and private foundations.

McClure discussed the responsibilities of state oral health programs which generally fall into three categories: assessment, assurance, and policy. Oral health literacy is an integral part of each of these functions, particularly assessment, because it is in this area that dental disease is tracked and stakeholders are notified of the problems, the issues, and what to do about them, he said. State oral health programs are strategically positioned to carry out oral health literacy initiatives because states are often responsible for bringing people to the table to discuss problems as they arise.

McClure discussed the relevance of two questions to the work of the state dental health program: Does it work, and what does it cost? He pointed out that we live in a world of evidence-based dentistry and states, in their role relating to accountability, must adhere to the evidence on cost-effectiveness. State oral health programs are accountable to the governor, to the legislature, and to the taxpayers. When advocating for a program, the state dental health director often has to marshal the evidence that the program works.

McClure highlighted the importance of developing partnerships. The State Office of Oral Health is ultimately responsible for decisions, but these decisions cannot be made in an isolated fashion. They must be made in conjunction with partners and all stakeholders. Decision making also relies on technical information, reviews of evidence, and examinations of outcomes.

State offices of oral health face many challenges and limitations, said McClure. In addition to funding and staffing, competing priorities are a major challenge. In addition, the bureaucracy associated with state government can sometimes take time and effort away from the main focus of the office.

Ninety-two percent of states provide oral health education and promotion according to a recent review conducted by the Association of State and Territorial Dental Directors. McClure added that states have been providing health promotion interventions to consumers and other stakeholders for years and they see it as one of their core functions.

Oral health literacy programs may be either stand-alone or integrated with other programs. McClure discussed state-based oral health programs in Arizona, Delaware, Maryland, and Vermont. Vermont developed a very successful program in 1997, the Tooth Tutor Dental Access Program. Tooth tutors, usually dental hygienists, have provided oral health education to elementary school children, children enrolled in Head Start, school staff, and parents. The program aims to get children into a dental home. The program has been supported through several sources, including grants from the Health Resources and Services Administration (HRSA) and the Centers for Disease Control and Prevention (CDC) and through state Medicaid funds. The program has been very successful. McClure reported that 74 percent of the targeted children, that is, children without dental homes, were placed in dental homes in the 2008-2009 school year, the most recent year for which there are data.

Arizona's Office of Oral Health developed a media awareness campaign to prevent childhood caries in 2005 with support from the Robert Wood Johnson Foundation and HRSA. Social marketing research and techniques were used to develop radio spots, oral health messages, brochures, and billboards.

McClure said that Delaware started an oral health literacy program when a state oral health plan was developed. A campaign began in 2008 and 2009 with limited state and HRSA grant support. The state collaborated with the Delaware Oral Health Coalition. The program depended heavily on volunteers. A marketing consultant helped guide the development of new messages and promotional materials and also managed the events. The target populations for this intervention were maternal and child health (MCH) families and early child care programs. The campaign involved public event promotions at Walmart stores, and other places young families congregate. The entire program was conducted with modest support, under $50,000. One of the products developed was an informative brochure that included a questionnaire. McClure said that these various activities evolved into the Delaware First Smile Initiative.

Delaware piloted its Tooth Troop Campaign in 2010 and 2011, formally launching the program in 2012. The goal of the program is to increase awareness and knowledge about oral health and disease prevention. It is a train the trainer type program where dental professionals train community and agency leaders to conduct pre- and post-surveys of targeted families. These surveys are intended to raise awareness, increase dental visits, and promote healthy behaviors and home practices. The coalition has become an independent organization that the state contracts with to carry out the activities of the Tooth Troop.

The Delaware state oral health office is also providing oral health

training for physicians and nurses. McClure described the recent completion of a strategic communications roadmap with the following goals:

- Raise the profile of oral health issues.
- Decrease the prevalence of dental disease, especially infant and childhood disease.
- Encourage an added importance of oral health among health care providers and key influencers.
- Increase Medicaid dental utilization (from 37 percent).
- Support research.

McClure stated that one focus when implementing the strategic plan will be on grass roots community outreach and evaluation. He described Maryland's Healthy Teeth, Healthy Kids social marketing campaign that is targeting pregnant women and children under age 6 and said that many in the dental health community have great expectations of this program and look forward to learning from it.

Maryland's $1.2 million CDC grant supported a multimedia marketing campaign until July 2012. The campaign established a hotline and extensive outreach through their partners. McClure stated that much research and preparation went into the development of the campaign which has six key strategies:

1. Define and promote a call to action.
2. Create a favorable environment and a sense of urgency.
3. Reach mothers during critical milestones.
4. Develop an oral health kit.
5. Evaluate campaign effectiveness.
6. Provide a foundation for future work.

A comprehensive plan to evaluate the program includes a pre- and post-campaign survey; the conduct of focus groups, an analysis of Medicaid utilization, and monitoring website visits. In McClure's opinion, this campaign serves as a model for other states.

In terms of future directions for state oral health programs, McClure said that national support is needed. In particular, research is needed to identify interventions that work. The specific oral health literacy methods and messages need to be evidence-based. McClure added that funding is needed for state oral health programs. He said that state oral health programs are in a key position to coordinate oral health literacy efforts and should be included in state-relevant oral health literacy initiatives. He concluded his remarks with the observation that the state oral health

infrastructure needs to be developed to carry out oral health literacy activities.

ACTIVITIES OF THE CALIFORNIA DENTAL ASSOCIATION

Lindsey Robinson, D.D.S.
California Dental Association

Robinson described herself as a pediatric dentist in private practice for 16 years in a rural California community that does not have fluoridated water. She provides care to children who are insured by Medicaid and the Children's Health Insurance Plan (CHIP). There are two federally qualified health centers (FQHCs) in her area that have dental programs and also serve these populations of at-risk children. Robinson recounted how unprepared she was for the amount of disease in her community and was staggered and overwhelmed by it. She has discovered a passion to address this problem and has realized that the root cause of the disease is primarily poverty. Robinson said that during her odyssey over the last 16 years from private practice into organized dentistry, she has learned a great deal about public health issues.

Robinson described the mission statements of the California Dental Association (CDA) and the California Dental Association Foundation. Both CDA and the foundation, which is its philanthropic arm, have engaged in activities related to the public's oral health. The CDA strives to address the needs of its members and part of the value of membership is the organization's ability to promote oral health to the public, in addition to the members' practices. In Robinson's view, the two goals are mutually beneficial, highly compatible, and essential to a caring, professional organization.

Robinson provided examples of how the CDA and its foundation have implemented programs and advocated for the public's oral health. The CDA has participated in the AD Council's dental health campaign. This campaign was the brain child of the president of the Dental Trade Alliance, Gary Price. Price created a partnership with the AD Council called the Healthy Mouths, Healthy Lives coalition. This is a 3-year oral health literacy campaign geared toward early childhood caries. It teaches parents and the public how to care best for children's teeth. There are more than 20 organizations involved. The CDA felt that it was imperative to engage in this partnership and provided significant financial support to conduct a marketing campaign that would reach areas of California where large populations of Hispanics reside. This population has a huge problem with early childhood caries. The campaign will be available in

English, Spanish, Vietnamese, and other languages in frequent use in California, where there is a high concentration of early childhood caries.

Robinson next described her experience as the guest editor of the April 2012 edition of the CDA journal that focused exclusively on oral health literacy. Some of the feature articles include the following:

- "National Plan to Improve Health Literacy in Dentistry"
- "Oral Health Literacy: At the Intersection of Schools and Public Health"
- "Creating a Health Literacy-Based Practice"
- "Maryland Dentists' Knowledge of Oral Cancer Prevention and Early Detection"
- "Health Literacy and California's Clarion Call"
- "Some Thoughts on Improving Access to Oral Health"
- "Care for Vulnerable Populations: Community Health Workers"

Robinson also discussed the CDA's access proposal and recommendations for improving access to dental care in California. This project was approved by the CDA House of Delegates in 2008 through a resolution submitted by the Alameda County Dental Society and written by a public health dentist, Jared Fine, dental director in Alameda County and board member of the Dental Society. The resolution directed CDA to conduct in-depth research on the barriers to accessing dental care for underserved populations in California. To complete this work, CDA formed two groups of volunteer members, commissioned seven separate studies, and engaged more than 20 subject experts. The Access Proposal serves as a framework of more than 20 strategies for improving access to oral health care which will guide CDA's work in the future.

Recommendations to reduce access disparities in California were outlined according to three phases:

1. Establish State Oral Health Leadership and Optimize Existing Resources.
2. Focus on Prevention and Early Intervention for Children.
3. Innovate the Dental Delivery System to Expand Capacity.

Robinson pointed out that the need for the first phase stems from California's lack of a state public health infrastructure for oral health. She stated that California lacks leadership because the state has no dental director or office of oral health. As a result of California's fiscal crisis, Robinson said that funding for state oral health programs has been eliminated. For example, in 2009, adult dental benefits in Medicaid and the

school-based sealant and prevention program lost funding. Many policy makers are not aware of the lack of infrastructure for dental health in California. Robinson stated that a dental health report card would show a very low grade for California. She said that such a low report card score could possibly help with advocacy and motivate change.

Robinson described the major objectives of phase 1 of CDA's access proposal are to

1. build state oral health infrastructure.
2. expand capacity within dental public health.
3. expand FQHC dental services.
4. support coordinated volunteer-based provision of care.
5. promote fluoridation.
6. expand capacity to provide children's care, especially to young children.
7. align the CDA Foundation with the proposal's goals.
8. continue workforce exploration.

The first phase has a major focus on building the state's oral health infrastructure. Robinson mentioned that an application cannot be submitted for a CDC infrastructure grant because there is no state oral health office to submit the application. She finds it remarkable that a state of 36 million residents, including large populations at risk, cannot apply for funding that is readily available. Overcoming this situation is a key priority according to Robinson.

CDA is engaged in legislative advocacy related to the access report. A bill (SB694) is moving its way through the state legislature. The bill has two components. First, the bill would reestablish the state dental director position and a state office of oral health with sufficient staff. The other component calls for an academically rigorous workforce study within specific parameters approved by the CDA House of Delegates. Robinson is optimistic that the bill will pass. If the bill does pass and an office of oral health is established, an application could be made to CDC or HRSA to sustain the office and support oral health programs for California.

Robinson next discussed activities of the CDA Foundation. The 12345 first smiles program was initially supported by the California First Five Commission with funding derived from a tax on tobacco products. Educational materials were developed for dental providers, medical providers, and community-based organizations, such as the staff in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and Head Start programs. The materials focused on issues related to

anticipatory guidance, the necessity of early intervention, and primary prevention.

The CDA foundation also has a guideline initiative on perinatal oral health care. An expert panel was assembled to review the latest evidence, and develop a consensus statement and guidelines for the oral health care of pregnant women and their infants. These guidelines have been promoted and widely distributed. Robinson stressed the importance of reaching pregnant women through the obstetrics/gynecology community, pediatricians, primary care providers, medical and dental providers, and community-based programs that interact with pregnant women. The CDA has two journal issues related to this guideline initiative (June and September 2010). The guidelines can be downloaded from the foundation website (www.cdafoundation.org).

The CDA foundation also developed a patient education tool called Cavity Keep Away that is geared to low-literate women. It is available in both English and Spanish. The messages were selected through focus groups conducted in both English and Spanish. A simple poster and brochure can be downloaded from the foundation's website (www.cda foundation.org).

The final program Robinson described is a planned demonstration project that is not yet funded. The target audience for the project is pregnant teens who have comprehensive Medicaid benefits until the age 21. The project would involve case managers connecting them with dental providers or FQHCs, to receive oral/dental health education and services while they have Medicaid coverage. The program is planned for Alameda County.

Robinson concluded her presentation by providing the website addresses needed to access resources from both the CDA and the foundation.

