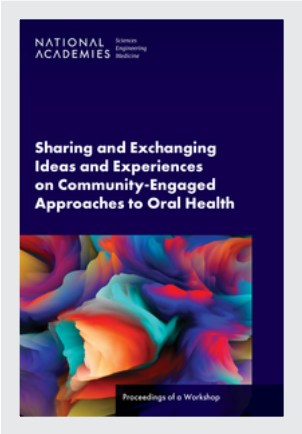

Sharing and Exchanging Ideas and Experiences on Community-Engaged Approaches to Oral Health: Proceedings of a Workshop (2023)

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Marian Flaxman, *Rapporteurs*

Global Forum on Innovation in
Health Professional Education

Board on Global Health

Health and Medicine Division

Proceedings of a Workshop

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PLANNING COMMITTEE ON SHARING AND EXCHANGING IDEAS AND GLOBAL EXPERIENCES ON COMMUNITY-ENGAGED APPROACHES TO ORAL HEALTH[1]

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This Proceedings of a Workshop was reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise. The purpose of this independent review is to provide candid and critical comments that will assist the National Academies of Sciences, Engineering, and Medicine in making each published proceedings as sound as possible and to ensure that it meets the institutional standards for quality, objectivity, evidence, and responsiveness to the charge. The review comments and draft manuscript remain confidential to protect the integrity of the process.

We thank the following individuals for their review of this proceedings:

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Although the reviewers listed above provided many constructive comments and suggestions, they were not asked to endorse the content of the proceedings, nor did they see the final draft before its release. The review of this proceedings was overseen by **MARTIN-J. SEPULVEDA,** CLARALUZZ LLC. He was responsible for making certain that an independent examination of this proceedings was carried out in accordance with standards of the National Academies and that all review comments were carefully considered. Responsibility for the final content rests entirely with the rapporteurs and the National Academies.

Acknowledgments

This passage is to thank the members of the planning committee who assisted with the development of the workshop agenda and, in particular, the co-chairs Isabel Garcia and Mayumi Willgerodt for their continuous support. Additional thanks go to the forum member–sponsors and to CareQuest Institute for Oral Health, with special recognition to Michael Monopoli for his endorsement of the workshop. Lastly, thanks go to the staff of the Global Forum on Innovation in Health Professional Education—Hannah Goodtree, Emma Rooney, and Patricia Cuff—who worked closely with the forum members, planning committee, and sponsors to make the workshop a thoughtful and engaging event for all the attendees.

Contents

1

Introduction[1]

OVERVIEW OF THE WORKSHOP

According to the World Health Organization (WHO), oral health "contributes to overall health, well-being and confidence" (World Health Organization, 2022) and is essential to a person's general health status. Yet oral health continues to be marginalized throughout the practice of health care, beginning with the way that providers are educated. This statement was communicated at the opening of the workshop by Isabel Garcia, the dean of the University of Florida College of Dentistry. The workshop, designed by a planning committee of experts, was intended to share ideas and experiences on public health approaches to oral health for interprofessional and transdisciplinary learning involving educators, health professionals, and community members. Titled Sharing and Exchanging Ideas and Global Experiences on Community-Engaged Approaches to Oral Health, the workshop took place on the afternoon of November 3, 2022, as an activity of the Global Forum on Innovation in Health Professional Education (forum membership can be found in Appendix B). The development of the workshop agenda was guided by a statement of task (Box 1-1). The full workshop agenda is provided in Appendix C. A list of planning

[1] The planning committee's role was limited to planning the workshop. This Proceedings of a Workshop was prepared by independent rapporteurs as a factual account of what occurred at the workshop. The statements, recommendations, and opinions expressed are those of individual presenters and participants and are not necessarily endorsed or verified by the National Academies of Sciences, Engineering, and Medicine. They should not be construed as reflecting any group consensus.

BOX 1-1
Statement of Task

A planning committee of the National Academies of Sciences, Engineering, and Medicine will organize and conduct public workshops to share ideas and experiences on public health approaches to oral health for interprofessional and transdisciplinary learning that includes educators, health professionals, and community members. Invited presentations will provide a foundation for discussing newly published WHO and FDI World Dental Federation definitions of community-engaged oral health and its application within, between, and across health professions.

The workshops will emphasize lifelong learning, the social determinants of health, and community engagement, as participants explore the development of innovative approaches and models for oral health workforce education and training in a global context. Three thematic areas will frame the workshops discussions, including:

- Data and evidence;
- Policy and regulation; and
- Interprofessional and transdisciplinary education and learning.

Following each workshop, a proceedings of the presentations and discussions will be prepared by a designated rapporteur in accordance with institutional guidelines.

committee members with biographical sketches can be found in Appendix D. While the workshop was primarily virtual, some of the speakers participated in person at the National Academies of Sciences, Engineering, and Medicine offices in Washington, D.C. This Proceedings of a Workshop is a mostly chronological summary of the presentations and discussions from the workshop.[2] In some instances, meaningful anecdotes from one portion of the workshop have been moved from their temporal location and grouped thematically to better illustrate deliberations on a topic.

Garcia and Mayumi Willgerodt, faculty in the Center for Global Health Nursing at the University of Washington, provided orienting remarks and introduced topics that would be discussed throughout the day, including data and evidence, policy and regulation, and interprofessional and transdisciplinary education and learning. Garcia told participants that the workshop was designed to provoke the consideration of oral health as a key

[2] Presentations from the workshop are available at https://www.nationalacademies.org/event/11-03-2022/sharing-and-exchanging-ideas-and-experiences-on-community-engaged-approaches-to-oral-health-a-workshop (accessed April 20, 2023).

component of overall health. She underscored that "separating the mouth from the body has not served people well" when it comes to addressing their overall health needs. Willgerodt added that in addition to a broad focus on educating the future workforce to treat the "whole person," the workshop would also discuss a unique population—infants—who do not yet have teeth. She then emphasized the importance of oral health across the lifespan and said the workshop would explore a prevention/promotion-focused model of oral health. These statements, shared during opening session, formed the foundation of the workshop.

As part of her opening remarks, Willgerodt provided an overview of the workshop that also set up the structure of this proceedings. The first half highlighted the roles of various health professionals in oral health and how they might work together to, in Willgerodt's words, "ensure the entire person is cared for in mind, mouth, body, and spirit." The second half focused on movement toward whole-person health promotion, prevention, and care, with an emphasis on underserved populations. Willgerodt also explained the workshop's attention to the role of educators in the transformation of oral health care, noting that health professional educators prepare the future workforce so they are in a good position to work collaboratively with community members and leaders. Garcia encouraged the audience to consider oral health inequities that involve the underlying social determinants of health and spoke of the importance of oral health throughout the entire lifespan. She then described the overall mission of the workshop as being to "provide a foundation for discussing [the] concept of community engaged oral health and how we can apply it within, between, and across health professions."

FRAMING THE WORKSHOP

Kaz Rafia, the chief health equity officer at CareQuest Institute for Oral Health provided the sponsor's welcome, commenting that oral health has become siloed by tradition, general attitudes, and methods of funding. He said that oral health has traditionally been viewed as separate from general health and medical care, which poses many challenges for oral health promotion and has led to "critical, system-wide inequities and gaps in delivery and outcomes of care."

Rafia then referred to WHO's updated definition of health (WHO, 2022), which Garcia had described as taking into account psychosocial dynamics such as self-confidence as well as the importance of oral health. To fulfill his organization's mission of building a future in which everyone can reach their full potential through optimal health, Rafia said, it is critical to appreciate the central role that oral health plays in overall health. Historically, he continued, the role of oral health in overall health

has been undervalued and overlooked, and he also spoke of inequities in access to oral health care and in the burden of oral disease. He described research from the CareQuest Institute, which found that Black Americans are 68 percent more likely to have unmet dental needs than white Americans. He spoke of the importance of addressing these inequities as well as of potential avenues of improvement in care and outcomes. Among the ideas he mentioned were the importance of integrating education and care between the medical and dental fields, the importance of integrating oral health into community health, and the benefits of advancing guidelines for integrating oral health into nursing and primary care. Rafia said that "meaningful system transformation towards [a system] that is more accessible, integrated, and ultimately more equitable demands collaboration and openness to learn from [international] paradigms . . . especially when it comes to movement towards training modalities that prioritize and invest in integrated education." With these remarks, Rafia welcomed a global audience of educators, health professionals, community leaders, and other key stakeholders to the workshop and set the tone for what would be a comprehensive, data-focused discussion.

2

Learning from Interprofessional Oral Health Models of Education

Key Points Made by Individual Speakers*

- A community-centered approach to oral health considers the social determinants of health and social inequities as barriers to care. (Mays)
- Oral health is subjective and dynamic, and it is essential to eating, speaking, smiling, and socializing without pain, discomfort, or embarrassment. (Weyant)
- The health of the mouth is connected to the health of the body and affects multiple facets of life. (Mallonee, Ziegler)
- It is important to establish the promotion of oral health as a best practice in clinical settings. (Haber)
- A patient's oral health is significantly affected by other areas of his or her life. (Hemmings)
- A crucial aspect of psychology training is giving oral health professionals the skills to care for patients who are in pain or afraid of dental care. (McNeil)
- Dentists do not "own the mouth," and neither does any other profession. (McNeilly)
- Dental hygienists could spend more time working in community settings to deliver preventive oral health care services to populations that are often left out of the current dental health care delivery model. (Lampron)

*NOTE: This list is the rapporteurs' summary of points made by the individual speakers identified, and the statements have not been endorsed or verified by the National Academies of Sciences, Engineering, and Medicine. They are not intended to reflect a consensus among workshop participants.

The first session of the workshop included a stage-setting presentation on integrating oral health into overall health from Keith Mays of the School of Dentistry at the University of Minnesota. The session was moderated by Lemmietta McNeilly from the American Speech-Language-Hearing Association. Their remarks were followed by a roundtable discussion on the oral health roles of different health professions which was facilitated by Robert Weyant from the University of Pittsburgh. The panel featured Hugh Silk from University of Massachusetts Chan Medical School, Lisa Mallonee from Texas A&M School of Dentistry, Jane Ziegler from Rutgers University, Rosemary Hemmings from the Oregon Health & Science University (OHSU) School of Dentistry, McNeilly, Judith Haber of the College of Nursing at New York University, Daniel McNeil of the University of Florida, and Colleen Lampron of AFL Enterprises, LLC. Discussants spoke about a collaborative approach to oral health care models, how to make health education more integrative, and how to prepare professionals, conceptually and in practice, to integrate oral health into overall health.

INTEGRATING ORAL HEALTH INTO OVERALL HEALTH

In his presentation on the importance of integrating oral health into overall health, Mays also spoke about current issues in oral health education and practice as well as the importance of visual storytelling in health care. Showing a collection of images that he described as commonly associated with the concept of "health care"—stethoscopes, white coats, syringes, bandages, and the heart—he pointed out that they did not include the mouth or oral health.

Mays spoke with the audience about the importance of advocating for dentists to be part of the overall health care team. "Oral health is just as important as overall health, and . . . oral health contributes to overall health," he said.

Mays also addressed the adverse oral health impacts of health professional shortage areas (HPSAs). As Figure 2-1 illustrates, according to data compiled by the Health Resources and Services Administration, access to oral health care is negatively affected by shortages in care providers. Across the United States, as of October 2022, there was a shortage of nearly 12,000 oral health care providers (HRSA, 2023). This shortage, Mays

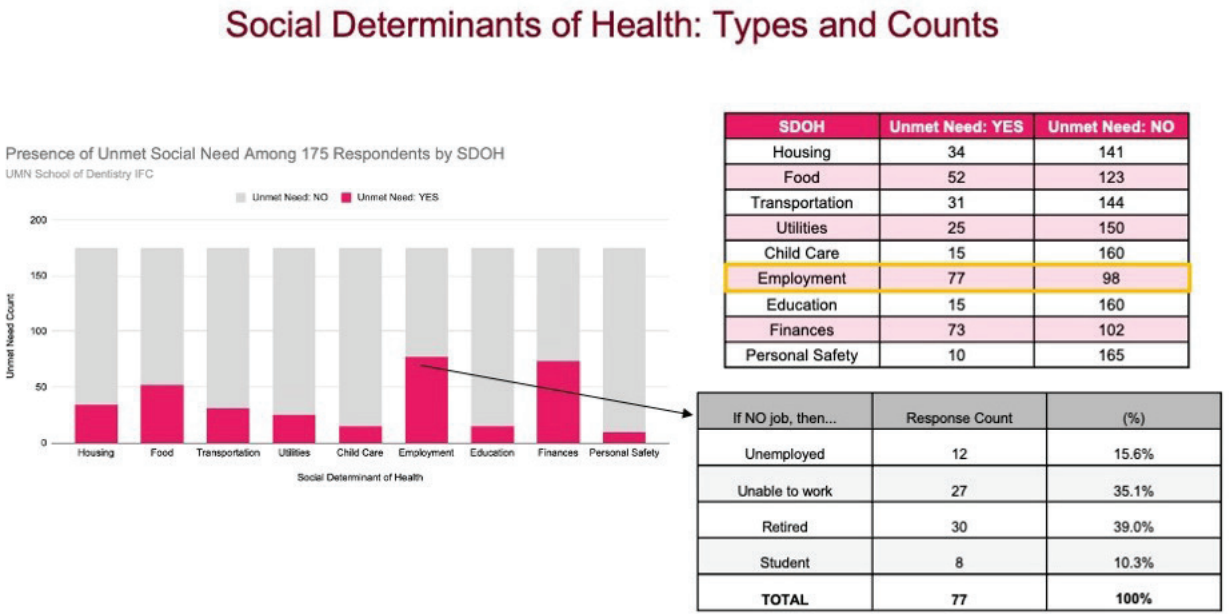
FIGURE 2-1 Data on health care provider and facility shortages across provider types.
*HPSAs (health professional shortage areas) are geographic areas, populations, or facilities with a shortage of primary, dental, or mental health care providers (HRSA, 2023). See https://bhw.hrsa.gov/workforce-shortage-areas/shortage-designation for details.
SOURCE: Presented by Keith Mays, November 3, 2022. https://data.hrsa.gov/topics/health-workforce/shortage-areas (accessed April 20, 2022).

said, affects access to care, and it is often lower-income Americans, who struggle to find providers who accept their insurance, who are negatively affected the most.