- Access Proposal—http://www.cda.org/library/pdfs/access_proposal.pdf
- Guidelines—www.cdafoundation.org/guidelines
- Journal issues:
  - June 2010: http://www.cda.org/library/cda_member/pubs/journal/journal0610.pdf
  - September 2010: http://www.cda.org/library/cda_member/pubs/journal/journal_0910.pdf
  - April 2012: http://www.cda.org/library/cda_member/pubs/journal/journal_0412.pdf
- Patient Education—www.cdafoundation.org/cavitykeepaway

STATE ACTIVITIES: NORTH CAROLINA

Kimon Divaris, D.D.S., Ph.D.
University of North Carolina

Divaris described two major oral health literacy projects taking place in North Carolina: the Carolina Oral Health Literacy (COHL) project that targets child-caregiver dyads enrolled in WIC and the Zero-Out Early Childhood Decay (ZOE) project that takes place in Early Head Start locations in North Carolina.

Divaris said that there is a significant concentration of oral disease burden among families of low socioeconomic status. In addition, there are very strong behavioral risk components, including oral health behaviors, dental attendance, oral hygiene, diet, and others. The determinants of oral/dental disease are varied and complex. From a person-level perspective, dental caries is primarily caused by the interaction of oral microorganisms, dietary habits, and oral hygiene on tooth structure, over time. On a population level, however, the incidence of caries is driven by more distal factors such as education and income. These population determinants may have a bigger impact on disease levels on the population level than the biologic or proximal factors, he said.

From a dental public health standpoint, interventions with a wide reach are desirable because they have the potential for great impact. Ideally, Divaris said, programs should reach those who are most in need, the high-risk populations. It is also desirable to design and carry out interventions that have a long-lasting, rather than a transient effect, and that are affordable. In Divaris' opinion, estimations of cost-effectiveness are problematic to make because it is hard to quantify the actual cost of dental disease which means taking into account factors such as pain, missed school days, parents' lost time and income when taking children in for dental care, and more. Divaris highlighted the importance of effectively targeting dental health interventions.

Divaris discussed three models for oral health literacy that have been published (Lee et al., 2011; Macek et al., 2010; NIDCR JDHD, 2005). Traditionally, dental providers give information to their patients, for example, providing guidance on brushing and flossing. The literature on health literacy demonstrates that information alone does not lead to behavior change. For example, in analyses based on data from the COHL project, University of North Carolina (UNC) at Chapel Hill investigators found self-efficacy to be an important determinant of oral health outcomes (Lee et al., 2012). Divaris highlighted the importance of the cultural environment and community in the broader context.

The COHL project is a prospective cohort study that began in 2008 and enrolled 1,405 children-caregiver dyads who were WIC clients in

seven North Carolina counties. The purpose of the study was to examine oral health literacy in conjunction with health behaviors and health outcomes among caregivers, infants, and children. Children were followed prospectively to monitor oral health outcomes. African American and American Indian subjects were oversampled so that 40 percent of the cohort was composed of African Americans, and 20 percent was American Indian.

The enrolled children were healthy at baseline. Information on how children received their dental care and the cost of their care was obtained through Medicaid claims, eligibility, and enrollment data. Clinical exams were conducted on a subset of children to validate self-reported oral health measures. The measures ascertained as part of the study included

- socio-demographic characteristics,
- oral health knowledge questions,
- perceived oral and general health status (self and child),
- perceived treatment needs and services utilization,
- oral health-related quality of life (OHIP-14 and ECOHIS),
- dental neglect (DNS), and
- general self-efficacy (GSEF).

Health literacy was measured using a word-recognition-based test, the Rapid Estimate of Adult Literacy in Dentistry (REALD-30), and a numeracy-based test (Newest Vital Signs). The REALD-30 test has been validated in English. One of the eligibility criteria for the study was that English had to be the primary spoken language at home. The REALD-30 instrument has been adapted in Spanish and the validation is under review.

Divaris compared some of the results of the study with findings from the literature. He described how the bell-shaped distribution of oral literacy in the COHL cohort is shifted to the left (indicating a lower level of health literacy) relative to the distribution reported from private and community dental and medical clinic-based studies. The advantage of a non-clinic-based study sample is that it is more representative of the population at large. A clear association between higher levels of education and health literacy has been found in the study.

An independent association with race, after controlling for education and other socioeconomic factors, was found in the study with whites having significantly higher oral health literacy scores than either African Americans or American Indians. Divaris reported that there were also significant associations found between general self-efficacy and both oral health literacy and dental neglect.

Divaris acknowledged that education, socioeconomic status, and

other factors influence oral health literacy. He also stated that the relationship between oral health literacy and oral health status is likely mediated by knowledge, behaviors, dental attendance, and other factors.

Divaris discussed the findings related to the effects of caregiver oral health literacy on oral health outcomes among their children. Lower caregiver literacy was associated with deleterious oral health behaviors, including nighttime bottle use and no daily brushing/cleaning (Vann et al., 2010). In another study, lower caregiver health literacy was correlated with children's oral health quality of life (Divaris et al., 2011). The association was more pronounced among the highly literate group. Divaris explained that it may be the case that low-literacy caregivers do not perceive, understand, or report as many complaints with regard to their children's oral health as compared to high-literacy parents, or they simply do not recognize early signs and symptoms of childhood dental disease.

Divaris briefly commented on the concept of the pediatric oral dental home. He said that the American Academy of Pediatric Dentistry has a guideline recommending that parents establish a dental home as soon as possible after birth and before the age of one. Divaris reported that compliance with this guideline recommendation is very low. In his view, there are opportunities to improve the status of the dental home through oral health education and community outreach.

Divaris discussed some of the work under way in North Carolina. The work is being conducted in response to several questions:

1. Are caregivers' health literacy levels associated with interruptions in their children's Medicaid enrollment? This may depend on the type of enrollment disruption (gap).
2. Do caregivers' oral health literacy levels affect their children's entry and navigation in the dental care system?
3. Do caregivers' oral health literacy levels affect their children's dental utilization?
4. Do caregivers' oral health literacy levels affect the cost of their children's dental care (preventive, restorative, emergency, or hospital-based)?
5. How stable are (oral) health literacy measurements?

In response to question 2, Divaris reported preliminary evidence indicating that parents whose children entered the dental health system in desirable ways (e.g., with a comprehensive oral exam) as compared to parents whose children entered the system in undesirable ways (e.g, with an emergency-based dental visit) had slightly higher oral health literacy. Divaris reported that analyses will be conducted to see whether low parental health literacy may be responsible for higher dental care costs.

In terms of future directions, Divaris outlined several productive research opportunities:

- Refinement of the terms "low literacy" and "at risk" (without a clear definition, it is difficult to made valid comparisons)
- Feasibility of oral health literacy rapid assessment in the clinic (e.g., two-stage REALD; short forms; computerized modules)
- Tailoring of messages to appropriate literacy levels in the dental office and in the community
- Determining appropriate message delivery vehicles and strategic target populations (e.g., community-based interventions, partnerships with family medicine, pediatrics)
- Determining whether (functional) oral health literacy is modifiable and what approaches may work best (e.g., information provision/reinforcement, motivational interviewing, experiential learning)

DISCUSSION

Brach began the discussion by asking the panel to address the issue of shortages of Medicaid dental providers. She observed that the dental profession has opposed allowing pediatricians, family physicians, and other health professionals to assume dental roles. She observed that even if oral health literacy were successful in getting Medicaid beneficiaries access to care, there may be few providers willing to serve this population. She asked the panel what should be done to make sure that services are available to vulnerable populations who receive dental services through Medicaid.

Robinson replied that although she was one of the few Medicaid providers in her area for years, there are now two FQHCs that provide the majority of the care for children covered under the Medicaid program in her area. She said that, from her perspective, the ADA is supportive of having pediatricians and other physicians provide basic preventive dental services such as applying a fluoride varnish. She added that there are pockets of concern among organized dentistry and private practitioners who fear that the incursion of medical practice into dentistry could go too far. Robinson noted that there are opportunities for pediatricians to provide early interventions before children seek dental care.

Divaris observed that in the Carolina Oral Health Literacy (COHL) study, youngsters under the age of 5 had more claims filed by physicians than dentists for certain preventive dental services. Pediatricians are now screening and referring patients who need dental care. He viewed this as an efficient approach insofar as a comprehensive set of preventive services are provided in one visit.

Pisano asked panel members representing states if there is a formal mechanism to share information, tools, and materials. She indicated that formal mechanisms for sharing reduce the risk of reinventing the wheel. In response, McClure stated that the Association of State and Territorial Dental Directors has good programs to facilitate sharing and he described th ebest practices reports that review and grade programs. In addition, guidelines for state programs have been developed. As with any professional organization, McClure said, the word-of-mouth transfer of information is of great value. McClure stated that there is good communication and sharing across states, which hopefully can be improved even further.

Wong asked the panel if there are plans to incorporate health literacy into the dental school curriculum. Divaris replied that it is certainly time to incorporate oral health literacy into the curriculum. He stated that there was a key paper in the *Journal of Dental Education* in 2010 that made this recommendation. This and the focus of the IOM could be the catalyst for change. Divaris added that the Department of Health and Human Services has developed national standards for culturally and linguistically appropriate services. He stated that these standards have not been discussed or addressed within dentistry. Divaris suggested that this topic would be a very good start to a more indepth treatment of health literacy.

7

National Activities in Oral Health Literacy

NATIONAL ACTIVITIES IN ORAL HEALTH LITERACY, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

RADM William Bailey, D.D.S., M.P.H.
Centers for Disease Control and Prevention

Limited health literacy is associated with poor health and negatively associated with the use of preventive services, management of chronic conditions, and self-reported health, Bailey said. He added that oral health literacy is positively associated with oral health status and quality of life, frequency of dental visits, and knowledge and understanding of preventive measures. In his view, health disparities can be reduced by empowering people and giving them the capacity to obtain, process, and understand basic information. This will then allow them to be partners in their own health decisions. In short, Bailey stated, improvements in health literacy will ensure a healthier population.

Clear communication is essential, said Bailey. He recounted a joke in which a woman came into a grocery store and told the clerk that she needed 50 gallons of milk. The clerk asked the woman why she needed 50 gallons of milk. She explained that she had been to see a dermatologist for a skin condition and the dermatologist instructed her to take milk baths. The clerk asked if the milk needed to be pasteurized and she replied, no, just up to my chin. Bailey felt that this joke illustrates the complexity that underpins communication. He suggested that this complexity is magnified in the context of dental care, where there are strange noises and

smells and complex terminology is used. Dental patients may experience a range of emotions from mild apprehension to dread.

Bailey summarized some of the actions being taken by the Department of Health and Human Services (HHS) with regard to health literacy, specifically those focusing on oral health literacy. He said that much has been accomplished across HHS in this area in just the past 2 years. The Affordable Care Act, passed in 2010, addresses oral health literacy by incorporating health literacy into professional training, facilitating the movement of clients into Medicaid and CHIP programs, and establishing state-based insurance exchanges. Participating health plans and insurers are required to use clear, consistent, and comparable health information using a standardized template to describe plan coverage and benefits.

Bailey described how the Health Information Technology for Economic and Clinical Health Act (HITECH) provisions of the 2009 American Recovery and Reinvestment Act (ARRA) call for adoption of electronic health records to provide health information that is meaningful and useful to consumers.

He then discussed the Plain Writing Act of 2010 that requires federal agencies to write documents clearly so that the public can understand and use them. This requirement does not just apply to health. It applies across the federal government to any information that the federal government is providing on federal benefits or services, or how to comply with federal regulations. Federal agencies are required by law to report on this requirement beginning in 2012. These reports will serve as the baseline for measuring future progress.

The HHS 2010 National Action Plan to Improve Health Literacy involved more than 700 individuals and organizations. The seven goals of the plan focus on

1. health information creation and dissemination,
2. health care services,
3. early childhood through university education,
4. community-based services,
5. partnership and collaboration,
6. research and evaluation, and
7. dissemination of evidence-based practice.

Bailey noted that the Affordable Care Act, the Plain Language Act, the HITECH provisions, and the HHS National Action Plan to Improve Health Literacy provide a unified way to address health literacy goals and strategies. Bailey felt that these accomplishments provide a roadmap for progress. He stated that it is remarkable that these initiatives have all occurred within the past 2 years.

Bailey enumerated other milestones, for example, the development of the Agency for Healthcare Research and Quality (AHRQ) Health Literacy Universal Precautions Toolkit. The underlying concept here is that providers are not able to gauge the health literacy of patients so effective communication tools should be used with all patients. This follows the rationale for universal precautions that are used for infection control.

Bailey described the National Stakeholder Strategy for Achieving Health Equity along with the 2011 HHS Strategic Action Plan to Reduce Racial and Ethnic Health Disparities. The action plan address health literacy; for example, it calls for an update of the 2009 national standards on culturally and linguistically appropriate services.

The National Institute of Dental and Craniofacial Research (NIDCR) in 2004 hosted a workshop on oral health literacy that examined a framework for studying relationships between oral health literacy and other points of intervention; summarized available evidence; identified research gaps; and provided a map for future work (NICDR, 2005).

Bailey described the oral health content of *Healthy People 2010* and *2020*. He said that the number of Healthy People communication objectives doubled from 2010 to 2020. The objectives address the need to measure system level changes in the areas of health literacy, including health care providers' use of the teach-back method; the level of shared decision making between patients and providers; and population-wide access to personalized eHealth tools. The oral health objectives for 2010 included explicit language to promote oral health and prevent oral disease. The objectives stated that oral health literacy is necessary for all Americans. Bailey said that the *Healthy People 2020* objectives lack this explicit statement, but in a background statement, there is a discussion of a person's ability to access oral health being associated with factors such as education level, income, and race/ethnicity.

Bailey discussed the release in 2011 of two IOM reports. In the first report, *Advancing Oral Health in America* (2011a), the IOM committee recommended that all relevant HHS agencies undertake oral health literacy and education efforts aimed at individuals, communities, and health care professionals. The IOM committee recommended that communitywide public education on oral diseases and preventive interventions was needed, especially on the infectious nature of dental caries, the effectiveness of fluorides and sealants, the role of diet and nutrition in oral health, and how oral diseases affect other health conditions. The second recommendation of the IOM committee related to communitywide guidance on how to access oral health care with the focus on using websites such as the National Oral Health Clearinghouse and healthcare.gov. The third IOM recommendation pertained to professional education on best practices in patient-provider communication with the focus on how to communicate

to an increasingly diverse population about prevention of oral cancers, periodontal disease, and dental caries.

Bailey stated that needed action steps have been clearly identified through the accumulated wisdom from these activities and documents of the past two years.

In terms of current HHS oral health literacy activities, Bailey said that in 2004, seven research projects on oral health literacy were funded through NIDCR. These projects received $15.5 million and have been extended to 2013. The research described by Dr. Divaris at this IOM workshop is one of the projects funded through NIDCR. There are six other NIDCR research initiatives that focus on oral health education:

1. Examination of oral health literacy in public health practice
2. Health literacy and oral health knowledge
3. Latinos' health literacy, social support, and oral health knowledge and behaviors
4. Development of an oral health literacy instrument
5. Use of videogames to promote oral health knowledge
6. Health literacy and oral health status of African refugees

One of the NIDCR research projects is designed to estimate dental literacy among people enrolled in the Women, Infants, and Children's (WIC's) Supplemental Food Program. The goal of the project is to reduce dental health disparities by helping pregnant women and their children to better interpret dental health information, navigate the dental health system, understand instructions, and participate in care decisions. As part of this project, multicenter assessments for oral health literacy are being conducted in Atlanta, Baltimore, Los Angeles, and Washington. This project examines the relationship between health literacy, oral health decision making, and oral health status, and determines the extent to which four different measures of health literacy represent unique skills.

Bailey also described research being sponsored by the Centers for Disease Control and Prevention (CDC). The San Diego Prevention Research Center was funded to sponsor community dialogue sessions on fluoridation. The project tested whether bringing community members together and giving them both negative and positive messages about fluoridation would allow them to enter into a dialogue and then make evidence-based decisions. Bailey described how this process did not lead to individuals supporting water fluoridation. He said that the study demonstrated that it is difficult to overcome fears when it comes to fluoridation messages. If people are uncertain, then they tend to say no to doing anything.

Bailey described educational initiatives of the Office of Minority Health. This office is creating a cultural competency e-learning continuing

education program for oral health professionals. The Office on Women's Health is integrating oral health messages into their materials and website. They are also conducting a physician survey to better understand physician's knowledge and behaviors related to oral health. NIDCR has developed easy-to-read oral health education brochures. They also have a curriculum for first and second graders (Open Wide and Trek Inside), and are developing educational videos. The CDC has tested messages and developed the Brush Up on Healthy Teeth campaign. The Centers for Medicare and Medicaid Services (CMS) is collaborating with text4Baby to include oral health messages. Bailey added that they are also going to award a contract summer 2012 on the National Children's Health Coverage Campaign.

Bailey provided a list of resources and associated website links pertaining to HHS resources:

- **Health Literacy Plans**
  - CDC Action Plan to Improve Health Literacy
  - AHRQ Health Literacy Action Plan
- **Training and Education**
  - Clear Communication: NIH Health Literacy Initiative (http://www.nih.gov/clearcommunication/healthliteracy.htm)
  - CDC Health Literacy Portal (http://www.cdc.gov/healthliteracy)
  - HRSA Training for Health Care Professionals (http://www.hrsa.gov/publichealth/healthliteracy/index.html)
- **Resources**
  - IHS Health Literacy Tools and Resources (http://www.ihs.gov/healthcommunications/index.cfm?module=dsp_hc_health_literacy)
  - CMS Health Literacy Toolkit (http://www.cms.gov/WrittenMaterialsToolkit)

Bailey concluded by stating that action steps have been identified to advance oral health literacy. These steps are as follows:

- Assure a more competent workforce.
  - Train clinicians in communication skills/cultural competency.
  - Have staff complete CDC/HRSA courses in health literacy.
- Use plain language in publications and websites.
  - Oral health care prevention and education, special populations, access to care, coverage.
- Assist patients with disease self-management.
- Assess and improve user friendliness of our clinics.

- Utilize guidance, resources, and tools.
  - Action steps are outlined and resources available for health professionals to make health information and services accurate, accessible, and actionable.
- Foster and enhance collaboration (internal and external).

HEALTH LITERACY IN DENTISTRY

Kathy O'Loughlin, D.M.D., M.P.H.
American Dental Association

O'Loughlin prefaced her remarks by noting the difficulty of changing health beliefs and behaviors and the need to instigate these changes both from the bottom up with patients and top-down with practitioners. Dental care providers can be influenced through educational institutions and dental care delivery systems. O'Loughlin mentioned her 12-year involvement in oral health literacy and the challenges of the field. She said she is optimistic and that progress has been made in oral health literacy. For example, a definition of health literacy in dentistry (Box 7-1) and a framework for understanding it (Figure 3-1) have been accepted by health and dental professionals.

As the Executive Director and Chief Operating Officer of the ADA, O'Loughlin described the twofold mission of the ADA. The ADA's purpose, as outlined in its bylaws, is to enhance the health of the public and promote the profession of dentistry. O'Loughlin stated that this bifurcated mission creates tension within the organization because resources have to be divided between the needs of 157,000 member dentists who actively seek ADA support and a silent majority of the U.S. population.

The ADA has been active in several dental oral health activities:

- *Oral Health in America: A Report of the Surgeon General* (2000)
- *Healthy People 2010* and *2020*
- National Call to Action to Promote Oral Health (NIDCR, 2003)
- Institute of Medicine reports (IOM, 2011a,b)
- NIDCR Workgroup on Functional Health Literacy
- Presentations at professional association meetings (e.g., National Oral Health Conference, International Association for Dental Research, American Association for Dental Research, American Public Health Association)
- National Action Plan to Improve Health Literacy (2010)

The ADA has learned from these initiatives and is now turning to action and evaluation of the impact of those actions, said O'Loughlin.

BOX 7-1
The Definition of Health Literacy in Dentisty

Health literacy in dentistry is "the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate oral health decisions."

SOURCE: Adapted from Ratzan and Parker, 2000.

She noted that health literacy is a pervasive issue that involves many health professions. Dentists, with their oral health expertise, are essential, but she indicated that they are insufficient to "turn the needle" on this issue. According to O'Loughlin, change will only occur by integrating the efforts of physicians, nurses, social workers, educators, and people in the community who have influence, for example, *promotores*. *Promotores* are trained lay health workers that provide basic health education in the Hispanic/Latino community. Some promotores receive about 18 months of oral health education and then work as Community Health Coordinators. They educate, navigate, intervene, provide preventive services, and on occasion, triage and reroute emergency cases to ensure that people in at-risk communities receive needed oral health care.

O'Loughlin relayed an anecdote from a pediatric dentist that illustrates the need for oral health education and clear communication. In the course of talking to a mother about proper tooth brushing, someone in her practice handed the parent a little 2-minute egg timer and told her to use it. The timer is intended to be used as an aid to help children maintain their teeth brushing for 2 minutes. Instead, the mother took the timer home, broke it open, and used the granules to brush her child's teeth.

The ADA sells millions of dollars of patient education information. It would be very helpful, O'Loughlin said, to have those materials reviewed and appraised in terms of its integrity and level of health literacy.

The ADA is working with the National Advisory Committee to develop a health literacy plan. There are five areas of focus:

1. Education and training (change perceptions of oral health)
2. Advocacy (overcome barriers by replicating effective programs)
3. Research (build the science base and accelerate science transfer)
4. Dental practice (workforce diversity, capacity, and flexibility)
5. Build and maintain coalitions (increase collaborations)

The ADA is actively working on at least three of these five areas with a focus on three strategic goals. The first goal is to help ADA members succeed (as defined by the members). The second goal is to ensure that the public has access to information so that individuals can be better stewards of their own health. The third goal is to improve the public's health through collaboration. O'Loughlin described two major collaborations, one a Web-based initiative (Sharecare) and the other an advertising campaign conducted in collaboration with the Ad Council that focuses on oral health.

Two years ago, the ADA joined forces with Sharecare, an online resource launched by Dr. Oz and Jeff Arnold of WebMD that focuses on diet, wellness, and nutrition. Oral health is 1 of 48 topics covered on the site. Questions posted by the public are answered by health professionals. O'Loughlin said that Sharecare is accessed by 2.6 million visitors, on average, every month; growing by 125 percent per quarter in terms of people visiting the site; being used fairly extensively—on average visitors to the site view 10 pages of information; and subscribed to by 1.3 million registered users, people who provide personal information so that they can receive emails, social media, and text messages from this site.

When a Sharecare user types in a question, the site's search engine finds answers to the question from multiple sources, sometimes competing sources. The site initially had only one dental expert, Bill DeVizio from Colgate-Palmolive; however, the ADA is now actively involved with Sharecare. ADA staff and its nine trained member spokespersons respond to questions that come through the website. Nearly 300 ADA active, licensed, member dentists have answered questions as individual oral health experts on the site (i.e., they do not represent ADA when they answer questions). ADA spokespeople and member dentists have answered more than 3,000 dental-related questions. All dentists can now contribute to the site. The site is monitored for accuracy and if a dentist posts information that is questionable, the dentist is contacted to correct the information. O'Loughlin indicated that the Sharecare initiative has been a great success. She stated that ADA is a fairly trusted source of oral health information and that the ADA's reviews and policies are evidence-based. In O'Loughlin's view, this website is a wonderful asset for the public. It allows individuals to ask questions and get credible, trusted answers. The service also helps the ADA by promoting the ADA; reinforcing the ADA's role as the leading advocate for oral health; engaging the public; and enhancing the recognition and importance of the dentist as the authority on oral health and care.