Mays then offered an example of the potentially devastating and deadly consequences of barriers to oral health care by telling the tragic story of Deamonte Driver, a young boy from Baltimore who died due to a dental illness. Driver suffered from an abscessed tooth, and his mother was unable to find affordable dental care for him. Lacking this basic dental care, Driver's abscess spread to a brain infection which tragically took his life at only 12 years old. Driver's death was completely preventable, Mays emphasized, and was caused by a lack of insurance, a shortage of providers, and insufficient access to care. Mays used this example to highlight the reality of untreated dental health problems as a critical public health issue. He noted that, in addition to premature death, lack of access to oral health care can also increase disease burden and adversely affect work productivity, mental health, and overall quality of life. Mays showed statistics demonstrating the oral health care disparity which indicated that in a single year, 108 million people do not visit a dentist, as compared with 27 million who did not see a primary care physician (Vujicic and Fosse, 2022). Mays concluded that an opportunity exists to address gaps in care access through an integrated, collaborative model of care. For example, barriers to accessing care could be reduced by geographically co-locating medical and dental offices, Mays proposed.

Mays also pointed to the challenges related to Medicaid coverage of oral health care as a major barrier to oral health and dental care access. While Mays noted that Medicaid expansion and the Children's Health Insurance Program have provided major improvements in oral health care access for low-income children, he said there is a need for continued improvement in these programs, especially with how they reimburse providers for dental exams.

Mays described the findings of a pilot study involving patients within a University of Minnesota dental clinic that examined those social determinants of health that affect access to oral health promotion, prevention, and care, noting that unemployment stood out as a major driver of unmet need (see Figure 2-2). In highlighting this, Mays reinforced the importance of a community-centered approach to oral health that considers the social determinants of health and social inequities as barriers to care. Mays discussed the differences between "oral health" and "dental health," explaining that oral health is more holistic, inclusive, and able to address the social drivers of health inequities. "It's not just about the tooth, it's about the patient's overall health," he said. "It's also about the patient's life, and . . . social determinants of health play a big role in our patient's care and their overall health." Mays agreed that it is important to educate and train dental



SDOH	Unmet Need: YES	Unmet Need: NO
Housing	34	141
Food	52	123
Transportation	31	144
Utilities	25	150
Child Care	15	160
Employment	77	98
Education	15	160
Finances	73	102
Personal Safety	10	165

If NO job, then...	Response Count	(%)
Unemployed	12	15.6%
Unable to work	27	35.1%
Retired	30	39.0%
Student	8	10.3%
TOTAL	**77**	**100%**

FIGURE 2-2 How specific social determinants of health affect access to oral health care, based on a survey of 175 participants at the University of Minnesota School of Dentistry.
SOURCE: Presented by Keith Mays, November 3, 2022.

students to screen for social determinants, encouraging them to look at the whole patient and not just the mouth.

In response to a question from McNeilly on how to better prepare the health care workforce to fulfill the needs of collaborative practice between oral health and medical care, Mays emphasized the importance of lifelong learning and professional education. He suggested that dentists view themselves as health care providers and simultaneously consider their patients' oral health and its connection to other health issues, such as cardiovascular disease or diabetes risk. Mays pointed to the COVID-19 pandemic as an example of the potential for health professionals to be trained to expand the types of care they provide; for example, since the middle of the pandemic pharmacists and community health workers have been administering vaccinations. This type of cross training could be important to oral health, Mays said, with dentists understanding themselves as part of the whole health care team. He also emphasized the potential to reduce overall health care costs through collaborative care.

For a successful transition to a new model of education and care, Mays suggested taking small steps, a theme that was also echoed later in the workshop by Lisa Mallonee, Julian Fisher, and Isabel Garcia. Overhauling the health care system to better integrate oral health and serve marginalized populations will be a major undertaking, he said, and he suggested a path forward in which change can happen with one small, impactful, and approachable step at a time. In closing, Mays described a program in which his dental students worked with a community obstetrics and gynecology clinic. Dental providers established relationships with patients, provided early oral health care to newborns and to expectant mothers throughout their pregnancies. This model of care was extremely successful, he said, and it illustrates the potential of a holistic and prevention-focused approach, which hopefully will be followed by other systems of care in the future.

THE ORAL HEALTH ROLES OF DIFFERENT HEALTH PROFESSIONS: A ROUNDTABLE DISCUSSION

Robert Weyant with the University of Pittsburgh School of Dentistry introduced a conversation centered around the critical question of how oral health can be more fully integrated into overall health, both conceptually and operationally. He spoke of oral health as a multi-dimensional concept, involving physical, psychological, emotional, and social domains. Oral health, Weyant said, is subjective and dynamic, and it is essential to eating, speaking, smiling, and socializing without pain, discomfort, or embarrassment. Unfortunately, Weyant added, oral diseases remain some of the most prevalent chronic diseases, despite the fact that they are largely preventable and persist in a socially patterned way, concentrating their

impact on socially marginalized populations. He detailed the findings from the National Institutes of Health's *Oral Health in America* (NIDCR, 2021) report, which reported that half of U.S. children do not receive dental care due to social, economic, or geographic obstacles. The report also found that half of adolescents experience decay and that nearly one in five adults experience moderate to high dental fear or anxiety. This anxiety acts as a barrier to seeking care and can also affect a parent's willingness to seek dental care for their children. Furthermore, Weyant said, there are additional barriers to care for certain populations, such as older adults, people with disabilities, people with cognitive impairments, people living in rural communities that lack dental services, and those living in care facilities who require team-based care. He also spoke of oral health during pregnancy, saying that harmful oral health patterns during pregnancy are linked to serious adverse health outcomes for both mother and baby.

Before engaging in discussions with the panel, Weyant presented key data that illustrated the need for improvements to U.S. oral health care practice. Like Mays, Weyant spoke of the barrier created by funding challenges, especially the lack of dental providers that accept Medicaid insurance. However, he said, the major insurance issue in dental health care is a lack of dental insurance at all, with 66 million Americans holding no dental insurance in 2018, twice the medical un-insurance rate (NIDCR, 2021). The costs of the resulting lack of care are immense; U.S. productivity losses due to oral health issues were estimated to exceed $45 billion in 2015, putting the United States highest among 195 countries. Emergency room visits for non-traumatic dental care needs average $1,000 per visit and cost the medical system $1.6 billion each year. All of these statistics, Weyant said, serve as evidence of the need to integrate oral health more fully into general health care.

Expanding on points previously made by Mays, Weyant pointed to policy challenges that exacerbate chronic access to care challenges among lower-income individuals. Later speakers, including Daniel McNeil from the University of Florida, Colleen Lampron with AFL Enterprises, LLC, and Michael Glick from the Center for Integrative Oral Health at the University of Pennsylvania, discussed topics including policy barriers and reinforcing the importance of oral health educators and leaders being actively involved in policy development and advocacy. For example, Weyant said that research shows cost to be the biggest barrier to routine dental care in the United States and that the way dental care is financed can be addressed through policy change. Therefore, Glick suggested, oral health professionals interested in broad improvements in oral health care in the United States should be prepared to engage with policy makers. Weyant added that a person-centered approach to care, when serving patients with multiple comorbid health conditions, including common oral diseases, will

require change at all levels. Specifically, he called for reform in policy, care financing, health care education, care delivery, workforce development, and professional collaboration.

Weyant concluded his introductory remarks by celebrating recent improvements in the field. He noted in particular the increase in the application of fluoride varnishes in primary medical care settings, changes in billing to allow for reimbursement in these new settings, and expanded Medicaid coverage for dental care for children. In the future, Weyant said, he hopes to see dental coverage incorporated into Medicare to better serve the oral health needs of U.S. seniors.

Next, Weyant facilitated a discussion with a panel of health professionals and educators representing medicine, public health, nutrition/dietetics, nursing, and psychology about the oral health roles of different health professions and how they can work across disciplines to promote oral health. Weyant began the conversation by highlighting the severity of the lack of oral health promotion and prevention in some communities in the United States. He then asked Mallonee and Ziegler, who are dietitians, to give their thoughts on the role of nutrition in oral and overall health.

Nutrition for Optimizing Oral Health

Mallonee spoke about the critical role of nutrition in optimizing oral health. She noted the importance of understanding the health of the mouth as being connected to the health of the body. She also talked about the role of nutrition professionals, such as dietitians, in working collaboratively as part of the oral health care team. It's important, Mallonee said, for dietitians to know if a client has tooth or mouth pain. Mallonee also addressed the social determinants of health as they pertain to oral health, nutrition, and the dietary recommendations made by dietitians. The word to consider, she said, is "accessibility." For example, does a patient live in a food desert? If so, what control does the patient have over his or her food choices and how can a practitioner acknowledge and help to address these challenges? Additionally, Mallonee spoke of the value in understanding a patient's level of health literacy and taking the time with each patient to explain how food choices affect oral health. Plainly stated, she said, "the same foods that cause cavities are the ones that put [excess] weight on our bodies." Mallonee spoke about the importance of addressing health through many levels, including policy, commenting that people with limited incomes often make food choices based on cost, and the most affordable foods are often also the most calorie dense and the least nutritious.

Reiterating a point made by Mallonee, Ziegler said that oral health and

nutritional health are intimately linked and that oral diseases can affect the health and nutritional status of a patient. She emphasized the need for interprofessional education, saying that ideally all health professionals should feel confident looking in their patients' mouths and referring abnormal findings to oral health professionals. She also spoke of the association between certain oral organisms and serious systemic health conditions, such as endocarditis and joint and bone infections. She talked about the two-way relationship between oral disease and overall health, noting, for example, that treatment of diabetes often improves symptoms of periodontal disease and that, conversely, the treatment of periodontal disease can improve blood glucose levels. Finally, Ziegler urged increased collaboration between medical and dental schools and among all health professionals.

Integrating Oral and Overall Health

Weyant posed a question about the role of nursing in oral health to Haber, who spoke about her work integrating oral health and overall health while leading the national Oral Health Nursing Education Practice program (AAN, 2021). The initiative provides grant funding to train nurses to support oral health and promotes systemic change in nursing by integrating oral health into overall health and establishing the promotion of oral health as a best practice in clinical settings. She said that because nurses are involved in all aspects of health care, they "bear witness to the impact of both acute and chronic community-based health problems, and the impact of oral health on overall health." Because of this, Haber emphasized, nurses are critically positioned to witness the impact of poor oral health on overall health and to positively affect outcomes. Noting the day's theme of pregnancy and infancy as critical windows for oral health, Haber added that the integration of oral health into overall health would ideally begin during pregnancy or preconception, with education focused on oral health literacy that can be passed down from mother to child. Finally, Haber spoke of the importance of having adequate data on oral health care, with robust documentation that can be shared across providers, such as an "interoperable electronic health record" as a means to improving care and elevating oral health. In closing, Haber underscored the importance of "making sure that oral health is on the health care scorecard."

Turning to the realm of primary care, Weyant posed a question to Silk, a primary care provider, about the role of primary care providers in oral health. Saying that more than 100 million people each year do not see a dentist but do see a primary health care provider, Silk suggested that these people would greatly benefit from better integration and coordination between primary care and oral health. However, he also mentioned the millions of other people who see neither a doctor nor a dentist each year and

stressed the benefits of considering the role of social structures and communities in access to care. Silk spoke of his work establishing the Center for Integration of Primary Care and Oral Health, which included creating core competencies for all heath care provider training. Through this center, Silk worked to launch the One Hundred Million Mouths Campaign (CIPCOH, 2023), an oral health campaign in all 50 states that engages medical schools, physician assistant schools, and residency programs to train the next generation of health care professionals to understand the mouth as a part of the body. Silk explained that fluoride varnishes are applied to children in primary care doctors' offices in Massachusetts as a result of the service being added to the routine standard of care for children enrolled in Medicaid, making doctors accountable for providing the service. This accountability measure helps to ensure that the Medicaid population, a group at particular risk for tooth decay, can benefit from access to the preventive service. Silk closed by assuring attendees that the tools to accomplish care integration already exist, but commitments to change are needed across states, towns, and institutions.

The Role of Social Workers in Oral Health Education

Weyant then spoke with Hemmings, a social worker, about the role of social workers in oral health and in the education of health professionals. Hemmings responded that social workers are well suited for this collaborative process because they are trained to view health through a broad, holistic framework. In her job at the Oregon Health and Science University School of Dentistry, Hemmings works with dental students and social work interns, focusing their studies on the social determinants of health. She encourages the students to get involved in legislative advocacy, noting, like previous speakers, the role of policy in improving health care. Through her work, Hemmings encourages future dentists to consider how the social determinants of health will affect their patients, including, for example, through access to transportation. She also trains dental students to recognize when a patient may need a referral for mental or emotional health care. She commented on the importance of dentists being able to recognize when a patient may be in crisis, how to approach such a patient, how to screen patients for substance use disorders, and when to refer them for additional support. Learning these lessons, Hemmings said, helps dental students begin to understand that the mouth is part of the body and that patients' oral health is significantly affected by other areas of their lives. It reframes patient care as the treatment of the whole person and teaches dental students that while they do not need to be an expert in the lived experiences of others, they do need to know how to approach and understand their patients and know where to refer them.

The Role of Psychology in Oral Health

Weyant asked McNeil about the role of psychology in oral health. McNeil, a psychologist, began by saying that psychology and the social sciences are inextricably intertwined with all aspects of oral health. Behaviors, perceptions, beliefs, attitudes, and cognitive factors all play important roles in oral health outcomes, he said; this includes the behaviors and attitudes of patients and caregivers as well as the behaviors and beliefs present in society and throughout the health care system. Psychology plays a role throughout the various areas of oral health, McNeil said, from dental hygiene to public policy to research. Psychology can be used in addressing mental health issues involved in oral health, such as dental fear and anxiety, he said, and there are numerous applications for psychology in interprofessional oral health care and education, including training on communication and interaction skills, understanding inequities, respectful and effective patient communication, and skills for interacting with public health, public policy, and other professionals that affect the quality of oral health care. McNeil mentioned that he is currently working on a project training oral health providers to use psychological tools to work with young children and their caregivers. The psychologically based tools address negative health behaviors and create patient-centered approaches to motivate positive change. McNeil identified giving oral health professionals the skills to care for patients who are in pain or are afraid of dental care as another crucial aspect of psychology training, as 15 percent of the population has dental fear or anxiety. At the same time, according to the Centers for Disease Control and Prevention, reports more than 40 percent of adults reported having mouth pain in the last year (CDC, 2022; Milgrom et al., 2010). Thus it is not rare for patients to experience mouth pain but also be anxious or fearful about getting treatment; it takes special skill, McNeil said, to effectively and compassionately work with patients who are in this acute mental state, and psychology can help provide effective tools to prepare oral health professionals for this delicate and difficult work. Holistic oral health care, McNeil said, would consider the emotional needs of the patient and promote positive health behaviors such as brushing and flossing, tobacco avoidance, and the use of mouthguards during athletic activities. In closing his dialogue with McNeil, Weyant noted his agreement that psychology plays an important role in oral health care and the importance of considering how patients' beliefs and attitudes affect their behaviors and how those behaviors, in turn, affect their oral health.

Weyant asked McNeilly, a speech-language pathologist, about the intersection of oral health and speech pathology. McNeilly began by noting that there is an important link between the two fields because any time people speak, they use their mouths. She also noted that speech pathologists

already perform mouth exams, making them well positioned to observe any issues in the mouth, consider whether or not the patient actively sees a dentist, and make the appropriate referrals. McNeilly spoke about the importance of interprofessional education and collaborative learning, suggesting that all health professionals would benefit from training programs, clinics, and internship experiences that enroll students and professionals from different disciplines in the same programs. She addressed the concerns of some health professionals who do not want to be perceived as operating outside their field or scope but echoed the sentiments of her fellow speakers when she said that dentists do not "own the mouth," nor does any other profession. All health practitioners should be willing to work collaboratively, build relationships, cross-train, and share skills across their various areas of expertise, she said. McNeilly also highlighted the importance of the early childhood window, remarking that if a 1-year-old child visits a speech language pathologist but has not yet seen a dentist, there could be a mechanism that triggers a referral to a dentist.

The Role of Public Health in Oral Health

Shifting focus to the field of public health, Weyant asked Lampron, a public health professional, about the role of public health in oral health. Lampron noted that the three core functions of public health are assessment, policy development, and assurance. Through this lens, public health recognizes the multifaceted nature of disease and focuses on addressing the individual, environmental, and social factors that contribute to better health outcomes. Public health also works to address health through a systemic framework, and to that end Lampron suggested envisioning what a new system that has been reimagined to improve health outcomes might look like. Considering the system more broadly, she said, allows for a better understanding of the current state of affairs, development of policies that improve outcomes, and monitoring of those outcomes to ensure continued achievement of desired results. She then described the interconnected nature of health care delivery and oral health equity (Figure 2-3).

What would health care delivery look like, Lampron asked, if everyone received the necessary support to attain their full health potential? Critical to this reimagining is addressing barriers in access to care and redesigning the oral health care model to focus on prevention; Lampron suggested that public health professionals could work with policy makers to ensure the financing and coverage of evidence-based services. For example, there has been some evidence to suggest that telehealth positively affects oral health, and Lampron said that coverage of telehealth for oral health care could play a large role in removing barriers to care access for those who struggle to get to the dentist. She also suggested that dental hygienists could spend more

FIGURE 2-3 A visual depiction of an interconnected health care system designed for oral health equity.
SOURCE: Presented by Colleen Lampron, November 3, 2022.

time working in community settings to deliver preventive oral health care services to populations that are often left out of the current dental health care delivery model.

Barriers and Facilitators to Interprofessional Collaboration in Oral Health

Weyant engaged the panel in a discussion about the barriers and facilitators to interprofessional collaboration in oral health. Hemmings began the discussion by saying that her background as a social worker provided her with a holistic lens with which to think about educating dental and social work students about social determinants, equity, and social justice. Her approach focuses on advocacy in educating students in the health professions on how the mouth is an integral part of whole-person care, and how the mouth projects negative impacts of social determinants. She also highlighted the importance of re-training veteran professionals as well as implementing collaborative education within the schools of medicine and dentistry. Haber said that one major barrier to interprofessional collaboration on oral health is a lack of knowledge and awareness about oral health in general, which implies that more integrative training is needed, starting with students having robust oral health clinical exposure during their education and training. She also suggested that it would likely be beneficial if faculty in health care programs received integrative and collaborative continuing professional education, and she said it would be valuable to integrate oral health metrics into primary health care standards, as this would require primary care doctors to take notice of oral health.

Continuing the discussion, Hemmings added that addressing the social determinants of health will be key to overcoming barriers and that special attention should be given to retraining dentists who have been in the field for decades but have not received training on a holistic perspective to oral health. Noting that medical school curricula evolve regularly, Silk commented that this creates opportunities to incorporate oral health into different programs. He recalled that just 5 years ago social determinants of health were seamlessly woven into medical training and suggested that the same could be done with oral health training. Silk said that oral health should not be the focus of any single class, but instead should be integrated throughout every lecture, such that the mouth is truly understood as part of the body. He spoke of successful past applications of this practice, such as foot exams and behavioral health exams becoming routine parts of primary care. The tools already exist to make these changes happen, he said, and the key will be to get people in the field excited to begin the work.

Mallonee agreed with Silk that dentistry should be worked into the overall health care curriculum in small, integrated pieces. She also suggested that dental hygienists and dentists could be trained to feel more comfortable

addressing the role of diet in their patients' oral health and that they could use more education and training to feel better equipped to do so. McNeil added that the field of psychology offers a model for integrated training. For example, he said, motivational interviewing is a tool from psychology that is integrated into other health professions and used extensively. In the same way, he said, pieces of oral health could be integrated into psychology programs, physical therapy programs, and other systems of care, and those areas of care could be integrated into oral health care in a bidirectional manner. Ziegler added that current health care students have an inherent understanding of the need for collaborative interprofessional care, but many established practitioners remain uncomfortable working outside of their own areas of expertise and addressing oral health. She suggested that a major focus should be on empowering current professionals to feel comfortable working on oral health and making referrals. Continuing the discussion about barriers and facilitators, Lampron chimed in that data remain one of the biggest barriers but can also be one of the greatest opportunities. For example, diabetes collaboratives with joint funding may lack the sort of accurate tracking information necessary for a provider to determine whether a medical patient had also had a dental visit. She said that when practitioners have meaningful patient data at their disposal, they are more able to make useful referrals and work collaboratively. This is especially important, she said, when it comes to at-risk subpopulations, such as pregnant women or people with diabetes. In a similar vein, Haber commented that a lack of electronic health records that cross between primary care and oral health care is a current barrier, and that such interdisciplinary records could be a major facilitator for interprofessional collaboration.

Willgerodt concluded the session by asking the panelists for their thoughts on expanding the role of dental hygienists in order to integrate them into primary care offices as dental therapists. Silk responded that having a dental hygienist in a medical office is beneficial and helps medical professionals increase their engagement with oral health practices such as fluoride varnishes. He said that with a dental hygienist in the room, learning about oral health practices can occur more fluidly, "through osmosis." McNeil added that the University of Florida currently has its first-year dental students work with students from other health professions to gain exposure to these areas. This early integration is beneficial and important to their future ability to work collaboratively and could help enable future health care practices that are more fully integrated between oral health and medical care. Willgerodt relayed a participant comment suggesting that if state regulations allowed trainees from one health profession to be supervised by providers from other health professions, it would be valuable to offer interprofessional education in which dental hygienists and dental therapists were educated together with other health care professions in hospitals and community centers.

3

Envisioning a New Education Model: Oral Health Promotion of the Mind, Mouth, and Body

Key Points Made by Individual Speakers[a]

- Oral health affects nutritional status, overall quality of life, and eventually, life itself. (Brown)
- Parents' dental anxiety can negatively affect their desire to take their children to the dentist. (Ford)
- Community health workers in Native American tribes help patients navigate their dental health needs and triage between concerns needing urgent treatment and those that could potentially wait to be addressed until the following year. (Thornton)
- Holistic dental health care involves understanding connections among the mind, mouth, and body. (Ahmed, Glicken)
- Holistic oral health education should be extended to sectors outside of health care that also touch the health of communities, such as social workers and teachers (Marshall, Stewart)
- Oral health could be better integrated into the sustainable development goals. (Glick)
- It is important to determine appropriate metrics for measuring the successful delivery of the agreed-upon value proposition. (Doll)
- There is a connection between mental and oral health conditions (Matanhire)
- The community itself knows best what it needs. (Albino)

- Education, if designed well, is collaborative, team-based, and focused on integrating oral health into the overall health care delivery system. (Stewart)

[a] This list is the rapporteurs' summary of points made by the individual speakers identified, and the statements have not been endorsed or verified by the National Academies of Sciences, Engineering, and Medicine. They are not intended to reflect a consensus among workshop participants.

LIVED EXPERIENCES AND VISIONS FOR IMPROVED MODELS OF CARE

The second half of the workshop began with an introduction from the session moderator, Anita Glicken of the National Interprofessional Initiative on Oral Health. The session featured several community health workers and individuals with meaningful lived experiences in the realm of oral health. These lived experiences highlighted the impact of, importance of, and considerations regarding proper oral health promotion, prevention, and care for vulnerable populations. The sharing of lived experiences led to a discussion with oral health and health education professionals about how to improve and integrate oral health education to make it more holistic and comprehensive.

The first to share her lived experience was Trina Brown, founder and chief executive officer of NeuroPathic Trainers and DataCivility, author, caretaker, and health care advocate. Brown grew up in rural Virginia as the youngest of 10 children from a coal mining family. She became the primary caretaker for her oldest and closest sibling when, after a lucrative career at a local nonprofit, this sister was diagnosed with early onset dementia. Her sister developed dementia in her 40s and lived for nearly two decades with the debilitating neurodegenerative illness. While caring for her, Brown saw how her sister's capacity to care for herself diminished over time, leading Brown and her family to transfer Brown's sister to a full-time care facility. After the move, Brown continued to function as her sister's caregiver as well as her advocate. For the last 18 months of her life, Brown's sister could not speak at all, and Brown needed to decipher and convey her sister's needs to providers in order to ensure that all aspects of her mental and physical health were cared for. Oral health and dental care were among Brown's concerns. Brown knew the importance of good oral health, which affected everything from what foods her sister was able to eat and thus her nutritional status, to her overall quality of life and, eventually, to her life itself. Brown's sister passed away from a dental abscess because her care providers did not know how to communicate with her

sister in ways that could persuade her to open her mouth and cooperate with a dental exam.