O'Loughlin believes that the ADA collaboration with Sharecare has helped improve public oral health literacy. When questions are answered

by dentists with credible oral health information, people learn more about their oral health.

O'Loughlin described another recent collaborative effort, a National Roundtable for Dental Collaboration, which is an annual 1-day meeting of dental organizations. In setting the agenda for the first meeting in 2010, representatives of the organizations were asked to prioritize their most important issues and their proposed solutions. The meeting was focused on developing an action plan based on this input. The number one issue submitted by the organizations was health literacy, especially among high-risk populations. The 16 organizations represented diverse interests including those of nine dental specialties, the Dental Trade Alliance (the group representing large manufacturers and distributors of dental products), Medicaid dentists, community health center dentists, public health dentists, and state and territorial dental directors. The meeting led to the formation of a coalition whose principle purpose was to increase the awareness of the importance of oral health among both deliverers and receivers of care. This collaboration led directly to the formation of a new coalition: the Partnership for Healthy Mouths, Healthy Lives. O'Loughlin said that the coalition has grown to include 34 oral health organizations.

The Partnership for Healthy Mouths, Healthy Lives submitted a successful proposal to the Ad Council in 2011. The Ad Council was founded in 1942 to sell war bonds in World War II. It has been responsible for some high-profile public service campaigns, including the Smokey the Bear campaign (relating to fire prevention), and the Crash Dummies campaign (relating to auto safety). The Ad Council specializes in major, multiyear campaigns that leverage an organization's direct cost contribution to create a $100 million dollar campaign that reaches millions.

The Ad Council will launch a 3-year national advertising campaign in the summer 2012, worth $100 million.[1] The goal of the campaign, called "Two Plus Two," is to reduce the risk of oral diseases in children through prevention. The slogan refers to getting children, by age 2, to brush their teeth for 2 minutes. Campaign messages will target parents and caregivers to raise awareness and change behaviors. The campaign will include a special focus on the Hispanic community and high-risk communities.

Through its media research, the ADA found that people in the United States are more likely to have cell phones than either computers or televisions. Therefore, an ADA-sponsored consumer website, MouthHealthy.org, will be available June 2012. The website will allow people who have

[1]Information on the Ad Council children's oral health campaign can be found at http://www.adcouncil.org/News-Events/Press-Releases/Coalition-of-More-Than-35-Leading-Dental-Organizations-Joins-Ad-Council-to-Launch-First-Campaign-on-Children-s-Oral-Health (accessed October 1, 2012).

been alerted to oral health issues through the Ad Council campaign to find additional information online. The website, called "Mouth Healthy for Life," has been designed to be consumer friendly and provide information at different life stages, including pregnancy. The site will also include a dental symptom checklist and information about nutrition.

O'Loughlin concluded her remarks by reiterating that the dental community alone is insufficient to solve the problem of poor oral health literacy. She stated that the ADA has developed good relationships with several physician groups, including the American Academy of Pediatrics, the American College of Obstetrics and Gynecology, and the American Academy of Family Physicians. The ADA has also reached out to representatives of the U.S. Department of Health and Human Services: for example, the Centers for Medicare and Medicaid Services (CMS) and the Centers for Disease Control and Prevention (CDC). O'Loughlin, stated that the ADA looks forward to future collaborations. She stated that coalitions of partners are able to bring messages related to oral health and prevention to larger audiences.

AETNA: ACTIVITIES IN ORAL HEALTH LITERACY

Mary Lee Conicella, D.M.D., F.A.G.D.
Aetna

Conicella is the dental representative to a health literacy workgroup at Aetna. The workgroup includes members from various departments, including medical, pharmacy, behavioral health, and communications. The workgroup has three subgroups to address its primary audiences: members, health care professionals, and employees. The goals of the workgroups are to

- research the effects of health literacy,
- increase awareness,
- provide tools and resources to address challenges, and
- promote plain language.

Aetna assists its members through the use of plain language. Plain language is a way of writing and speaking that helps people understand something the first time they read or hear it. By using plain language, members can find what they need; understand what they find; and use what they find to meet their needs. Conicella said that the use of plain language helps Aetna's members use services appropriately, better understand health care information, and act on that information. The Aetna employee newsletter includes a column "In Plain Language," a how-to

guide to simplify speech and prose. This column helps employees find better ways to convey information.

Conicella said it is important that employees embrace the concept of health literacy because it is employees who weave the concepts of health literacy and plain language into the fabric of the organization. Two features of Aetna's employee intranet address health literacy: (1) Jargon Alerts; and (2) Because You Asked. Jargon Alerts is a once-a-week feature that that focuses on a word that is used, but lacks a clear meaning. Recent examples of words featured include noncompliant, adjudicate, and impactful. These words are used within the industry, but may be confusing to members of the public. The "Because You Asked" feature on the intranet allows employees to submit questions and receive answers about the use of words. A recent example of a question submitted related to the correct use of "flush out" and "flesh out."

Aetna encourages employees to nominate peers for the Aetna Way Excellence Awards for their work in language simplification and health literacy, said Conicella. In addition, she said that each month a health literacy champion is recognized for creating member materials or otherwise promoting health literacy.

Conicella said that Aetna has had a long-standing commitment to voluntary activities. Every February, during children's dental health month, dental hygienists, dentists, and other employees visit preschools, schools, and other organizations to educate children about oral health. The Aetna team provided education and screening at the Pittsburgh children's museum during that time. Oral health education was provided jointly to parents and children.

As part of its outreach to clinicians, Aetna communicates with doctors and other health care professionals about their role in helping patients better understand their health and health care. These clinician awareness activities, include the following:

- Health literacy messaging via ePocrates[2]
- Health literacy features in the physician newsletter
- A health literacy reference tool on the provider education website
- A cultural competency course for clinicians
- An online continuing education course for dentists

In terms of research and collaboration, Conicella described two research studies that Aetna was involved in, one on asthma health literacy and one on migraine health literacy. Aetna has collaborated with a

[2]ePocrates is a company that creates point-of-care digital products (online and for mobile devices) for health care professionals (http://www.epocrates.com/who).

number of organizations, for example, the American College of Physicians Foundation, the Institute of Medicine's Roundtable on Health Literacy, the America's Health Insurance Plans (AHIP) Health Literacy Taskforce, and the American Medical Association Foundation. The collaboration with AHIP resulted in a continuing medical education (CME) course on health literacy for clinicians.

Conicella described a writer certification training program at Aetna which aims to ensure that Aetna communicators

- inform, educate, and engage members/consumers,
- follow Aetna writing guidelines,
- write in plain language,
- simplify codes for explanation of benefits statements, and
- simplify member letters.

Conicella recommended *Navigating Your Health Benefits for Dummies* (Cutler and Baker, 2006), a book that breaks down the complex health benefits system into easily digestible pieces and helps consumers navigate their way the system.

Conicella described an oral health literacy continuing education course that was designed with Aetna's research partner, the Columbia University College of Dental Medicine. The course is called Oral Health Literacy: A Dental Practice Priority. The course became available on Aetna's website in 2009. Aetna's participating dentists are encouraged to take the course. The course is lengthy and includes a description of the various tools available to assess patient health literacy. For example, the following screening tests are available online to assess patient reading levels:

- Wide Range Achievement Test-Revised (WRAT-R)
- Rapid Estimate of Adult Literacy in Medicine (REALM)
- Test of Functional Health Literacy in Adults (TOFHLA)
- Newest Vital Sign (NVS)

Newest Vital Sign interprets a patient's ability to understand a nutritional label from ice cream. Conicella pointed out that a dentist does not have to use any of these formal tools and most dentists would not be comfortable with these tools. However, she said that a dentist could add a few simple questions to the health history form that could help them assess the health literacy of their patients (Box 7-2).

The Aetna continuing education course provides a summary of existing dental educational materials and the readability of those resources. The review includes patient educational brochures and pamphlets currently available from the National Institute of Dental and Craniofacial

BOX 7-2
Examples of Health Literacy Questions

1. How often are medical forms difficult to understand and fill out?
   - Always
   - Often
   - Sometimes
   - Occasionally
   - Never

2. How often do you have difficulty understanding written information your health care provider (like a dentist or dental hygienist) gives you?
   - Always
   - Often
   - Sometimes
   - Occasionally
   - Never

3. How often do you have problems learning about your dental or medical condition because of difficulty understanding written information?
   - Always
   - Often
   - Sometimes
   - Occasionally
   - Never

SOURCE: Chew et al., 2004. From Conicella Presentation, March 29, 2012.

Research and the National Institutes of Health. The reading level of the materials ranges from 4th to 10th grade. When dental terms such as "gingivitis" and "periodontal disease" were replaced with the word "dog," the reading level of the brochures and pamphlets was lowered, but many of them remained above a 7th-grade level. Conicella stated the many of the materials in use are highly technical. Ideally, materials at the 4th- or 5th-grade reading level are needed so that the majority of people can understand them.

Conicella said that the *Plain Language Thesaurus for Health Communication* (HHS, 2007) is a useful resource. She agreed with a quote from the thesaurus that relates to patient communication: "It is more important to be understood than to be medically precise."

To encourage patients to feel comfortable and ask questions, Conicella recommended adoption of the "Ask Me 3™" method from the Partner-

ship for Clear Health Communication, National Patient Safety Foundation. According to this method, dentists should encourage their patients to ask (www.npsf.org/askme3)

1. What is my main problem?
2. What do I need to do?
3. Why is it important for me to do this?

Conicella described an award-winning, consumer-oriented, Aetna-sponsored website, Simple Steps To Better Dental Health® (http://www.simplestepsdental.com). The content on this website is primarily provided by the Columbia University College of Dental Medicine. The content is comprehensive, however, the reading level was set so that most members of the public could learn from it. The website includes an interactive tool for parents and caregivers of small children to teach them about preventing early childhood caries. Another interactive tool helps assess the risk for caries for adults and children. The website also includes information on oral health and diabetes.

Conicella said that Aetna also works to advance health literacy through collaborations between dentists and physicians. For example, Aetna sponsored three symposia in the past 4 years at the New York Academy of Sciences that brought the dental and medical community together. The symposia focused on the implications of oral health to the aging population, diabetes, cardiovascular disease, and pregnancy. Aetna has also been involved with other health conferences, mostly in affiliation with the National Dental Association and their local chapters where there is a good working relationship with the National Medical Association. Three additional collaborative conferences are scheduled for 2012.

DENTAQUEST FOUNDATION ORAL HEALTH 2014 INITIATIVE

Ralph Fucillio, M.A.
DentaQuest Foundation

Fucillio described the origins of Oral Health 2014, an initiative funded by the DentaQuest Foundation, formerly known as the Oral Health Foundation. The Oral Health Foundation limited its activities to Massachusetts. The DentaQuest Foundation expanded the mission and has a national focus.