Brown noted that patients in nursing facilities require a different level of care from providers who are trained to work with people who cannot fully communicate, may struggle to open their mouths, and may need special toothbrushes or need to have their teeth cleaned with swabs. Her sister's facility did not have adequate dental resources in place, Brown said. Her sister's story also showed how important it is to understand the mental side of oral health and dental care in considering the whole person, Brown said, and she suggested that if doctors felt more comfortable looking in patients' mouths and if the state of oral health promotion and prevention for people in nursing homes could be improved, patient health would be addressed more holistically. Glicken commented that Brown's sharing of her sister's story had provided insights into opportunities to help other people in similar situations in the future.

Next to speak was Ashley Ford with the Healthy Kids Project and Care South Carolina. A community health worker, Ford spoke about the oral health needs of communities, sharing her experience in both community health and oral health working with schools, communities, children, and families. Ford told the story of a young student with chronic mouth pain whose mother had avoided taking her to the dentist. The school nurse involved a social worker who called the home many times, but there was no response, and the child continued to complain of pain. Finally, Ford visited the child's home and met with the mother. The mother confided in Ford that she herself had dental anxiety, which made her hesitant to take her child to the dentist. Ford empathized, listened, and explained to the mother that oral health is connected to the rest of the body and that mouth pain can negatively impact other aspects of her child's life, such as how she eats and drinks. Ford explained that maintaining oral health is important for a child's overall quality of life. By taking the time to reach the mother and engage fully, Ford was able to get dental care for this child and positively affect the family's overall health behaviors. This story highlighted the important role of community health workers in educating families about oral health.

Another community health worker shared her experience working with Native American tribes in Oklahoma. Angel Martinez-Thornton is a member of the Sac and Fox nation and a community health worker who works with rural tribal populations. She talked about some of the unique barriers to care experienced by people living on tribal land. Tribes are allocated very limited funds to spend on dental care, and once that money is gone there are no additional funds for dental insurance to cover the costs of additional care. Thornton explained that community health workers in these communities help patients navigate their dental health needs and triage between issues needing urgent treatment and those that could potentially wait to

be addressed until the following year. Thornton noted the limited scope of care facilities available to Native populations and the complexity of the paperwork required to get a referral to a non-Native facility. She also highlighted additional barriers to care, such as transportation and family structures. For example, elder grandparents who are raising a child may have mobility issues or other challenges that affect their ability to facilitate their grandchild's care. In describing each of these scenarios, Thornton spoke of the role of community health workers in helping patients navigate complex and confusing circumstances and in assisting some of the most marginalized patients in receiving the oral health care that they need.

The next speaker was Md Koushik Ahmed, who spoke about dental health care in rural Bangladesh. Ahmed described the importance of understanding connections among the mind, mouth, and body. He said that people are more focused generally on their bodies than on their mouths or minds and that in Bangladesh the health care system is structured in such a way that oral health often gets left out. "Oral health care is basically neglected," he said. Health care in Bangladesh is highly pluralistic, and no one group dominates. Nongovernmental organizations work alongside the government to provide health care. The health-focused groups in Bangladesh have a variety of focus areas, but according to Ahmed, none of them prioritize oral health. If a child has a mouth-related issue, the rural pharmacy, front-line community health workers, or other informal health workers are the first to respond. These providers have only basic training—or sometimes no training at all—in oral health, yet these poorly trained and untrained workers are the first line of defense for oral health needs. When adult have oral pain, they go to the pharmacy for treatment. Only if their initial treatment fails will they see a dental specialist. In this way, dental care and oral health are extremely siloed and disenfranchised in Bangladesh. Recently, Ahmed said, Bangladesh has made progress in training people to serve as frontline community health workers, make house visits, and communicate directly with community members to educate them about health issues. Some community health workers in Bangladesh work on commission, which encourages them to reach more people and more households. They also experience increased social capital from their roles as community health workers. Ahmed said the system in Bangladesh has struggled to provide adequate oral health and dental care across the nation but has worked to create new and innovative strategies to build out their community health teams and reach more people with health education that includes aspects of oral health. Glicken thanked Ahmed for sharing the story with the group and providing an example of a way to expand outreach and education for oral health.

Glicken asked the session's speakers to reflect on their work with underserved communities and speak about how to meet the needs of these

communities, with specific consideration for the mind–mouth–body connection. Thornton responded that care should be proactive rather than reactive and should be focused on preventive treatments. Oral health education should be another key area of focus for the community, including teaching people how to brush and floss and providing toothbrushes. Thornton said that when she works with groups of children, she and her team dress in scrubs to show the children that health care professionals are not intimidating or scary. Thornton recounted a story of a child with extreme dental fear who overcame this fear after working with Thornton's team and receiving the gift of a new toothbrush.

Brown added that community health workers and care providers could go into schools, churches, nonprofit organizations, and other community hubs to offer dental screenings and education services. She has seen evidence of success with this approach in other areas of health care, she said.

A virtual participant asked the speakers for their thoughts on the potential for telehealth to have a positive impact on barriers to care. Brown said that she believes telehealth could provide a major improvement in access to care within nursing facilities. Ford added that telehealth for dentistry would be a major benefit to the communities with whom she works, as it would increase access for working parents with busy schedules. Glicken closed the discussion by noting that as long as oral health remains siloed from the health of the rest of the body, getting collaboration for holistic health care will be difficult, and oral health will not be seen as an essential component of whole person care.

EXPLORING A NEW MODEL FOR DESIGNING DEMONSTRATION PROJECTS: BARRIERS AND OPPORTUNITIES IN THE FUTURE OF ORAL HEALTH EDUCATION

The final session of the workshop featured a panel discussion on community-integrated oral health projects and best practices in oral health education. The session was moderated by Richard Berman of the University of South Florida and Julian Fisher of the Charité University Berlin. Initial discussants included Michael Glick from the Center for Integrative Global Oral Health at the University of Pennsylvania, Teresa Marshall of the University of Iowa College of Dentistry, and Bruce Doll of the Uniformed Services University of the Health Sciences. The conversation was later expanded to include global representatives with community-engaged experiences in oral health. Those discussants included Rita Villena of the University of San Martín de Porres in Peru, Cleopatra Matanhire from the Oral Health for Mental Health Patients Project in Zimbabwe, Lisa Mallonee of the Texas A&M School of Dentistry, Judith Albino of the Colorado School of Public

Health, and Jeffery Stewart of the American Dental Education Association. The session began with an introduction from Berman and Fisher.

Berman started by describing the main focus of his career, which has been on the effective translation of scientific developments rather than on oral health. "There is no question that the mouth and the mind and body are connected," he said, adding that issues of health status are often interconnected with a person's zip code or geographic location, as their location affects their access to resources. He spoke of the need not just to describe problems, but to actively work toward solutions. Berman invited listeners to consider how caregivers of young children could be better supported in promoting children's oral health. Fisher then joined the introduction, encouraging the audience and policymakers to place oral health at the center of the global health agenda. Glick agreed, further supporting the idea of oral health having "a seat at the table" and calling for the creation of "oral health in all policies."

Fisher underscored how the mouth is integral to every aspect of our lives. He reiterated a message from previous speakers, including Mays, that the first few years of life are a critical window for oral health and that it is much easier to create good habits early in life than to correct bad habits later. Fisher suggested that oral health move "out of the bathroom," beyond the act of toothbrushing, and become embedded into other health programs. He emphasized the importance of collaboration across fields, saying that professionals such as social workers, psychiatrists, doctors, and community health workers could be more involved in promoting and supporting oral health.

On this point, many panelists added their thoughts. Stewart suggested extending holistic oral health education to sectors outside of health care that also touch the health of communities, such as social work and education. Marshall commented that people in underserved communities often engage with non-physician care providers, such as social workers and teachers. She suggested that offering oral health education and experiential learning to these providers could help make them be more empowered to engage in conversation with their clients about oral health and disease prevention. Fisher continued his comments by asking about the need for integrative policy approaches that consider how health affects other sectors and how other sectors affect health. He suggested that teaching people about health in all policies could address the social determinants of health as well as the social determinants of lifelong learning.

Glick spoke about how prevention-focused oral health could be framed for policy makers as an opportunity to improve economic outcomes. He described a meeting that he had with a former governor of Kentucky, in which he learned that explaining the impact of oral health care on the state's economy, health care costs, and the health of the state's workforce could be a way to get a politician's attention. Glick also highlighted the

benefits of educating and training dental students on political advocacy to advance oral health policy. To do so, Glick said, one needs to understand what is important to politicians and frame the conversation through that lens. He emphasized the importance of broadening research to include the more holistic framework that had been discussed throughout the workshop and suggested that oral health be better integrated into the United Nations' Sustainable Development Goals). Glick then returned to a point made by previous speakers about integrating oral health into other realms of health care. He reminded the group that oral health promotion starts during preconception, pregnancy, and infancy, before a child has teeth, making supporting the health of pregnant mothers and infants a critical window of opportunity. Mallonee elaborated on this point, noting that the focus of oral health policy could be more effective if looked at across the entire life cycle.

Glick closed his remarks with what he acknowledged to be a controversial point, asking if the "right people" are being accepted into dental school, i.e., those focused on oral health from a holistic, prevention-focused perspective and interested in serving the needs of marginalized populations and communities. Dentistry is often viewed as an elite field and an opportunity for wealth accumulation, he said, but assuming that dentistry's aim is to serve the needs of communities, he posed a question that he termed "little bit controversial": "Do we actually accept the right people into dental school?" Perhaps, he suggested, admissions processes might be altered to shift the focus of oral health toward community health and prevention, given that a gap exists between dental education practices and community needs. To help close that gap, Glick said, oral health promotion could benefit from a celebrity spokesperson who could help normalize a prevention-based approach to oral health. He gave the example of a famous athlete serving as an advocate for mental health and said that oral health would also benefit from hearing the perspective of a well-known patient.

Doll reinforced the importance of data in measuring and evaluating progress in the field, saying, "if you can't measure it, you won't accomplish it." Doll added, "if it's not documented, it didn't happen." He then asked about whether the methods that professionals use to approach communities properly communicate the benefits that health professionals intend to provide. Doll suggested creating an agreed-upon value proposition between the community and the health care professionals, and Mallonee further urged that health care professionals involve community members in care planning discussions. Doll underscored the importance of determining appropriate metrics for measuring the successful delivery of the agreed-upon value proposition. As an illustrative example, he spoke about a community in rural Alaska. In this community, he said, it is very difficult to access high-quality oral health care, and many community members simply want to eliminate

diseased teeth from their mouths. He spoke of a young woman with decay in her two front teeth, who went on to have those teeth removed. This left her free of disease, but also missing two teeth critical for eating, speaking, and smiling. In speaking about the importance of identifying the measure for success, Doll said, "if the metric is elimination of disease, you get a pretty high score. But if the metric is oral health, I'd say the score is a lot lower." In telling this story, Doll reinforced the importance of knowing the performance metrics and staying open to routinely reevaluating them.

Marshall, Mallonee, Albino, and Doll spoke about the importance of interventions and messaging being culturally appropriate, sensitive, and realistic. For example, Marshall said, in messaging about healthy eating for oral health, one must consider the availability of certain healthy foods within a community. Mallonee emphasized the importance of meeting people where they are and tailoring health messaging, and Albino suggested learning about a community's culture and day-to-day lives. She highlighted the importance of asking community members about their values and perceived barriers to success in order to better address the barriers and deliver success as measured by those values. Doll closed the panel by reinforcing the importance of working with pregnant women to establish metrics for measuring the value of preventive oral health care and for educating other community-based health professionals on oral health.

Further expanding the conversation, Berman and Fisher turned to two presenters from outside the United States, who described lessons learned from incorporating oral health promotion and prevention into non-dental health clinics. First to speak was Matanhire, a public health dentist in Zimbabwe who shared her experiences with integrating oral health into mental health, community-based programs in Zimbabwe. She led off by describing a surge in drug and substance use in 2020—and subsequent dental complications—in connection to the COVID-19 pandemic; however, prior to COVID, Matanhire and her colleagues had noticed that mental health patients suffered from multiple problems caused or exacerbated by a lack of oral health attention. She further spoke about the connection between mental and oral health conditions and about the intersection of oral disease, drug abuse, and mental health, noting how mental health patients often have many overlapping issues that could be addressed concurrently. Oral health challenges reduce patient quality of life, she said, and special attention could be paid to understanding the oral health burden of people with mental health challenges and how these challenges contribute to their reduced quality of life. With funding from the FDI World Dental Development Fund, Matanhire set up Transformation of Oral Health Care of Mental Health Patients in Zimbabwe to International Best Practices (Mashiri, 2022). To accomplish this, Matanhire needed to collaborate with mental health specialists and be integrated into their current clinics. The

first phase, in 2021–2022, involved a survey that confirmed Matanhire's hypothesis about the oral–mental health connection and provided details on the sorts of education and training needed to serve the oral health needs of mental health patients. These survey results led to a manual and training workshop. Matanhire is now into phase two of the project, conducting a mental–oral health burden assessment with the intent of scaling and spreading her oral–mental health, community-focused training model for health professionals.