Fucillio recounted an experience he had while volunteering in 2009 in Wise County, Virginia, an area without good access to dental care. Dental services offered through charitable organizations such as Remote Area Medical Volunteer Corps and Missions of Mercy are sometimes

offered in such areas. These volunteer-staffed programs are sponsored by dental societies and other stakeholders and treat people who do not otherwise have access to dental care. Fucillio arrived at the clinic site, a county fairground at 7:00 am. There were already long lines forming for care, with some having arrived days before to be assured of being seen. A circus tent was set up with 90 dental stations. Fucillio observed that while many were being served, the delivery was not the way dental care should be delivered in the United States in a sustainable way. There were many people in pain, with some in severe pain. Most clients were expecting their teeth to be pulled. This experience motivated Fucillio to start thinking about a national movement on oral health. In March 2009, he attended an access to oral health care summit convened by the American Dental Association. The summit involved multiple stakeholders and addressed the long- and short-term needs of U.S. populations that lacked access to oral health care, especially preventive services.

In the three years since the summit, a number of stakeholders have joined together to build a National Oral Health Alliance. A coordination and communication committee worked for 2 years to establish the National Oral Health Alliance. A number of contentious issues, including water fluoridation and workforce issues, had to be discussed among the stakeholders to build new levels of trust, create opportunities for dialogue, ensure civic engagement across sectors, and establish a foundation for a national plan to address oral health. The U.S. National Oral Health Alliance was launched March 22, 2011. Mr. Fucillio recognized two of the other founding board members in attendance, Dr. Kleinman and Dr. Robinson.

Fucillio identified four system components that are needed for change: funding, policy, community, and care. These four components are interdependent (Figure 7-1). In his view, the overall system cannot change without a change in one of these components. Funding and reimbursement systems may need to change to facilitate prevention-oriented, evidence-based dental care, he said. In the policy arena, Fucillio discussed prevention provisions of the Affordable Care Act that could help people understand both their general and oral health. Social determinants of health fit into community systems and greatly affect health outcomes. Based on his review of the literature, Fucillio estimated that 10 percent of what is spent on health actually improves health and 90 percent of what is going on in people's lives is what really contributes to whether they are healthy or not. He said that the community is one of the most important places for improvements in health to occur. Using the language of the community is key to health literacy. Fucillio recounted an anecdote from research on language used to describe food. In one study, people from

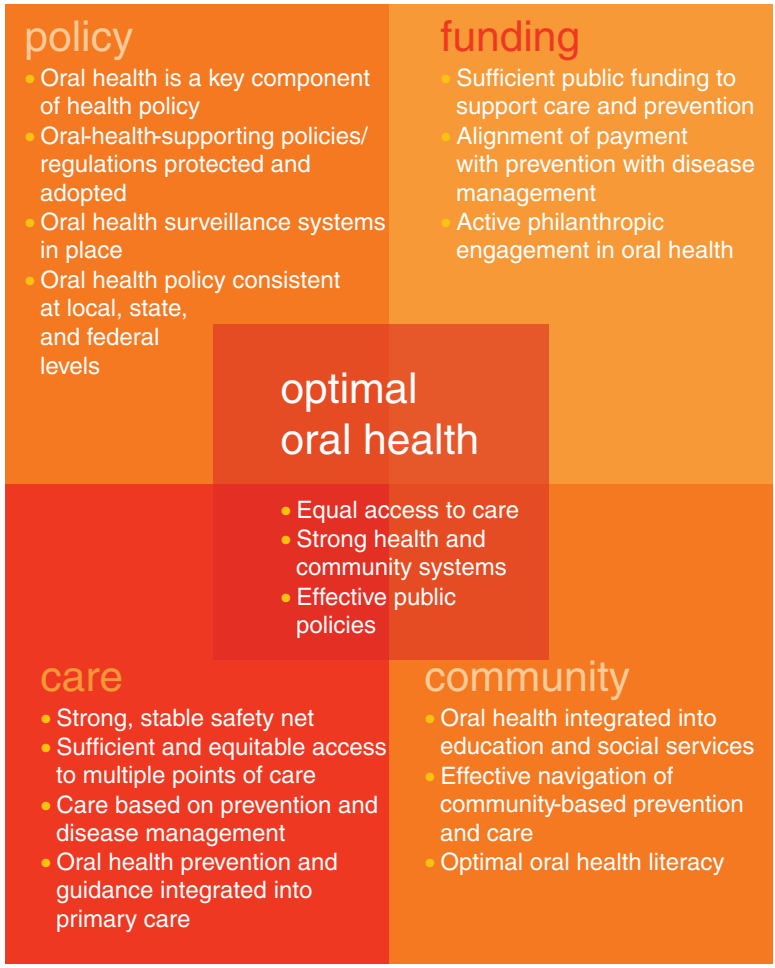

FIGURE 7-1 Systems change for optimal oral health.
SOURCE: Fucillio, 2012.

southern states were asked if they ate poultry. They reported that they did not. They were more familiar with the term chicken.

DentaQuest Foundation provides funding and engagement opportunities at the state level that address one or more of the six priorities of the National Oral Health Alliance:

1. Prevention and public health infrastructure
2. Medical dental collaboration

3. Strengthening the dental care delivery system
4. Data and surveillance
5. Financing models
6. Oral health literacy

The DentaQuest Foundation offered states $100,000 for the first year of planning. The foundation received 69 letters of intent and 36 proposals. The foundation funded 20 states (Table 7-1). Four of those states are focused on oral health literacy (Arizona, Florida, Maryland, Rhode Island).

Fucillio discussed two colloquia held by the U.S. National Oral Health Alliance. The first colloquium focused on medical and dental collabora-

TABLE 7-1 State Oral Health Programs Funded by the DentaQuest Foundation

Arizona: American Indian Oral Health Coalition	• Twenty-two tribes in the state starting regional "roundtables" as a culturally sensitive means of bringing tribes in various regions together • An "oral health 101" session is hosted by a dental hygienist from the community in which the roundtable is being held • Roundtables work to create consensus around which aspects of the oral health plan are most important to those tribes and how they can work together to implement them
Florida: Healthy Mouth, Healthy Body Campaign	• To develop culturally competent messages regarding the importance of good oral health, to create support for public policy solutions and to improve access to dental care • Develop a series of messages (messaging plan) for their alliance and local coalitions: the plan was officially adopted by their alliance
Maryland: Maryland Dental Action Coalition	• Reducing health disparities, enhancing oral health literacy among community-based groups • Oral health literacy campaign officially launched with engagement by elected officials and the Maryland Oral Health Learning Alliance (created for Oral Health 2014 Initiative) as a support and alignment mechanism to keep the campaign moving forward
Rhode Island: Rite Smiles-Smart Smiles: Rhode Island's Oral Health Literacy Improvement Initiative	• Increase the knowledge and skills of families and providers and improve access to dental care among families and children with Medicaid coverage

tion. Numerous professions came forward to describe their cooperative initiatives. The second colloquium focused on prevention and public health infrastructure. A third colloquium on oral health literacy was held June 6 and 7, 2012.

Fucillio said that the many oral health literacy initiatives under way point to progress in this relatively new field. He cited as examples of these promising initiatives, the grant programs of Oral Health 2014, coalition development, the National Oral Health Alliance, the Oral Health Coordinating Committee at the federal level, and the current IOM workshop. Fucillio stated that these and other initiatives will contribute to improvements in oral health. However, he cautioned that change will not occur unless literacy levels improve. He indicated that literacy interventions must go beyond targeting individual behavior and reach communities.

Fucillio concluded his remarks by providing four key oral health literacy messages:

1. The mouth is part of the body.
2. Oral health problems stem from an infectious process in the mouth.
3. Dental disease is preventable.
4. Oral health literacy and oral health is everybody's business.

Fucillio encouraged members of the audience to learn more about the Alliance's national initiatives at the DentaQuest Foundation website (dentaquestfoundation.org).

DISCUSSION

Roundtable member Kelly began the discussion of the presentations by asking O'Loughlin whether the ADA had reached out to the payor community in terms of involvement with the Ad Council dental health campaign. Kelly suggested that receiving key messages from insurers as well as through the media would reinforce the campaign's information. O'Loughlin replied that the ADA discussed the Ad Council campaign with representatives of Delta Dental and the National Association of Dental Plans (NADP). The plans have been preoccupied with health care reform legislation. The ADA welcomes collaboration with health and dental insurance plans. She pointed out that the Ad Council "owns" the campaign, has their own website for the campaign, and is in charge of the media launch to the public. All members of the partnering coalition are recognized on the website.

Roundtable member Epstein provided the audience with information about the online Unified Health Communication course offered by the Health Resources and Services Administration (HRSA). The course has

been updated and is now called Effective Health Care Communication Tools for Healthcare Professionals. An hour of ethno-cultural and lesbian, gay, bisexual, transgender (LGBT)-specific content is being added to the course and six continuing education (CE) credits can be earned upon its completion. Epstein anticipates the inclusion of additional oral health content in the course so that it will be eligible for CE credits for oral health care providers.

Roundtable member Francis asked Fucillio how social determinants fit into the framework he described that included interconnections between policy, funding, community, and care. Fuccillio replied that social determinants operate on all four components of the framework. Social determinants are usually thought to operate at the community level, for example, by influencing factors affecting people's everyday lives, such as economics, transportation, education, and housing. However, he said, decisions made in the areas of policy, funding, and care also greatly affect the conditions of people's lives, which, in turn, affects their health. Fucillio said that a shift of focus from individual behavior to the conditions in which individuals find themselves is an important part of this framework. Francis added that a focus on social determinants is needed because they can preclude access to care. Fucillio agreed and said that if people do not have a place to receive care, or do not have the means to pay for that care, they will likely not get care.

Roundtable member Schyve asked members of the panel to discuss interventions at the level of the individual practitioner that improve communication with patients. He noted that from the practitioner's point of view, effective interventions such as the teach back method take time. Schyve suggested that taking this extra time with patients would likely mean that fewer patients could be seen in the course of the day. He asked the panel to address this practical issue.

O'Loughlin observed that insurers do not usually provide reimbursement for oral health literacy interventions such as the teach back method. There is a code for the provision of education and guidance, but payors usually do not reimburse for this service. She indicated that fundamental systems issues, including reimbursement, need to be addressed to help practitioners intervene to improve the health literacy of their patients. The first step is to teach dental providers how to intervene in effective ways. O'Loughlin added that there is a Commission on Dental Accreditation communication standard, but that it could be strengthened. She observed that the dental curriculum is already very full. There is a growing recognition that medical and dental schools need to do a better job of teaching practitioners how to communicate effectively, O'Loughlin said. She stated that there is also a greater emphasis on interprofessional collaboration in dental schools and medical schools.

In terms of giving practitioners incentives to use health literacy interventions, Conicella said that dentists who have completed Aetna's course have not raised this issue. As a practicing dentist, she said that perhaps demands on her time are less than those experienced by physicians. She noted that dentists often use their hygienist and dental assistants to work with them to further health literacy interventions.

Bailey added that informing dentists that health literacy interventions improve outcomes is a powerful incentive. Many dentists do not realize the impact that good communication has on oral health outcomes. He suggested that educating oral health providers about this link would encourage them to incorporate health literacy interventions into their practices.

Roundtable member Patel asked Fucillio whether there is an economic evaluation planned of the state interventions funded through the DentaQuest grant program. She noted that it is useful to have a business case to support public health interventions. Fucillio replied that the state programs have been in operation for a short time (6 months) and that the evaluation process is ongoing. The first year of the grant focuses on planning. Some of the grantees will be selected to implement their plans. The evaluation metrics will vary according to which of the six priority areas the grantees elect to target. One of the financial benefits of the interventions observed so far is that strengthening the oral health safety net has led to improvements in the financial results of the safety net dental clinics. These benefits have occurred in states where there is a primary care association working with the grantee to mobilize local stakeholders.