The second presenter was Villena, who spoke about her work in community oral health in Peru. Her program brings nurses and dentists together to serve very young children. The need for her program was arose from national data showing that there had been no significant reduction in dental carries in the last decade for children under age 6 and a prevalence rate of greater than 70 percent based on World Health Organization criteria (Castillo et al., 2019). Given the high prevalence rate, starting at 3 years was too late, Villena said. In the strong national Peruvian immunization program, with 92 percent coverage, she and her team saw an opportunity to reach very young children. Villena and her colleagues installed their pilot within the successful immunization program, where the nurses are in charge. This 4-year prospective study was designed for nurses and dentists to be trained to work with infants' oral health. An oral health card was used to integrate oral health into the immunization appointments. Their results showed 10 percent caries in their population versus 60 percent in controls and demonstrated cost savings through oral health promotion in very young children. Villena reiterated a point that had been mentioned throughout the workshop, saying "it is always better and easier to establish a good habit earlier in life than to try to change a bad one."

Keeping to the theme of community-engagement and value proposition, Fisher asked Albino to share her thoughts on the importance of integrating health care teams in addressing the social determinants of health while focusing on the unique social needs of individual communities. Albino began by reflecting on her own experiences, saying that when planning health intervention programs and conducting research for Indigenous peoples, the community should be brought into the planning. The community itself knows best what it needs. She then brought up two additional related points. First, it is important to consider the entire lifespan of participants and to address the varying needs of the different age groups being served. For example, while it is critical to focus on the needs of young children, health professionals might also consider that, in the coming decades, the needs of elder populations will overwhelm the system if appropriate preparations are not made. It is critical, Albino said, to embrace new models for oral health providers, including using mid-level providers as a preferred alternative to no dental care at all. Mallonee underscored the importance

of Albino's messages before commenting on community engagement. She suggested the use of "bite-size" pieces of oral health information so as to not overwhelm patients or communities with too much guidance at once. In her experience, she said, small wins will motivate people to maintain their oral health routine. This harkened back to the earlier words of McNeil, who spoke about the role of integrating tools from psychology into oral health and dental care.

Stewart, in his remarks, reiterated the importance of interprofessional education, saying that education, if designed well, will be collaborative, team-based, and focused on integrating oral health into the overall health care delivery system. He also reminded the group of the importance of continuing to educate practitioners in addition to improving education for students. In this way, the existing health care workforce would become competent in and role models for interprofessional collaborative care, teamwork, roles and responsibilities, and interprofessional communication. He suggested modeling this work after successful programs in other countries, where oral health has been successfully integrated into overall health care, and extending the education to practitioners outside of the traditional health care framework to include all professionals who may have a meaningful impact on the health of individuals and communities.

Berman closed the discussion by highlighting a key point that had been made by prior speakers. He said that to be successful, it is important to keep the person at the center of the health promotion, prevention, and care efforts, and practitioners can meet people where they are and help them achieve their own definition of success. He reminded the audience of the importance of listening to communities and asking them about their needs. Garcia drove home the need for a community-engaged approach to oral health and a new education model. This is a moment, Garcia said, for dentistry to expand in a meaningful and effective way and for oral health to integrate into other avenues of health care, while recognizing the importance of the social determinants of health. Willgerodt added her closing remarks, urging each person in the workshop to use their own positions and expertise to promote oral health. With these words, the workshop concluded, with inspiration that the future of oral health education would be collaborative and focused on overall health promotion.

A

References

AAN (American Academy of Nursing). 2021. American Academy of Nursing Edge Runners: Oral Health Nursing Education and Practice Program. https://www.aannet.org/initiatives/edge-runners/profiles/oral-health-nursing-education-and-practice-program (accessed February 10, 2023).

Castillo, J. L., C. Palma and A. Cabrera-Matta. 2019. Early childhood caries in Peru. *Frontiers in Public Health* 7:337.

CIPCOH (Center for Integration of Primary Care and Oral Health. 2023. *100 Million Mouths Campaign*. https://cipcoh.hsdm.harvard.edu/one-hundred-million-mouths-campaign (accessed February 10, 2023).

CDC (Centers for Disease Control and Prevention). 2022. *Oral health conditions*. https://www.cdc.gov/oralhealth/conditions/index.html (accessed February 10, 2023).

HRSA (Health Resources and Services Administration). 2023. *Health workforce shortage areas*. https://data.hrsa.gov/topics/health-workforce/shortage-areas (accessed May 6, 2023).

Mashiri, P. 2022. Oral Health for Mental Health Patients Manual launched. *Health Times*, June 27. https://healthtimes.co.zw/2022/06/27/oral-health-for-mental-health-patients-manual-launched/ (accessed May 6, 2023).

Milgrom, P., J. T. Newton, C. Boyle, L. J. Heaton, and N. Donaldson. 2010. The effects of dental anxiety and irregular attendance on referral for dental treatment under sedation within the National Health Service in London. *Community Dentistry and Oral Epidemiology* 38(5):453–459.

NIDCR (National Institute of Dental and Craniofacial Research). 2021. *Oral health in America: Advances and challenges: Executive summary*. Bethesda, MD: National Institutes of Health. https://www.nidcr.nih.gov/sites/default/files/2021-12/Oral-Health-in-America-Executive-Summary.pdf (accessed May 5, 2023).

Vujicic, M., and C. Fosse. 2022. Time for dental care to be considered essential in U.S. health care policy. *AMA Journal of Ethics* 24(1):57–63.

WHO (World Health Organization). 2022. *Global status report on oral health 2022*. Geneva: World Health Organization.

B

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C

Workshop Agenda

SHARING AND EXCHANGING IDEAS AND GLOBAL EXPERIENCES ON COMMUNITY-ENGAGED APPROACHES TO ORAL HEALTH

NOVEMBER 3, 2022

2:15 pm **Session One: Learning from Interprofessional Oral Health Models of Education**

Welcome from the Co-chairs
- **Isabel Garcia,** College of Dentistry, University of Florida
- **Mayumi Willgerodt,** Center for Health Sciences Interprofessional Education, University of Washington School of Nursing

2:25 pm **Welcome from the Sponsor**
Kaz Rafia, Chief Health Equity Officer, CareQuest

2:30 pm **Interprofessional Health Professions Education in Oral Health**
Setting the Stage: Integrating Oral Health Into Overall Health
Moderator: Lemmietta McNeilly, American Speech-Language-Hearing Association
Keith A. Mays, Dean, School of Dentistry, University of Minnesota

2:50 pm **Oral Health Roles of Different Health Professions**
Framing the Discussion/ Moderator: Robert Weyant, University of Pittsburgh, School of Dentistry

Roundtable Discussants:
- Medicine: Hugh J. Silk, University of Massachusetts, Chan Medical School
- Nutrition/Dietetics: Jane Ziegler, Rutgers Biomedical and Health Sciences, and Lisa Mallonee, Texas A&M School of Dentistry
- Social Work: Dr. Rosemarie Hemmings, Oregon Health & Science University School of Dentistry
- Speech-Language-Hearing: Lemmietta McNeilly, American Speech-Language-Hearing Association
- Nursing: Judith Haber, College of Nursing, New York University
- Psychology: Daniel W. McNeil, University of Florida
- Public Health: Colleen Lampron, AFL Enterprises, LLC

3:55 pm **Break**

4:10 pm **Session Two: Holistic Health Promotion of the Mind, Mouth, and Body: Envisioning a New Educational Model**

Oral Health Promotion (mind, mouth, body): Addressing Social Determinants
Moderator: Anita Glicken, National Interprofessional Initiative on Oral Health

A conversation with Dr. Brown:
Dr. Trina Brown, Founder/Chief Executive Officer NeuroPathic Trainers and DataCivility, Sister and Caretaker

Panel Discussion on Oral and Holistic Care in Underserved Communities
Panel Discussants:
- Ashley N. Ford, Community Health Worker, CareSouth Carolina
- Angel Martinez-Thornton, RN, Community Health Worker, Sac and Fox Nation, Oklahoma
- Md Koushik Ahmed, Community-Based Experiential SDH Learning, Bangladesh

5:00 pm **Operationalizing a New Model for Designing Demonstration Projects**
Moderators: Richard Berman, University of South Florida, and Julian Fisher, Charité University Berlin

Roundtable Discussants:
- Michael Glick, Center for Integrative Global Oral Health, University of Pennsylvania
- Teresa Marshall, University of Iowa College of Dentistry
- Bruce Doll, Uniformed Services University of the Health Sciences

Expanding the Conversation: Workshop planning committee joins the discussion
- Rita Villena, University of San Martín de Porres, Peru
- Cleopatra Matanhire, Oral Health for Mental Health Patients Project, Zimbabwe
- Lisa Mallonee, Texas A&M School of Dentistry
- Judith Albino, Colorado School of Public Health
- Jeffery Stewart, American Dental Education Association

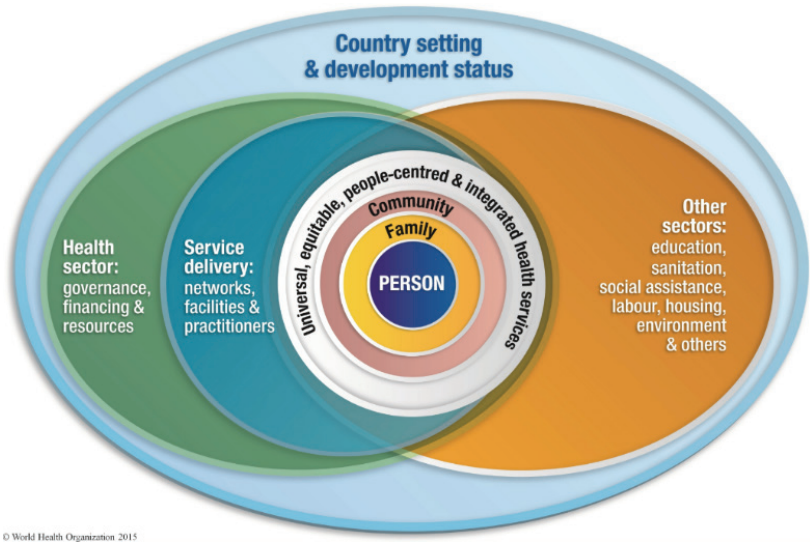
Open Mic: All participants are welcome to join the discussion.
Next steps for demonstration projects

6:05 pm **Closing by the Co-chairs**

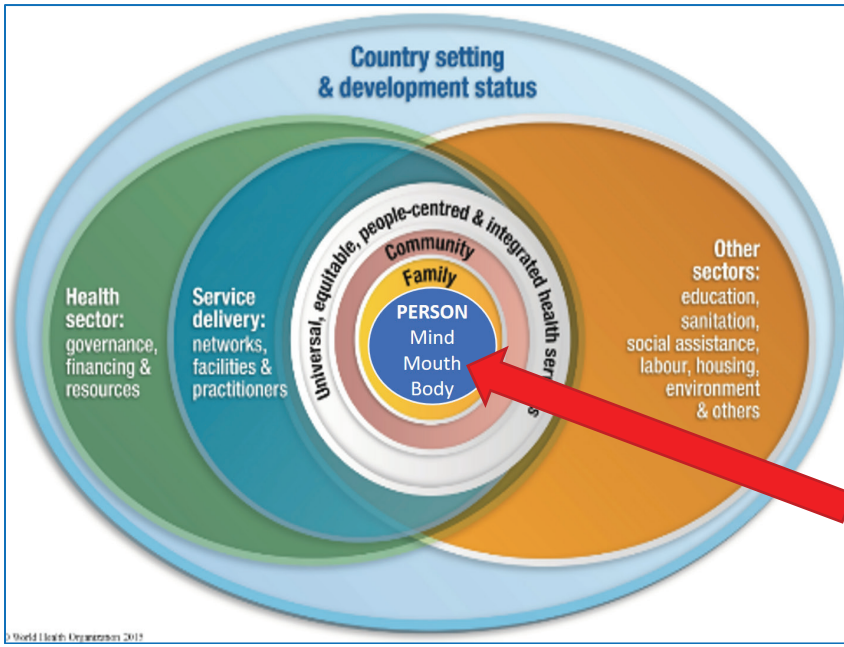
6:15 pm **Adjourn**

The below figures are provided within the agenda to help inform discussions during the workshop session on "Operationalizing a New Model for Designing Demonstration Projects." The first two figures provide a visual for how the WHO (2015) model could be adapted to emphasize the point that person-centered care includes the mind, mouth, and body together as one. The figure by Glick et al. (2016) further underscores the notion that good oral health is a key part of overall health and well-being that are impacted by social and other determinants.

World Health Organization Model of Person-Centered Health Services



SOURCE: Adapted from WHO (2015) model of person-centered (mind, mouth, body) health services.



Resources:

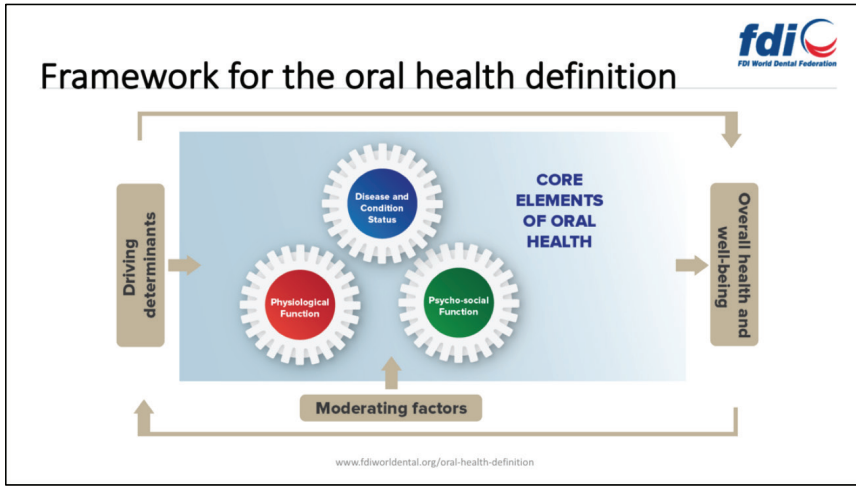
FDI World Dental Federation's definition of oral health

Oral health is multifaceted and includes the ability to speak, smile, smell, taste, touch, chew, swallow, and convey a range of emotions through facial expressions with confidence and without pain, discomfort, and disease of the craniofacial complex.

Further attributes of oral health:

- *It is a fundamental component of health and physical and mental well-being. It exists along a continuum influenced by the values and attitudes of people and communities.*
- *It reflects the physiological, social, and psychological attributes that are essential to the quality of life.*
- *It is influenced by the person's changing experiences, perceptions, expectations, and ability to adapt to circumstances.*

SOURCE: M. Glick, D. M. Williams, D. V. Kleinman, M. Vujicic, R. G. Watt, and R. Weyant. 2016. A new definition for oral health developed by the FDI World Dental Federation opens the door to a universal definition of oral health. *British Dental Journal* 221(12):792–793.



SOURCE: Glick et al. (2016).

WHO Director-General's definition of oral health

Oral health is the state of the mouth, teeth and orofacial structures that enables individuals to perform essential functions, such as eating, breathing and speaking, and encompasses psychosocial dimensions, such as self-confidence, well-being and the ability to socialize and work without pain, discomfort and embarrassment. Oral health varies over the life course from early life to old age, is integral to general health and supports individuals in participating in society and achieving their potential.

SOURCE: World Health Organization. 2022, April 27. Oral health. Seventy-Fifth World Health Assembly: Provisional Agenda Item 14.1.

NIH Report, Oral Health in America: Advances and Challenges

Direct link: https://www.nidcr.nih.gov/sites/default/files/2021-12/Oral-Health-in-America-Advances-and-Challenges.pdf.

New ASTDD Older Adult Oral Health Resources for Collaboration

Direct link: https://www.astdd.org/astdd-older-adult-oral-health-resources-for-collaboration.

Designing Oral Health Curriculum That Facilitates Greater Integration of Oral Health Into Overall Health, by Keith Mays, D.D.S., M.S., Ph.D.

Direct link: https://www.frontiersin.org/articles/10.3389/fdmed.2021.680520/full

D

Planning Committee and Speaker Biographies

Isabel Garcia, D.D.S., M.P.H. (*Co-Chair*), joined the University of Florida College of Dentistry as dean on Feb. 16, 2015, after retiring from the U.S. Public Health Service in 2014 as a rear admiral lower half. Garcia's career spans 37 years in public health, clinical practice, research, teaching, and administration at the local, state, and national levels. Dr Garcia joined the National Institute of Dental and Craniofacial Research (NIDCR) at the National Institutes of Health in 1995 and held multiple leadership roles during her time there. She led NIDCR's science transfer efforts, directed the institute's Office of Science Policy and Analysis, and served as acting NIDCR director from 2010 to 2011. Dr. Garcia also served as the institute's coordinator for global health and directed NIDCR's residency in dental public health program from 2005 to 2014. While with the USPHS, she was deployed to help prepare a major health diplomacy mission to Central and South America, which provided care to more than 85,000 people in 12 countries.

As deputy director of NIDCR from 2007 to 2014, Dr. Garcia shared responsibility for the oversight and management of programs and functions within the institute, which included a staff of more than 400 scientists and administrators dedicated to research, training, science policy, health education, communications, and financial management. She received a doctorate in dental surgery in 1980 from Virginia Commonwealth University and a master's degree in public health from the University of Michigan in 1988. She subsequently completed a residency in dental public health at the University of Michigan and a fellowship in primary care policy from the U.S. Public Health Service. A fellow of the American College of Dentists and the

Pierre Fauchard Academy, Dr. Garcia is a diplomat and the past president of the American Board of Dental Public Health as well as an active member of the American Dental Education Association, the International Association for Dental Research, and the American Dental Association.

Mayumi Willgerodt Ph.D., M.P.H., FAAN, FNASN, RN (*Co-Chair*), is an associate professor and the vice-chair of education in the Department of Child, Family, and Population Health Nursing at the University of Washington as well as affiliate faculty in the Center for Health Sciences Interprofessional Education Research and Practice and in the Center for Global Health Nursing. Dr. Willgerodt's research is grounded in the community, centered around school health and interprofessional education and collaborative practice. She is active nationally and internationally consulting on community-based collaborative practice, team-based care, and interprofessional education. She is the lead researcher for the National School Nurse Workforce Study and has a funded program of research focused on school nursing services. She was a Josiah Macy Jr. Foundation Faculty Scholar in 2013–2015, during which time her work focused on the integration of oral health in all levels of nursing education and practice. Dr. Willgerodt is a fellow in the American Academy of Nursing and a fellow in the National Academy of School Nurses. She Willgerodt earned her B.S.N. from Georgetown University in 1987, her M.P.H. and M.S. in 1996, and her Ph.D. in 1998 from the University of Illinois at Chicago.

Md Koushik Ahmed, M.D.S., M.A., is a current graduate student, teaching assistant, and research assistant at the Falk College Department of Public Health, Syracuse University. Prior to this, he worked for several years on community-based experiential learning on the social determinants of health in Bangladesh. At present he is actively involved in studying the competency-based teaching and learning of the social determinants of health for the global health graduate students at Syracuse University. He has written several large grants funded by the Johns Hopkins Center for Communication Program and World Health Organization TDR on implementation science. His area of interests includes implementation science for the social determinants of health and social network analysis for global health.

Judith Albino, Ph.D., is president emerita of the University of Colorado and professor emerita in the Colorado School of Public Health. She received her Ph.D. in 1973 from the University of Texas at Austin, with a focus on measurement and evaluation in psychology, education, and communications. She built an interdisciplinary research program in the psychosocial aspects of oral health and taught behavioral sciences at the University at Buffalo School of Dental Medicine (1972–1990). She also served that

university as the associate provost and dean of the graduate school before being recruited to the University of Colorado (CU), serving briefly as vice-president for academic affairs and then as president. After 17 years focused on university leadership in Colorado and California (Alliant International University), she returned to a faculty role at the CU Anschutz Medical Campus, where she directed a National Institutes of Health (NIH)-funded Center for Native Oral Health Research, conducting clinical trials of behavioral strategies for caries prevention in American Indian populations. In 2018, Dr. Albino was tapped by the National Institute of Dental and Craniofacial Research to serve as co-director and scientific editor of the recently released NIH landmark report *Oral Health in America: Advances and Challenges*. She is a fellow of the American Association for Dental and Craniofacial Research and of the American Psychological Association, a member of the honor societies of dentistry and public health, and an honorary member of the American College of Dentists, and in 2013 she was named Distinguished Psychologist in Management by the Society of Psychologists in Leadership. Dr. Albino has served on the boards of numerous corporate and nonprofit organizations, including chairing the Board of Caring for Colorado from 2018–2020.

Richard Berman, M.B.A., M.P.H., is the associate vice president for strategic initiatives for innovation and research at the University of South Florida, a visiting social entrepreneurship professor in the Muma College of Business, and a professor in the Institute for Advanced Discovery & Innovation. He is currently an elected member of the National Academy of Medicine (formerly known as the Institute of Medicine) of the National Academy of Sciences, Engineering, and Medicine in Washington, D.C., and is a board member for Emblem Health. He is a member of the Seeds of Peace board of directors and a board member for the Savannah Centre for Diplomacy, Democracy and Development in Abuja, Nigeria and for CATAYS, Inc. Additionally, he is the vice-chair of the board of directors for OIC in Florida. Previous organizations in which he has served on the board of directors include the Lillian Vernon Corporation, the Westchester Jewish Chronicle (chairman of the advisory board), the American Jewish Committee (Westchester Chapter), and the March of Dimes. Previously, Mr. Berman has worked as a management consultant for McKinsey & Company, the executive vice president of New York University (NYU) Medical Center, and a professor of health care management at the NYU School of Medicine. He served as the special advisor to the leader of the African Union–United Nations Peace Keeping Mission in Darfur. He has also held various roles at Korn Ferry International and at Howe-Lewis International, served in two cabinet positions in New York state government, and worked in the old U.S. Department of Health, Education, and Welfare. In 1995,

Mr. Berman was selected by Manhattanville College to serve as its tenth president. Mr. Berman is credited with the turnaround of the college, where he served until 2009. Mr. Berman received his B.B.A., M.B.A., and M.P.H. from the University of Michigan and holds honorary doctorates from Manhattanville College and New York Medical College.

Lois K. Cohen, Ph.D., has served as a consultant and the Paul G. Rogers Ambassador for Global Health Research since her retirement from U.S. government service in 2006. She is a sociologist whose research and health science administration career included service as the director of extramural research, associate director for international health, and director of the World Health Organization (WHO) Collaborating Center for Dental, Oral, and Craniofacial Research and Training at the National Institute of Dental and Craniofacial Research, National Institutes of Health (NIH), Bethesda, Maryland. Having authored more than 150 articles in peer-reviewed journals and edited four books on the social sciences and dentistry, she co-directed the WHO International Collaborative Studies of Oral Health Systems.

Having served on several journal boards, among them the *Journal of the American Dental Association*, she co-chairs the Friends of the Organization for Safety, Asepsis, and Prevention and serves on the boards of the Alliance for Oral Health Across Borders, the Edw. B. Shils Entrepreneurial Fund, the Global Advisory Council of the Regulatory Affairs Professional Society, and the Caplin Family Charities. She provides consultation to NIH, WHO and its regional offices in Africa and the Americas, the Canadian Institutes for Health Research, and various universities and professional associations including the American Dental Association, the FDI World Dental Federation, the American Dental Education Association, and others in the area of global health through oral health. Lectures and awards in her honor are presented annually at the University of the Sciences in Philadelphia, Pennsylvania; at Harvard University's School of Dental Medicine in Boston, Massachusetts; and at the International Association of Dental Research's Behavioral, Epidemiological and Health Services Research Group.

Bruce Doll, D.D.S., Ph.D., M.B.A., is the assistant vice president for technological research and innovation, Office of Research, Uniformed Services University (USU) in Bethesda, Maryland. He leads the development and integration of database management within the research portfolio and the advancement of novel technologies focused upon military medical requirements. His formal education includes a D.D.S. from the State University of New York at Buffalo, periodontics specialty certificate from Navy Postgraduate Dental School, Ph.D. from Penn State, and M.B.A. from the Navy Postgraduate School. During 34 years of service with the U.S. Navy,

he served with both the Navy and U.S. Marine Corps, INCONUS and OCONUS. Several times deployed, RADM Doll completed his service as both director of the Research, Development, and Acquisition Directorate for the Defense Health Agency in Falls Church, Virginia, and the deputy commander of the U.S. Army Medical Research and Materiel Command, Fort Detrick, Maryland, where he oversaw execution of Defense Health Program–funded medical research. He had academic appointments with Carnegie Mellon University, University of Pittsburgh, Oregon Health Sciences University, University of Maryland, Pennsylvania State University, and Rutgers University prior to coming to USU. He served as the chief operating officer for the Rutgers–Cleveland Clinic Consortium for the Armed Forces Institute of Regenerative Medicine. He has served on several scientific boards. He has published on the topics of bone regeneration and is a former grantee of the National Institutes of Health and the National Institute of Standards and Technology.

Julian Fisher, B.D.S., M.Sc., M.I.H., is a policy advisor and analyst specializing in health workforce education, social and environmental determinants of health, and global oral health. He is currently the coordinator and senior researcher for planetary health and global oral health at the Department of Oral Diagnostics, Digital Health, and Health Services Research at Charité University in Berlin, Germany. He is responsible for the development and delivery of the global oral health education module to over 25 dental schools and associations around the world.