Ratzan posed a series of questions related to opportunities for sustainable solutions in health literacy. First he asked O'Loughlin how health literacy education can be integrated throughout the health science undergraduate and graduate curriculum. In addition, he noted that revisions to the Medical College Admission Test (MCAT) might include health literacy questions. He asked Conicella about incentives that insurers could offer employers to encourage healthy behaviors among employees. Ratzan noted that employers receive a large discount if they can show that their employees are aware of measures such as blood pressure and blood sugar levels. Incentives can be built into the plan structure. Ratzan asked Bailey about the evaluation of the text4Baby program and how it might be tied to the Ad Council media campaign as a resource. He noted that the program has had some impact in terms of improving the rate of flu vaccinations. Ratzan asked more generally, How can we come up with sustainable solutions? He urged the government agencies and other stakeholders to work together.

Fucillio replied that the National Oral Health Alliance was formed to conduct business differently. In his view, the Alliance should be a

public–private partnership. Fucillio added that there are 27 members of the Alliance funders group who are focused solely on oral health. He mentioned that three foundations are sponsoring an interprofessional collaborative on oral health. Fucillio is hopeful that when norms, communication patterns, and the way business is done change, systems will change. Bailey added that one way to "span the silos" is to involve top leadership because they have control across all of the silos. From his perspective Bailey suggested that stating health literacy as a priority across an agency, in his case, the Department of Health and Human Services, is an effective way to motivate integration. He added that agency staff may work within silos, but that this does not preclude having a coordinated effort across silos. Bailey suggested that having a public–private national oral health plan serves to focus on priority areas. Individual agencies can tie into a national strategic framework. He likened this to a zipper that connects all of the partners even though each is working on their own element of the plan.

8

Closing Remarks

Isham asked members of the Roundtable to reflect on the day's proceedings and the themes that emerged from the ensuing discussions. Isham noted that one theme that he heard reiterated throughout the day related to fragmentation and a lack of coordination between oral/dental health and medicine. He learned from the proceedings of the significant impact of public health interventions on oral/dental health outcomes, for example, water fluoridation. He observed that there are tremendous opportunities for prevention to significantly reduce the morbidity associated with oral/dental disease. He stated that oral/dental diseases touch all Americans and there is clear evidence to guide both public policy and individual behaviors.

Isham noted that the evidence from health literacy as it applies to medical practice is also directly applicable to oral/dental health practice. Isham said how impressed he was with the map of U.S. populations that lack water fluoridation. There is solid evidence that fluoridated water dramatically reduces caries in children, and yet, there is resistance to this public health intervention in many parts of the country. Isham stated that a determined effort is needed on the part of the oral health and medical communities to overcome resistance to evidence-based interventions.

Roundtable member Kelly commented that human-centered design is essential to motivate behavior change. A community-focused framework is important, but behavior change needs to occur at the level of the individual.

Roundtable member Ross was encouraged by discussions relating to

social determinants of health and the need to intervene early with mothers, to ensure that infants receive the preventive oral/dental care that they need.

Roundtable member Pleasant observed that many of the lessons from health literacy are applicable to oral health literacy. While it is important to avoid "reinventing the wheel," he cautioned that oral health professionals should be very careful not to adopt tools and methodologies that have not been proven in the context of dental practice. In terms of research and evaluation, Pleasant indicated that health outcome indicators are needed in the evaluation metric, as well as information on the costs of interventions under investigation.

Roundtable member Brach observed that primary care providers are essential players in terms of oral health literacy because, according to some of the evidence provided during the workshop, they are responsible for 50 percent of the claims for dental services among some pediatric populations. She felt strongly that primary care providers, given their prominent role in addressing the needs of vulnerable populations, need to be targeted for education and training in the area of oral health literacy. Brach congratulated those in the oral health literacy community for adopting some of health literacy's best practices, evidence, and knowledge and applying it to oral health.

Roundtable member Parker raised a very practical issue. She asked how many people in the audience brushed their teeth for 2 minutes. This is recommended, but she herself admitted that it is a difficult recommendation to adhere to. She has four children and none of them was ever taught to brush for 2 minutes. She suggested that it is important to hold up a mirror, ask about our own health literacy, and acknowledge the difficulties of practicing what is preached.

Roundtable member Schyve found that a key message from the day's proceedings was that poor oral health literacy leads to both poor general health and poor oral health. He observed that the implications of poor oral health literacy extend beyond oral health. A second key message is that oral health literacy is influenced at multiple levels, the community, the family, and the individual. To address the issue of oral health literacy, interventions are needed at the level of policy makers, public health organizations, and individuals, Schyve said. He observed that solid research with a focus on outcomes is needed to provide evidence that prevention (e.g., fluoride, sealants) and medical/dental collaboration are effective. He stated that the adoption of interventions depends on complex systems and that an intervention's success may be dependent on the context in which it is tested. This introduces a major challenge to research because it is necessary to demonstrate the effectiveness of interventions, not just overall, but in specific situations. Schyve said that much more research

is needed to understand how oral health literacy will be translated into actual behavior change.

Roundtable member Loveland reiterated the finding from the workshop that oral health literacy is dependent on health literacy. She added that oral health is a major determinant of general health and that the status of oral health in America is poor and in urgent need of attention. She was encouraged that there are initiatives under way to address this problem. As a physician, Loveland acknowledged that neither she, nor her medical colleagues, focused on oral health or oral health literacy but that medical/dental collaborations are very important. Medical school training is necessary, she said, but added that a lengthy period of time will pass before well-trained clinicians get into clinical practice. She expressed some skepticism about top-down approaches to changing provider behavior. Loveland said that professional societies, reaching out to one another, are likely needed to bring about collaboration.

Roundtable member Francis said she was left after the day's proceedings with a desire to find evidence behind oral health literacy interventions and that evidence on community-based and individual interventions is lacking. An understanding of the disease process is not sufficient when it comes to changing health behaviors. She observed that access to oral health care in the United States is twice as bad as access to physical health care with 100 million people lacking access to oral health care. Oral health literacy is critical to improving this statistic, she said. Francis found Jacob's presentation and opinion that framing an issue in terms of a problem, in this case water fluoridation, helps the public to accept potential solutions to the problem. She also found Wong's comment about positive deviance instructive and felt that evaluating successes might be very informative. Lastly, Francis emphasized the importance of focusing on patient-centered care, self-efficacy, and the social determinants of health when intervening to improve oral health literacy.

Roundtable member McGarry applauded the attention paid to public health throughout the day's deliberations, but expressed some concern that the subspecialties within dentistry were not discussed. He observed that financial incentives that reward cosmetic approaches to dentistry may impede known public health prophylactic approaches. A preoccupation with cosmetic procedures, for example orthodontics, may take up much of dental practitioners' time, leaving less time to address the needs of underserved populations.

Roundtable member Ratzan, as a public health physician with an interest in communication, was surprised that the issue of tobacco use was not discussed during the workshop. In the context of oral health literacy, he stated that tobacco use is a very important topic. Ratzan described a score card developed by the World Health Professions Alliance that was

announced at the United Nations in 2011. The World Health Professions Alliance includes the World Federation of Dentists, the World Medical Association, and the International Council of Nurses. It also includes the international organizations representing pharmacists and physical therapists. The oral/dental focus of the score card is on tobacco use, not on tooth brushing. The score card also addresses having a healthy diet and states that an unhealthy diet increases the risk of being overweight, obese, and developing oral diseases. Ratzan said that a multidisciplinary, interdisciplinary, plura-disciplinary approach applies not only to professions, but also to how public health challenges are examined. He agreed with Brach, that there is a need to better define oral health literacy. He indicated that it is not yet clear whether oral health literacy is a subset of health literacy, and if so, how large a subset it represents. Ratzan observed a great deal of interest in public health by the dentistry professionals and concluded his observations with a plea, to think holistically and broadly about the impact of oral/dental interventions using existing indicators that are in place to monitor public health.

Roundtable member Alvarado-Little expressed her appreciation of the focus on the community perspective. She greatly benefited from the presentation from Congressman Cummings and his reference to the few items in his family's medicine cabinet to treat dental problems. Alvarado-Little works with the Latino community in Amsterdam, New York, and has found that families can preserve their limited resources and adapt dental practices to what might be available in the home. Alvarado-Little said she also benefited from the presentation by Wolpin who described the practices of mothers in a Hispanic migrant community where young mothers were using honey on pacifiers to help quiet babies at nighttime. These stories are very instructive and could be invaluable if shared with pediatricians working in similar communities. Pediatricians have access to families and are viewed as authority figures within the migrant community. The family may not have contact with a dentist, but, Alvarado-Little said oral health messages could be shared by the pediatrician. Having a cultural component to interventions is very important, she said, because some of the beliefs and the customs within the communities are not so tied to socioeconomic status. Rather, behaviors are rooted in what is learned and observed in the traditions of families.

Roundtable member Rush highlighted the value of workshop deliberations on the relationship between oral health and general health, particularly chronic disease, and the discussions relating to disparities in access to oral/dental care. Rush was especially interested in the interventions that targeted the parents and caregivers of children. He felt that it would be useful to examine the relationship between oral health and the health care of older adults, particularly the people who are providing support

for older adults, whether they are paid or nonpaid caregivers. He stated that the pain that older adults suffer is also shared by their caregivers.

Roundtable member Humphreys found the discussion of positive deviance quite interesting and asked whether there are any data on this topic at the community level. She indicated that examining variance across communities with similar characteristics, for example, socioeconomic and minority status, to identify positive outliers in terms of oral/dental health problems could be instructive. Those communities with a relatively good oral/dental health profile could be studied to identify the behavioral antecedents of these health outcomes. Humphreys added that representatives from communities with these positive attributes could form alliances with members of other communities that had more negative attributes. For example, she mentioned that if water fluoridation was one of the attributes of the positively deviant community, then members of that community could be effective communicators regarding its value.

Roundtable member Fritz remarked that she was surprised the public is not aware that dental disease is preventable. She pointed out that knowing dental disease is preventable is insufficient. It is also necessary to find a way to change behaviors and how to change behaviors needs to be addressed in both health literacy and oral health literacy. Fritz noted parallels between health literacy and oral health literacy, but said that more work is needed to find out if the solutions to problems are the same.

Wong discussed the need to distinguish oral health and dental health and interventions aimed at individuals (e.g., pulling teeth) and those aimed at communities (e.g., water fluoridation). He said that the competencies and skills needed at the individual or community level are distinct and need to be identified. Wong also highlighted the need to collaborate across allopathic medicine and dental/oral health.

An audience member, from the University of Maryland School of Dentistry suggested that a collaboration with school teachers might be an effective approach to improving the oral health literacy of children. She pointed out that teachers are key communicators.

Commander Pamella Vodicka, of the U.S. Public Health Service, a registered dietitian and oral health program lead within the Maternal Child Health Bureau (MCHB) at HRSA stated that individuals may be reluctant to divulge their behaviors or that of their children if they think that they are being judged. In her experience, it is vital to have some cultural context and to learn about an individual's circumstances. When working as a dietitian, one of her clients (a young mother) thought that if she did not tell her the "right thing," her baby would be taken away from her. As part of her work at HRSA, Vodicka described an MCHB-funded cooperative agreement that supports two oral health literacy initiatives:

1. The Medicaid-CHIP State Dental Association has funding to collaborate with partners to develop, implement, and evaluate an improved approach to strengthen Medicaid and CHIP oral health program infrastructures and capacity. The aim of this initiative is to assure quality and cost appropriate services for women, children, and families served by state oral health and Title V programs.
2. The Association of American Medical Colleges (AAMC) has been funded to develop an online model curriculum collection on oral health hosted on MedEdPORTAL©, AAMC's free, peer-reviewed, open-access, online repository of educational resources and teaching materials.

Commander Vodicka discussed another HRSA project that is being co-led by the Bureau of Health Professions and the Office of Strategic Priorities. A standard core set of clinical oral health competencies is being developed for non-dental primary care providers working in HRSA's safety net settings. These competencies will pertain to the practice of physicians, physician assistants, nurse practitioners, and nurse midwives.