Prior to this he was the associate director of professional and scientific affairs with the World Dental Federation in Geneva, Switzerland. His work experience covers a diverse range of professional domains including international public health policy and advocacy (consultancies for the World Health Organization; the United Nations Educational, Scientific, and Cultural Organization [UNESCO], and the United Nations Environment Programme), health profession (federation) management, and health workforce undergraduate and post graduate education, both classroom and web-based.

His work has been based in Europe, Tanzania, South Africa, Saudi Arabia, the Falkland Islands, and Antarctica within various sectors and organizations. Mr. Fisher earned his B.D.S. (dentistry) from Birmingham University in 1985, his M.Sc. (HIV/AIDS) from Stellenbosch University in 2002, and his M.I.H. (international health) from Charité University in 2006.

Anita Glicken, M.S.W., is a professor and associate dean emerita at the University of Colorado Anschutz Medical Center with over 30 years of administrative, research, and education experience. She was a founding member

of the National Interprofessional Initiative on Oral Health (NIIOH) and is now serving as its executive director. The NIIOH provides backbone support and is the national voice for interprofessional integration of oral health into primary care. In 2009, Ms. Glicken launched the Physician Assistant Leadership Initiative on Oral Health, creating a model systems change strategy that engages national organization leaders to work together to integrate oral health across professional education and practice. Ms. Glicken has served on several national expert panels to develop tools and resources supporting workforce research, education, and policy, including the Health Resources and Services Administration's (HRSA's) 2014 Interprofessional Oral Health Core Competencies for Primary Care Providers and the 2015 Qualis Health White Paper, Oral Health: An Essential Component of Primary Care.

Past leadership roles include president of the Physician Assistant Education Association (PAEA) and president/chief executive officer of the National Commission on Certification of Physician Assistants Health Foundation, where she worked with HRSA's National Center for Health Workforce Analysis to create a database on certified physician assistant practice to inform health policy and workforce planning. A clinical social worker, Ms. Glicken's career has focused on health care transformation, partnering with others to create innovative education and care delivery models grounded in interprofessional collaboration and health equity. Most recently she was founding project director of an American International Health Alliance contract to build midlevel health workforce capacity in South Africa. Since 2012, she has been an invited member of the U.S. delegation of the International Health Workforce Collaborative. Ms. Glicken is the author of more than 100 publications in health care education, workforce and research.

Lisa F. Mallonee, M.P.H., RDH, RD, LD, is a tenured professor, graduate program director, and registered dietitian in the Caruth School of Dental Hygiene at the Texas A&M School of Dentistry (TAMU SOD), where she has served as course director for public/community health and provides nutrition lectures in the dental hygiene and predoctoral dental curriculum. Additionally, she oversees practicum placement and thesis research as a co-director for postgraduate dental hygienists enrolled in the Master of Science in Education for Healthcare Professionals program housed in the Texas A&M College of Medicine. Furthermore, she serves as a preceptor for the Baylor University Medical Center Dietetic internship program. She was most recently appointed to serve in the capacity of interim associate dean of academic affairs at TAMU SOD.

Ms. Mallonee received her bachelor of science in dental hygiene (1990) and a master of public health with a coordinated degree in nutrition (2000) from the University of North Carolina at Chapel Hill. As a health care

professional and educator, she is committed to sharing her knowledge, expertise, and passion while promoting the value of interprofessional collaboration among dental professionals within the wider health care community for greater patient/client outcomes. She serves as a reviewer and expert content advisor on numerous publications, including the *Journal of the Academy of Nutrition and Dietetics*, *Journal of the American Dental Association*, and *Journal of Dental Hygiene*, and works with organizations such as the National Diabetes Education Program, National Maternal and Child Oral Health Resource Center, and the American Dental Educators Association (ADEA). She is a published author in dental textbooks and peer-reviewed journals on multiple topics pertaining to diet, nutrition, and oral health and the practical application to whole body health for dietetic and dental professionals. She coauthored the nutrition curriculum for the revised 2015 edition of the ADEA Curriculum Guidelines for Allied Dental Education Programs and served as primary author for the Academy of Nutrition and Dietetics Practice Paper on Oral Health and Nutrition. She is currently a coauthor on the editorial team continuing Esther Wilkins' cornerstone textbook *Wilkins' Clinical Practice of the Dental Hygienist* and primary author on *The Dental Hygienist's Guide to Nutritional Care, 6th edition*.

Teresa A. Marshall, Ph.D., is a registered, licensed dietitian with a doctorate in human nutrition who coordinates and teaches the nutrition curriculum, directs the dental student research program, and holds the Michael W. Finkelstein Centennial Teaching Professorship at the University of Iowa's College of Dentistry. Dr. Marshall's primary research interests focus on the relationships among diet, nutrition, oral health, and systemic health. Dr. Marshall has engaged with national and international groups to understand, educate, and advocate for caries prevention with emphasis on diet. She served as a delegate to the Academy of Nutrition and Dietetics' Dietary Guidelines Collaborative, which identified diet-related caries science to inform the U.S. Department of Agriculture's 2020 dietary guidelines; was a section author including content on diet in caries prevention for the 2020 Surgeon General's report on oral health; and provided a dietary voice for the Borrow Foundation's Oral Health-Related Birth Cohort Study. She is a member of the Academy of Nutrition and Dietetics (including the practice group Nutrition Educators of Health Professionals), the American Dental Association, the International Association for Dental Research, the American Dental Education Association, and the American Academy of Cariology. She is a research editor for the *Journal of the Academy of Nutrition and Dietetics* and a reviewer for multiple nutrition and dental journals.

Lemmietta McNeilly, Ph.D., CCC-SLP, CAE, is an American Speech–Language–Hearing Association (ASHA) fellow, a distinguished scholar and

fellow of the National Academy of Practice, and an American Society of Association Executives fellow and certified association executive. Presently she serves as ASHA's chief staff officer for speech–language pathology with responsibility for speech–language pathology practices, governmental affairs and public policy, international programs, and 20 special interest groups. Her resume includes numerous international publications and presentations for health care executives, health professionals and academics across the globe as well as consultations with the World Health Organization, the Global Rehabilitation Alliance, and the National Academy of Sciences, Engineering, and Medicine. She has addressed the following topics: empowering leaders for the changing health care landscape, genomics for health care professionals, interprofessional education and collaborative practice, social determinants of health, effective use of speech–language pathology assistants, and educating clinicians to practice at the top of the license and target outcomes based on the functional needs of individuals and families.

Jonathan Metzl, M.D., Ph.D., is the Frederick B. Rentschler II Professor of Sociology and Psychiatry and the director of the Department of Medicine, Health, and Society at Vanderbilt University in Nashville, Tennessee. He received his M.D. from the University of Missouri, M.A. in humanities/poetics and psychiatric internship/residency from Stanford University, and Ph.D. in American culture from University of Michigan. Winner of the 2020 Robert F. Kennedy Human Rights Book Award, the 2020 APA Benjamin Rush Award for Scholarship, and a 2008 Guggenheim fellowship, Dr. Metzl has written extensively for medical, psychiatric, and popular publications about some of the most urgent hot-button issues facing the United States and the world. His books include *The Protest Psychosis*, *Prozac on the Couch*, *Against Health: How Health Became the New Morality*, and *Dying of Whiteness: How the Politics of Racial Resentment is Killing America's Heartland*.

Jeffrey Stewart, D.D.S., M.S. is the senior vice president for interprofessional and global collaboration at the American Dental Education Association (ADEA). Prior to joining ADEA, he had been a faculty member at three dental schools. In his current role with ADEA, he is a member of the Interprofessional Education Collaborative Planning Committee and the Interprofessional Professionalism Collaborative. He attended college at the University of Delaware and received his dental degree from the University of North Carolina. Following a general practice residency, he attended the University of Michigan, earning a master's degree in oral pathology and diagnosis.

Deborah Weisfuse, M.S., D.M.D., is the current president of the Alliance for Oral Health Across Borders. She has served as an advisory director on

the New York County Dental Society Board since she became a New York State Dental Association officer in 2012. She has served as national secretary of the American Friends of the Dental Volunteers for Israel and now serves as director at large on their board. She sits on the advisory board of Project Accessible Oral Health.

Dr. Weisfuse was elected as the first woman president of the New York State Dental Association in 2012. During her years as a state officer, she initiated the first Student Legislative Day and founded the New York State Dental AssociationTechnology Task Force. Both programs have become permanent in the structure of the organization. She has served on the American Dental Association Committee on Annual Meetings and as a trustee for the New York State Dental Foundation for 12 years. Dr. Weisfuse has also had the honor of serving on the Commission of Dental Accreditation (CODA) Predoctoral Review Committee and has consulted for the commission both nationally and internationally in different roles. Recently she was elected by the American Dental Association to serve as a CODA commissioner and has just started her term of office.

Dr. Weisfuse received her master's degree in biomedical research at the State University of New York at Downstate Medical Center. Then she pursued her dental degree at the University of Pennsylvania School of Dental Medicine. Her residencies included a general geriatric residency and a chief residency at the Long Island Jewish/ Hillside Medical Center, now known as Northwell. After this, she taught clinically at the Columbia University School of Dental Medicine and then at the Community Dentistry Department at Fairleigh Dickinson University School of Dentistry, where she also wrote National Institutes of Health grants to improve the quality of oral health for inner city children.

Earlier in her career, Dr. Weisfuse created a nursing home curriculum and rotation for the dental residents at Cobble Hill Nursing Home, associated with Long Island College Hospital in Brooklyn and was an attending there part time for 7 years. She built a successful private general practice in Midtown Manhattan while always continuing to participate in many ways within the dental profession and its organizations. At this time, she is currently retired from clinical practice. Dr. Weisfuse has been awarded honorary fellowships for her studies and achievements by the American College of Dentists, the International College of Dentists, the Pierre Fauchard Academy, the Academy of General Dentistry, the New York Academy of Dentistry, and the International Academy of Dental-Facial Esthetics.

In 2019, Dr. Weisfuse received the National Jeffrey Dalin Distinguished Volunteer Service Award from the American Dental Association for her work as general chair in development of the largest Give Kids a Smile programs in the United States in New York City.

Jane Ziegler, D.C.N., RDN, LDN, is currently the interim chair and director of the Doctor of Clinical Nutrition Program in the Department of Clinical and Preventive Nutrition Sciences and an adjunct associate professor in the Rutgers School of Dental Medicine. Dr. Ziegler has over 30 years of clinical practice in the areas of neonatal, pediatric, and adolescent nutrition with an emphasis on chronic disease, primarily in the areas of pediatric pulmonary disease, gastrointestinal disease, and pediatric weight management.

Dr. Ziegler has served as a member of the Pediatric Weight Management Expert Workgroup of the Academy of Nutrition and Dietetics, Evidence Analysis Library (EAL), and served as a lead analyst as well as a research analyst for the EAL. In the Rutgers School of Dental Medicine, she has provided clinical support to the specialty clinics of the Orofacial Pain Clinic, Oral Medicine Clinic, Pediatric Clinic, and the Special Needs Clinic as well as clinical support in the undergraduate dental clinics. She has supported multiple courses within the School of Dental Medicine, including lectures in clinical nutrition, dental caries/microbiology, and special needs dentistry. She is a course director for pediatric nutrition, weight management, metabolism and body composition, nutrition and pharmacology, and other graduate-level nutrition courses. She is a mentor for the New Jersey Leadership Education for Neurodevelopmental and Related Disabilities program. She mentors masters and doctoral student research projects and has been a principal investigator on multiple pediatric oral health grants and educational grants. She is an ad hoc reviewer for multiple peer-reviewed journals. Dr. Ziegler brings strong clinical and educational experiences, skills, and expertise to the clinic population, nutrition courses, and research studies.

SPEAKERS

Trina Brown, Ph.D., CNPT, is the founder and chief executive officer of Data Civility LLC (an African American biomedical company) and Neuro Pathic Trainers Foundation, Inc. (mental and physical healthy lifestyle), a division of Dr. Trina Brown and Associates. Data Civility collaborates with University of North Carolina Chapel Hill, Duke University, Wake Forest University, Maya Angelou Center for Health Equity, and several historically black colleges and universities. Dr. Brown has served on numerous committees with various organizations to improve health care around the world.

Dr. Brown recently received the President's Lifetime Achievement Award for her lifelong commitment in building a stronger nation through volunteer service. She has served as an advocate for health care and humanity for over 30 years, an international motivational speaker, and radio host in over 180 countries as well as a mental and health lifestyle coach and counselor and a mental fitness trainer.

Dr. Brown's mission is to educate and empower people about health care issues related to dementia, the aging population, and financial impacts on families and communities.