Isham closed the session by thanking the speakers, the workshop planning committee, and IOM staff for an outstanding workshop.

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Appendix A

Workshop Agenda

Roundtable on Health Literacy

Workshop on Oral Health Literacy
20 F Street Conference Center
20 F Street, NW
Washington, DC

AGENDA

March 29, 2011

9:00-9:15	Welcome and Introduction—Roundtable Chair
9:15-9:30	The Importance of Oral Health Literacy *Congressman Elijah Cummings* *Maryland 7th District*
9:30-9:45	Background Overview: Brief Summary of Relevant Sections of White Paper Report for Research, Call to Action and IOM Reports *Dushanka Kleinman, D.D.S., M.Sc.D.* *Associate Dean for Research* *University of Maryland School of Public Health*
9:45-10:00	Statement of the Problem—Why Is Oral Health Important and What Role Does Health Literacy Have to Play? *Amid Ismail, B.D.S., M.P.H., M.B.A., Dr.P.H.* *Dean, Kornberg School of Dentistry* *Temple University*

10:00-10:30 Discussion

10:30-10:45 BREAK

10:45-11:00 What Should One Look for in a Oral Health Literacy Assessment of Systems and the Environment?
Alice M. Horowitz, Ph.D.
Research Associate Professor
School of Public Health, Center for Health Literacy, University of Maryland

11:00-11:15 Discussion

11:15-12:30 *Effective Oral Health Literacy Programs*

11:15-11:30 Community perspective on importance of oral health literacy
Scott Wolpin, D.D.S.
Senior Vice President and Chief Dental Officer
Choptank Community Health Center

11:30-11:45 Consumer awareness, especially vulnerable populations, of importance of oral health
Marsha Butler
Vice President, Global Oral Health
Colgate-Palmolive Company

11:45-12:00 Discussion

12:00-1:00 LUNCH

1:00-2:00 *Effective Oral Health Literacy Programs (continued)*

1:00-1:15 Patient-Practitioner Communication from the Perspective of the Providers, Based on Survey by ADA
Gary Podschun
Manager, Community Outreach and Cultural Competence
American Dental Association

1:15-1:30 Oral Health and Primary Prevention
Matt Jacob, Project Manager, Communications
Pew Children's Dental Health Campaign

1:30-1:45 Discussion

1:45-3:00 Panel: State Activities in Oral Health Literacy

1:45-2:00 State Efforts
Gregory B. McClure, D.M.D., M.P.H.
Dental Director
Delaware Division of Public Health
Bureau of Oral Health and Dental Services

2:00-2:15 California
Lindsey Robinson, D.D.S.
Past Chair, California Dental Association Foundation
President-Elect, American Dental Association

2:15-2:30 North Carolina
Kimon Divaris, D.D.S., Ph.D.
Carolina Oral Health Literacy Project
Department of Pediatric Dentistry
University of North Carolina

2:30-3:00 Discussion

3:00-3:15 BREAK

3:15-4:45 Panel: National Activities in Oral Health Literacy

3:15-3:30 Department of Health and Human Services
RADM William Bailey, D.D.S., M.P.H.
Director, Division of Oral Health
Centers for Disease Control and Prevention

3:30-3:45 American Dental Association
Kathy O'Loughlin, D.M.D., M.P.H.
Executive Director and Chief Operating Officer

3:45-4:00 Insurers
Mary Lee Conicella, D.M.D., F.A.G.D.
Aetna

4:00-4:15 DentaQuest 2014 Initiative
Ralph Fucillio, M.A.
President
DentaQuest Foundation

4:15-4:45 Discussion

4:45-5:30	Reflections on the Day
5:30	ADJOURN
6:30	Working Dinner, Gordon Biersch Brewery and Restaurant, 900 F Street, NW

Friday, March 30, 2012
Keck Building
500 5th Street, NW
Washington, DC
Room 105

7:45-8:30	BREAKFAST
8:30-9:15	Introduction of Members—New and Returning
9:15-9:45	Review of Workshop 1. What were the important points? 2. Should there be any follow up activity in oral health? If so, what are the possibilities and who would be involved in pursuing this?
9:45-10:30	Review and discussion of plans for International Health Literacy workshop
10:30-10:45	BREAK
10:45-11:15	Report of work on Attributes of a Health Literate Organization • Workshop summary • Brief discussion paper • Longer discussion paper
11:15-11:30	Articles for *Journal of Health Communication*
11:30-12:15	New Activities and Strategies for Roundtables at the IOM *Katharine Bothner, Associate Program Officer, Deputy Executive Office* • Innovation collaboratives • Perspectives *Abbey Meltzer, Deputy Communications Director* • Communications strategies

12:15-1:00	LUNCH *Guest: Melissa Welch-Ross, Deputy Director IOM Board on Behavioral, Cognitive, and Sensory Sciences*
1:00-1:45	How Might the Roundtable Use the New Mechanisms?
1:45-2:30	What Planning Groups Should Be Formed and Who Will Be on Each?

Appendix B

Speaker Biosketches

RADM William Bailey was selected by Surgeon General Regina Benjamin as the chief professional officer for the dental category effective May 24, 2010. As chief dental officer, RADM Bailey leads the Commissioned Corps of the U.S. Public Health Service (USPHS) dental professional affairs, and advises the Office of the Surgeon General and the Department of Health and Human Services on the recruitment, assignment, deployment, retention, and career development of Corps dentists. In addition, he currently serves as the acting director of the Division of Oral Health at the Centers for Disease Control and Prevention.

RADM Bailey has enjoyed assignments with the National Health Service Corps, Bureau of Prisons, Indian Health Service, and Centers for Disease Control and Prevention. He has received numerous awards including the USPHS Meritorious Service Medal and the Dental Category's Jack D. Robertson Award, and is a diplomate of the American Board of Dental Public Health.

Marsha Butler, D.D.S., is currently vice president, global professional relations, Colgate-Palmolive Company, responsible for global strategies, programs, and policies that support Colgate's professional and oral health initiatives around the world. Dr. Butler interfaces with numerous international government, dental, and health organizations to promote programs aimed at the prevention of oral disease and the improvement of general and oral health.

In 1990, Dr. Butler conceptualized, designed, and implemented a

comprehensive oral health education program called Bright Smiles, Bright Futures. This initiative is directed toward high-risk youth populations and utilizes public-private partnerships, community-based outreach, and parent involvement to improve the oral health of low-income inner-city children in the United States. Under Dr. Butler's leadership, Bright Smiles, Bright Futures has been implemented in 80 countries around the world, reaching more than 650 million children in 30 languages. Dr. Butler authored and presented results from several publications that study the oral health habits, knowledge, and clinical status of young children in the United States and other regions around the world.

Dr. Butler has worked diligently with the National Dental Association (NDA) Foundation to help increase the pool of African American dentists in the United States through a multifaceted program which provides scholarship awards to dental, dental hygiene, dental assistant, and postgraduate dental students pursuing dental careers. More than 2,500 scholarships have been awarded since 1990. Dr. Butler partners with the NDA Foundation to support funding for research grants at the historical African American schools: Howard University and Meharry Medical College.

Dr. Butler is a graduate of the Howard University College of Dentistry. A member of the American Dental Association (ADA), the NDA, the Academy of General Dentistry, the American Association of Public Health Dentists, the International Association of Dental Researchers, and the American College of Dentists. Dr. Butler has received numerous awards for her oral health improvement activities, including the Howard University College of Dentistry Distinguished Alumni of the Year award, an advocacy award from the World Organization for Early Childhood Education, a 2012 *UPTOWN Professional* magazine's Top 100 Executives in Corporate America, a 2005 Silver Screen Award from the U.S. International Film Festival, a 2006 Telly Award, a 2007 Ebony Outstanding Women in Marketing and Communications Award, a Council Choice award from the ADA, and other awards.

Mary Lee Conicella, D.M.D., is Aetna's chief dental officer. In this role she is responsible for building Aetna's market position by providing high-quality and affordable dental care. With 13.6 million members, Aetna Dental offers one of the broadest product portfolios in the insurance industry to help meet customers' varied needs. In her role, Dr. Conicella leverages her broad clinical background to support the development of best-in-class clinical programs that provide solutions to engage members, deliver superior dental health, and improve costs through clinical integration. She also supports the overall service experience for Aetna Dental's customers, providers, and members.

Dr. Conicella received her B.S. in medical technology from the University of Pittsburgh and her D.M.D. from Temple University School of Dentistry in 1987. She received a fellowship in the Academy of General Dentistry in 2000. Prior to joining Aetna, Dr. Conicella was in private practice. She is a faculty member of the University of Pittsburgh School of Dental Medicine, where she has taught since 1992. She began her career with Aetna in 1997 as a dental consultant in dental utilization management, assuming the role of chief dental officer in 2005. She was instrumental in developing Aetna's Dental-Medical Integration initiative and has coauthored several abstracts and articles published in collaboration with Columbia University College of Dental Medicine related to research on dental care's impact on overall health. She is also a member of Aetna's Health Literacy Work Group and represents the dental business in Aetna's Clinical Innovation initiative.

Dr. Conicella has a number of affiliations, including the American Dental Association, the National Dental Association Corporate Round Table, the Academy of General Dentistry, the Omicron Kappa Upsilon scholastic fraternity, the Temple University School of Dentistry Board of Visitors, and the University of Connecticut School of Dental Medicine Advisory Board. She serves as chairman of America's Health Insurance Plans' dental code work group, and is a member of the National Association of Dental Plans' Professional Relations Committee.

Elijah E. Cummings, U.S. Representative for Maryland's 7th congressional district, was born and raised in Baltimore, Maryland, where he still resides today. Congressman Cummings obtained his bachelor's degree in political science from Howard University, serving as student government president and graduating Phi Beta Kappa, and then graduated from the University of Maryland School of Law. Congressman Cummings has also received seven honorary doctoral degrees from universities throughout the nation.

Congressman Cummings has dedicated his life of service to uplifting and empowering the people he is sworn to represent. He began his career of public service in the Maryland House of Delegates, where he served for 16 years and became the first African American in Maryland history to be named Speaker *pro tempore*. Since 1996, Congressman Cummings has proudly represented Maryland's 7th congressional district in the U.S. House of Representatives.

Congressman Cummings often says that our children are the living messages that we send to a future we will never see. In that vein, he is committed to ensuring that our next generation has access to high-quality health care and education, clean air and water, and a strong economy defined by fiscal responsibility.

Congressman Cummings currently serves as the ranking member of the Committee on Oversight and Government Reform. As the main investigative committee in the House of Representatives, Oversight and Government Reform has jurisdiction to investigate any federal program and any matter with federal policy implications. As the committee's ranking member, Congressman Cummings fights to hold the presidential administration to a high standard of excellence and to ensure efficiency and effectiveness in the actions of the government of the United States. He also seeks to identify appropriate reforms that prevent waste, fraud, and abuse and to ensure government programs meet the needs of the American people.

Congressman Cummings is also a senior member of the House Committee on Transportation and Infrastructure, serving on both the Subcommittee on Coast Guard and Maritime Transport and the Subcommittee on Highways and Transit. He has consistently been an advocate for the rights of those facing foreclosure and holds regular foreclosure prevention seminars for people who are at risk of being foreclosed upon. The homeowners are matched with lenders to work out loan modifications on site to prevent foreclosure. He began the 112th Congress by requesting that the first hearing in the House Committee on Oversight and Government Reform investigate the causes of, and potential solutions to, the foreclosure crisis.