Ashley Ford, B.S.B.A., CCHW, is the Healthy Kids project director with CareSouth Carolina in Hartsville, South Carolina. Ms. Ford has worked in health care since 2008. She has worked with CareSouth Carolina for 9 years. She has held numerous positions within the organization. In 2017, Ms. Ford attended Northeastern Technical College to complete the community health worker program. She became a certified community health worker in May 2017. Ms. Ford is also a South Carolina Community Health Worker Association member. She served as an ambassador for the association from 2019 to 2020. In 2018, Ms. Ford joined the CareSouth Carolina Division of Dentistry as a community health worker where she mostly worked with school-based pediatric patients. Her job as a dental community health worker was to make contact with families to educate and help eliminate as many barriers as possible to dental health. After 2 years working in dental health. Ms. Ford accepted a position as a medical case manager for infectious diseases and worked with patients who had been diagnosed with HIV/AIDS. Even when while working in infectious diseases, Ms. Ford continued to educate patients on the importance of dental health.

Michael Glick, D.M.D., is the executive director of the Center for Integrative Global Oral Health and a professor of clinical restorative dentistry at Penn Dental Medicine. From 2009 to 2015, Dr. Glick served as dean of the University at Buffalo, SUNY, School of Dental Medicine, where he remained as a professor of oral diagnostic sciences before moving to Penn Dental Medicine in 2021. Prior to his time at Buffalo, he was a professor of oral medicine at the Arizona School of Dentistry and Oral Health, A.T. Still University, also holding the post of associate dean of oral-medical sciences at the university's School of Osteopathic Medicine. While at the University of Medicine and Dentistry of New Jersey from 2001 to 2007, Dr. Glick served as chairman of the Department of Diagnostic Sciences and as director of both the Division of Oral Medicine and the Postgraduate Training Program in Oral Medicine. The cuurent position with Penn Dental Medicine is Dr. Glick's second faculty appointment at the school, having previously served from 1994 to 2001 on the oral medicine faculty. During that time, he also directed the school's programs for medically complex patients and infectious diseases.

A widely published and highly respected lecturer, Dr. Glick served as editor-in-chief of the *Journal of the American Dental Association* from 2005 to 2020. In the global arena, Dr. Glick has been active with the FDI World Dental Federation since 2007, serving on multiple committees,

including co-chairing the Task Team Vision 2030. He also had a leading role in establishing FDI's Vision 2020 and most recently was the primary author of its Vision 2030, giving guidance for a global interdisciplinary and integrative role for oral health.

Judith Haber, Ph.D., APRN, FAAN, is professor emerita at the New York University (NYU) Rory Meyers College of Nursing. Dr. Haber is the executive director of a national nursing oral health initiative, the Oral Health Nursing Education Practice (OHNEP) Program, funded by the CareQuest Institute for Oral Health Advancement. She is an NYU leader of interprofessional education and practice, with a special focus on oral-systemic health, collaborating with interprofessional partners at NYU College of Dentistry and School of Medicine. Dr. Haber is the lead author of the landmark 2015 article in *American Journal of Public Health*, "Putting the Mouth Back in the Head: HEENT to HEENOT."

Dr. Haber was a member of the Health Resources and Services Administration expert panel that developed the 2014 Interprofessional Oral Health Core Competencies for Primary Care Providers; the technical expert panel that developed the 2015 Qualis Health White Paper, *Oral Health: An Essential Component of Primary Care*; and the 2017 Primary Care Collaborative (PCC) National Steering Committee on Shared Principles. Dr. Haber is a member of the Santa Fe Group and a fellow in the American Academy of Nursing and the New York Academy of Medicine. She is the 2011 recipient of the NYU Distinguished Teaching Award, 2014 NYU Meritorious Service Award, the 2020 Changemaker Award, the 2015 Sigma Theta Tau International Marie Hippensteel Lingeman Award for Excellence in Nursing Practice, and the 2017 DentaQuest Health Equity Hero Award. In 2019, the OHNEP Program received an EdgeRunner Award from the American Academy of Nursing.

Rosemarie Hemmings, Ph.D., LCSW, is an assistant professor in community dentistry and director of social work at the Oregon Health & Science University's School of Dentistry. She is developing and teaching an innovative inter-professional curriculum related to the social determinants of health within the school of dentistry. Additionally, Dr. Hemmings directs the social work program, which includes masters of social work interns from Portland State University, Arizona State University, and Simmons University who provide social work interventions to patients within the dental clinic, and residency program.

As a social worker for some 30 years, she has seen the psychological impact of socioeconomic status on who gets their oral health needs met. Additionally, as a public health practitioner, she knows the impact of access issues related to oral health insurance, oral health practitioners, and

affordable oral health care on marginalized populations. Dr. Hemmings states that one of the greatest rewards of being at a school of dentistry is being able to help educate dental students about the human factors (psychological and social) related to the oral health of their patients both now and in their future practice.

Colleen Lampron, M.P.H., is a public health leader with particular expertise in planning innovative initiatives that promote access to care for underserved populations. Her proficiencies include managing innovative public health initiatives and overseeing local and national programs using a collaborative approach that advances innovations (e.g., IHI's Breakthrough Series model) and supports systematic and continuous quality improvement measures. Through her company, AFL Enterprises, LLC, Ms. Lampron partners with other experts to effectively execute client deliverables. Additionally, she is a sought-after facilitator and quality improvement coach.

Daniel W. McNeil, Ph.D., is a professor and chair of the University of Florida Department of Community Dentistry and Behavioral Science; he has also been appointed the Parker E. Mahan Endowed Professor. As a clinical psychologist, Dr. McNeil has worked in the realm of oral health for his entire career. His department houses two advanced education in general dentistry residency training programs, two research centers (focusing on pain and oral health disparities), and a variety of community outreach programs. He is actively engaged in community-engaged research on behavioral dentistry, pain, oral health inequities, and use of oral health care.

A member of the American Dental Education Association, the American Psychological Association, and the International Association for Dental Research and a fellow of the American Association of Dental, Oral and Craniofacial Research, Dr. McNeil has an impressively long list of published research in books, articles, and manuals. A former Fulbright fellow, he received the Distinguished Scientist Award in 2021 for Behavioral, Epidemiologic and Health Services Research from the International Association for Dental Research.

Angel Martinez-Thornton, RN, is a registered nurse and lifestyle coach for the Sac and Fox Nation tribe in Stroud, Oklahoma. She works as the community health manager for Black Hawk Health Center.

She started her medical journey as a license practical nurse at the Chickasaw Nation in 2007. She was recognized as the 2010 employee of the year in the specialty clinic for her efforts to provide information and resources to cancer patients. She began her career as a community health representative in 2013 at Black Hawk Health Center. During this time, she continued her education by obtaining her podiatric medical assistant (PMA)

and studied new wound care strategies and techniques. She served on the board of Oklahoma Area Association of Community Health Representatives as historian. In this role she planned and organized conferences to assist other community health representative Programs.

In 2017, Ms. Martinez-Thornton earned her nursing degree from Rose State College in Midwest City, Oklahoma. For the last 9 years, she has provided health care, health promotion, and disease prevention services through the community health program at Black Hawk Health Center. She knows that the distance between dreams and reality is called action. This viewpoint continues to motivate her to teach, improve, and preserve the health care needs of the community.

Cleopatra Matanhire-Zihanzu, B.D.S., M.B.A., M.Sc., is the project leader for the Oral Health for Mental Health Patients Project Zimbabwe and a faculty member at the Department of Oral Health, Faculty of Medicine and Health Sciences, University of Zimbabwe. She is an oral health advocate with an emphasis on research, education, and policy formulation. She served in the Ministry of Health and Child Care, Oral Health Services Department, Zimbabwe, gaining exposure in primary, secondary, and tertiary oral health care service delivery; coordinating national dental surgery assistants training and dental missions, culminating with her being practitioner in charge at the School of Dental Therapy and Technology.

Dr. Matanhire-Zihanzu holds a bachelor of dental surgery from the University of Zimbabwe, a master's in business administration from the National University of Science and Technology, and a master of science in global health from the University of Glasgow. She is also a 2017 Mandela Washington Fellow who was in the civic leadership track at Kansas State University.

Keith Mays, D.D.S., M.S., Ph.D., is the dean and associate professor at the University of Minnesota School of Dentistry. Dr. Mays' academic career has included student advising, faculty private practice, and service as the assistant director of the University of Maryland general practice residency program. He served as the division director of prosthodontics at the East Carolina University School of Dental Medicine and as associate dean for academic affairs at the University of Minnesota School of Dentistry.

Dr. Mays brings a pragmatic approach to management, a keen sensitivity to the needs of individuals and an appreciation for the dynamic relationship between patient care and student education. Dr. Mays' several research interests have included clinical and educational research. His clinical research interests focus on improving oral motor function, specifically investigating compensatory movements of the tongue and jaw during speech, swallowing, and mastication. Educational research interests focus on community-based dental education, student well-being, improving the academic environment,

the use of computer-aided design/computer-aided manufacturing (CAD/CAM) as an assessment tool in pre-clinical dental education and enhancing service-learning during community based dental experiences for students. His advocacy for better oral health as a pathway to improving overall health has shaped his research interest in the role of oral health in interprofessional education and collaborative practice.

Kaz Rafia, D.D.S., M.B.A., M.P.H., has over two decades of experience in successful startups, academia, managed care, government, and nonprofit organizations. He is currently the chief health equity officer at CareQuest Insti—tute, where he leads the development and execution of strategic initiatives that foster and advance engagement and access to integrated oral health care for the ethnically and socially diverse communities served by the institute. Dr. Rafia also drives the organization's efforts to elevate the integration of oral health and overall health care through the oversight of the health improvement and grantmaking teams. Prior to joining CareQuest Institute, he served as the state dental director for the Oregon Health Authority, where he set the equity-centered state oral health strategic plan focusing on population health measures, health care workforce development, optimization of the value-based care coordination model, and telehealth. Rafia also served as a dental volunteer for 8 years at Medical Terms International leading successful mission-critical projects. Dr. Rafia holds a B.S. in biology from Youngstown State University. He received his M.B.A. from University of Illinois and a master of public health from Johns Hopkins University. He earned his doctor of dental surgery from Ohio State University.

Hugh J. Silk, M.D., is a professor in the Department of Family Medicine and Community Health at the University of Massachusetts Chan Medical School. Dr. Silk received his undergraduate degree (B.A.) from Harvard University, where he majored in government. He completed medical school at McMaster Medical School in Hamilton, Ontario, Canada. He undertook his residency at the University of Massachusetts Medical School Family Medicine Residency Program in Worcester and successfully completed a master of public health degree from the Harvard School of Public Health in Boston. Prior to medical school, Hugh taught with Dr. Robert Coles at Harvard University in a course called The Literature of Social Reflection and ran a youth service program in Toronto called Serve Canada.

Currently, Dr. Silk provides clinical care at the Homeless Outreach and Advocacy Program (HOAP) and The Road to Care van. He is a professor in the Department of Family Medicine and Community Health. He also teaches at the Harvard School of Dental Medicine. Dr. Silk does public health work in oral health access and training health care providers to address oral health as part of overall health. He is a past recipient of the

American Association of Public Health Dentistry Public Service Award. He is a principal investigator at the Center for Integration of Primary Care and Oral Health (CIPCOH) doing research and projects to improve oral health in medical and dental schools and primary care residency programs across the country. His other interest in medical education is medical humanities and reflective writing.

Rita Villena, D.D.S., Ph.D., is a researcher with a master's and doctorate in pediatric dentistry from the University of Sao Paulo, Brazil. Currently the coordinator of pediatric dentistry at the San Martin de Porres University, she is an expert in prevention, the use of fluorides, and caries in early childhood. She is past president of the Latin American Region of Dental Research. International and is a speaker and author of national and international publications in the area. She serves as a technical consultant of the Ministry of Health and since 2014 has been an evaluator of the national oral health programs. She has also served on the annual scientific program committee for the International Association for Dental Research (IADR).

Robert J. Weyant, M.S., D.M.D., Dr.P.H., serves as the associate dean of dental public health and community outreach, the interim associate dean for faculty affairs, and professor and chair of the Department of Dental Public Health at the University of Pittsburgh School of Dental Medicine. He is also an associate professor of epidemiology at the Graduate School of Public Health. He received a master's degree in public health in 1978 and a dental degree in 1982 from the University of Pittsburgh School of Dental Medicine. In 1991 he earned a doctoral degree in epidemiology from the University of Michigan. Dr. Weyant is a former U.S. Navy dental officer and Department of Veterans Affairs dentist. He has been a diplomate of the American Board of Dental Public Health since 1987 and also is a past president of the American Association for Public Health Dentistry. He currently serves on numerous local, state and national committees aimed at reducing oral health disparities, increasing the dental workforce, and improving access to oral care. Dr. Weyant's research involves basic and social epidemiological research related to oral health disparities. Presently he is a principal investigator or co-principal investigator on several National Institutes of Health–funded studies of oral disease etiology. Dr. Weyant also directs the Center for Oral Health Research in Appalachia and oversees the joint degree program in public health.

Dr. Weyant was recently acknowledged as the inaugural recipient of the American Association for Dental Research/American Dental Association (AADR/ADA) Evidence-Based Dentistry Faculty Award. He is recognized with this award for his life-long contributions to evidence-based dentistry.