Congressman Cummings serves on numerous boards and commissions. He is spearheading an effort to strengthen the maritime curriculum at the Maritime Academy in Baltimore. He is the chairman of the Maritime for Primary and Secondary Education Coalition (MPSEC). He also serves on the U.S. Naval Academy Board of Visitors, the Morgan State University Board of Regents, the Baltimore Aquarium Board of Trustees, and the Baltimore Area Council of the Boy Scouts of America Board of Directors. He is an honorary board member of the SEED School of Maryland, KIPP Baltimore Schools, and the Baltimore School for the Arts. Congressman Cummings is an active member of New Psalmist Baptist Church and is married to Dr. Maya Rockeymoore Cummings.

Kimon Divaris, D.D.S., Ph.D., received his D.D.S. from Athens University School of Dentistry, Greece, in 2005. Prior to joining the University of North Carolina (UNC) at Chapel Hill in 2007, he completed 1 year of service as a Hellenic Army dental officer. At UNC at Chapel Hill, he pursued advanced studies jointly at the School of Dentistry and the Gillings School of Global Public Health. In 2011 he received a certificate of specialization in pediatric dentistry, a graduate certificate in global health, and a Ph.D. degree in epidemiology from UNC at Chapel Hill. His research interests are diverse and include both proximal and distal oral health determinants with emphasis on caries, periodontitis, and oral cancer, and span from

genetics to dental education and oral health literacy. Kimon served as president (2003-2004) of the European Dental Students' Association and was recipient of the 2011 International Association for Dental Research's Behavioral, Epidemiologic and Health Services Research Group post-doctoral award and the 2012 American Academy of Pediatric Dentistry Graduate Student Research Award. He is currently research assistant professor of pediatric dentistry and dental research postdoctoral fellow at UNC at Chapel Hill.

Ralph Fuccillo has served as president of the DentaQuest Foundation (formally Oral Health Foundation) since 2006. Mr. Fuccillo is a seasoned leader in the nonprofit sector with a lifelong career that has included professional and volunteer experiences in education, health and human services, and organizational development. As an advocate for disease prevention and health promotion, his work has focused on the social determinants of health, policy development, and behavior change to reduce injury and violence, HIV/AIDS, substance abuse, other preventable illnesses, and now oral health.

Through his board service to nonprofit organizations, he carries his collaborative leadership approach to national and local organizations such as the Albert Schweitzer Fellowship Program (chair), Elderhostel, the Massachusetts Dental Society Foundation, and Neighborhood Health Plan. He has served as the immediate past president of the Massachusetts Health Council and of the AIDS Action Committee Board of Directors, Harvard School of Public Health Prevention Research Center of the National Community Committee of the Centers for Disease Control and Prevention Research Center Program, and has been a visiting lecturer at the Harvard Divinity School.

Mr. Fuccillo is a lecturer on health and philanthropy, an advocate for the underserved and the work of community health centers, and a frequent speaker and panel moderator at professional conferences.

Alice M. Horowitz, Ph.D., R.D.H., is a research associate professor at the School of Public Health, University of Maryland. Formerly, she was a senior scientist in the Division of Population and Health Promotion Sciences at the National Institute of Dental and Craniofacial Research. She was a primary architect of the Maryland State Oral Cancer Prevention and Early Detection coalition. She initiated both state and national research on what health care providers and the public know and do about oral cancer prevention and early detection. She has initiated statewide research on what the public knows and does about preventing dental caries and their perceptions of communication skills of dental providers and on health care providers' (physicians, nurse practitioners, dentists, and dental

hygienists) reported use of recommended communication practices. She served as the National Institutes of Health lead for the *Healthy People 2010* oral health chapter and worked on *Healthy People* and *Healthy People 2000*. She organized the National Institute of Dental and Craniofacial Research's workshop on oral health literacy and coauthored the resultant findings. She has published more than 125 scientific papers and book chapters and is the recipient of numerous awards. Dr. Horowitz holds a Ph.D. in health education from the University of Maryland, College Park.

Amid Ismail, Dr.P.H., has been dean and Laura H. Carnell Professor at Temple University Kornberg School of Dentistry since October 2008. Before joining Temple University, Dr. Ismail was professor and director of the Detroit Center for Research on Oral Health Disparities and director of the Detroit Oral Cancer Prevention Project at the School of Dentistry, University of Michigan. Dr. Ismail was also director of the Program of Dental Public Health at the University of Michigan's School of Public Health.

For 25 years, Dr. Ismail has been an actively funded researcher in population-based studies and interventions to reduce disparities. His expertise is in the field of measurement, outcomes assessment, design and planning for complex statistical analyses, survey methods, and organizational management. Having played a significant role in developing the field of evidence-based dentistry, he is a key consultant to the American Dental Association (ADA) in this area. He is known internationally as an expert in the field of cardiology and evidence-based dentistry, and he played a leadership role in developing the Community Dental Health Coordinator Project for the ADA.

Dr. Ismail has established new innovative programs, such as the Advanced Dental Education Residency and Public Health Program and the Executive Health and Management Policy Program with a certificate degree in dental public health.

Awards he has received include the H. Trendley Dean Award from the International Association for Dental Research, the Award for Community Service from the Regents of the University of Michigan, as well as awards from the ADA and community organizations. For 5 years, he had the highest grades at the College of Dentistry, Baghdad University, where he received his dental training. He completed a master and doctorate of public health at the University of Michigan, and an M.B.A. from the Ross School of Business at the University of Michigan. He is also a diplomate of the American Board of Dental Public Health.

Matt Jacob is project manager for communications at the Pew Center on the States. For more than 25 years, Mr. Jacob has used his skills to assist nonprofit and advocacy organizations raise the profile of their issues and

translate their research into clear, compelling messages. In 1993, he wrote the slogan that the Clinton administration used to promote its national health care plan. Mr. Jacob's op-ed columns have appeared in *USA Today*, cnn.com, the *Los Angeles Times*, and many other media outlets. He has provided training on communication challenges at numerous conferences, including those sponsored by the Centers for Disease Control and Prevention and the American Public Health Association. He earned his bachelor's degree in journalism from the University of Arkansas.

Dushanka Kleinman, D.D.S., M.Sc.D., RADM (Ret.), serves as associate dean for research and professor, department of epidemiology and biostatistics, School of Public Health, University of Maryland (UMD), College Park. In this role she works closely with the school's senior leadership, faculty, and students and has devoted much of the past few years to the initial accreditation of this new School of Public Health. She earned her D.D.S. from the College of Dentistry at the University of Illinois at Chicago, followed by a dental internship at the University of Chicago Hospitals and Clinics. She also received an M.Sc.D. in dental public health from the Henry M. Goldman School of Dental Medicine at Boston University.

Prior to joining UMD in 2007, Dr. Kleinman completed 28 years of government service, where she most recently served as deputy director, National Institute of Dental and Craniofacial Research (NIDCR), National Institutes of Health (NIH), and assistant surgeon general, U.S. Public Health Service (USPHS) Commissioned Corps. In 2006, she also completed a 5-year term as the 15th Chief Dental Officer, USPHS. At NIH, Dr. Kleinman assumed the role of NIDCR acting director twice during transitions between directors. She coordinated the federal involvement in the development of the first-ever Surgeon General's Report on oral health (2000) and served as the first assistant director of the NIH Roadmap for Medical Research.

Dr. Kleinman is a diplomate of the American Board of Dental Public Health (ABDPH) and has served as president of several organizations, including the ABDPH, the American Association of Women Dentists, and the American Association of Dental Public Health. Her work on the epidemiology of oral mucosal tissue diseases and disorders and related activities has been recognized by multiple organizations. In addition to her UMD School of Public Health responsibilities, she currently serves on the editorial board of the *Journal of the American Dental Association* and is a board member of several organizations and foundations, including the USPHS Commissioned Officers Foundation.

Gregory McClure, D.D.S., is the state dental director for the Delaware Division of Public Health. His responsibilities include management of

dental public health activities, the statewide dental clinic system, and providing consultative services for the dental Medicaid program for other state programs that provide dental services. The integration of direct clinic services, Medicaid program development, and dental public health services creates a unique opportunity to link the programs synergistically for advancing oral health.

After graduating from Maurice H. Kornberg School of Dentistry at Temple University, Dr. McClure was in private practice in Binghamton, New York. While practicing there, he obtained his M.P.H. from the State University of New York at Albany, and his M.H.A. from Cornell University. He completed his dental public health residency with the New York State Department of Health, where he worked with county public health programs, focusing on the development of dental health delivery systems.

Dr. McClure is a member of several dental associations, including the American Dental Association, the Academy of General Dentistry, the American Association of State and Territorial Dental Directors, and the American Association of Public Health Dentistry. He serves as the clinical director for Delaware Special Olympics, and is a director for the Delaware Institute of Dental Education and Research.

Kathleen O'Loughlin, D.D.S., is executive director and chief operating officer of the American Dental Association (ADA). Prior to joining the ADA, Kathy served as the chief dental officer for United Health Group, and president and chief executive officer of Delta Dental of Massachusetts.

Dr. O'Loughlin practiced dentistry for more than 20 years in Medford and Winchester, Massachusetts, while serving as an assistant clinical professor at Tufts University School of Dental Medicine in the department of general dentistry as a course director. She received her bachelor's degree cum laude from Boston University in 1974 and her doctorate from Tufts University summa cum laude in 1981. In 1998, Dr. O'Loughlin received a master's degree in public health and health care management from Harvard University. She currently serves as a trustee of Tufts University and is a member of the executive committee and board of overseers for Tufts Dental School. Dr. O'Loughlin is a member of several dental organizations and has received numerous awards.

Gary Podschun is manager for Community Outreach and Cultural Competence with the American Dental Association (ADA). He provides leadership, management, and direction of the ADA's program and policy planning, development, implementation, and evaluation related to oral health disparities, social determinants of oral health, domestic volunteerism, and health promotion/disease prevention. These activities include the American Indian/Alaska Native Dental Placement Program, cultural/

linguistic competence in oral health care, health literacy in dentistry, and other issues of national significance impacting oral health care services. Mr. Podschun is a member of the American Public Health Association, American Rural Health Association and the Society for Public Health Education.

Lindsey Robinson, D.D.S., has maintained a full-time pediatric dental practice in Grass Valley for the past 16 years since receiving her certificate in pediatric dentistry from the University of Florida in 1995 and her D.D.S. from the University of Southern California in 1990. Dr. Robinson was a member of the American Dental Association (ADA) Council on Access, Prevention, and Interprofessional Relations (CAPIR) for 6 years, and during her tenure served as chair for 2 years. As CAPIR chair, she hosted two national access summits convened by the ADA, the American Indian/Alaska Native Oral Health Access Summit in 2007, and the Access to Care Summit in March 2009. She is a founding board member of the U.S. National Oral Health Alliance. Dr. Robinson currently serves as president-elect of the California Dental Association and is past chair of the California Dental Association Foundation.

Scott Wolpin, D.M.D., is the vice president/chief dental officer for Choptank Community Health System. Dr. Wolpin serves as a board of directors member for the National Network for Oral Health Access and the Eastern Shore Area Health Education Center. Additionally, Dr. Wolpin is past president of the Eastern Shore Dental Society and past president of the Association of Clinicians for the Underserved. He completed a hospital dentistry residency at Johns Hopkins Hospital, in Baltimore, Maryland, in 1990 after commencement from Tufts University School of Dental Medicine in Boston, Massachusetts. He holds academic appointments with the University of Maryland School of Dentistry and the Arizona School of Dentistry and Oral Health mentoring fourth-year dental students in community-based oral health. Dr. Wolpin serves as the assistant director for Lutheran Medical Center's advanced education in general dentistry residency program and provides hospital-based dental services for young children at Dorchester General Hospital. Dr. Wolpin provides public service to the community he lives in as a volunteer firefighter/emergency medical services provider. In 2003, Dr. Wolpin was nominated as Maryland Outstanding Rural Health Practitioner and Maryland Oral Health Hero in 2010.