



Oral Health Disparities: Proceedings of an Oral Health Innovation Forum

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ABSTRACT The UCLA Center for Children’s Oral Health (UCCOH) focuses on translating evidence-based research into clinical care in order to improve children’s oral health. UCCOH held an interprofessional forum to discuss and formulate policy solutions for addressing diversity issues in the dental workforce, access/barriers to care and the impact of emerging technology on patient care. This paper discusses the findings from the forum.

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Early childhood caries (ECC) is the most common chronic childhood disease in the U.S. as well as globally.¹⁻³ Untreated ECC in primary teeth affects more than 600 million children worldwide, and ECC shares common risk factors similar to other chronic diseases associated with excessive sugar consumption, such as cardiovascular disease, diabetes and obesity.³ As of 2016, approximately 22% of U.S. children aged 2 to 5 years and 51% aged 6 to 11 years have ECC.^{1,4} In California, 54% of kindergarteners and 70% of third graders have experienced dental caries, and nearly one-third of children have untreated dental caries.^{2,5} Hispanic children in California are more likely to experience ECC than non-Hispanic Whites and African Americans.^{1,5} Reversing the substantial and unfortunate impact of this preventable childhood disease has proven to be a considerable challenge.

Understanding Oral Health Disparities in the Context of Macro- and Microsystem Levels

Viewing optimal oral health and access to effective and affordable oral health care as a right rather than a privilege results in systemic changes at both the macro and micro levels that lead to social justice and health equity. Macro-level systems involve interventions on a large scale that can affect entire communities, states and countries while micro-level systems involve intervention at the individual or family level.

Macro-level systemic factors affecting oral health equity and social justice include global forces, government policies or social and structural influences on health that lead to the continuation of privilege for some and discrimination for others based on such characteristics as race/ethnicity, economic status, gender, age and special needs status. Such macro-level factors might include lack of access to affordable healthy food due to physical and environmental factors and lack of access to comprehensive, culturally and linguistically appropriate and affordable oral health care.

Micro-level factors affecting oral health might include childhood difficulty with speech, attention problems in school and negative social interactions and lack of social relationships that result from poor oral health.⁶

Introducing comprehensive, culturally appropriate and affordable oral health care and addressing macro-level forces within a health equity and social justice framework can have a positive impact on micro-level systemic factors affecting an individual's overall health in various ways such as the following:

- Making it possible to access providers who are culturally responsive and patient centered.

- Increasing trust in the provider-patient relationship.
- Significantly decreasing socioeconomic-based disparities in oral health care.

Applying a social justice and health equity lens to oral health care will require dental providers to build ongoing awareness and understanding of these issues within their practice. For example, dentists and other oral health care providers should receive training on the persistent patterns of (dis)empowerment and (dis)trust often

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seen in patients, so they can learn how to recognize these patterns in their own patients. Additionally, they should learn to recognize the complexity of the human experience and pursue dignity for all patients seen in their practice.⁷

In October 2018, the UCLA Center for Children's Oral Health (UCCOH) held a two-day interprofessional "Oral Health Innovation Forum." This interactive event, the first of its kind, emphasized a cross-collaboration of five major UCLA schools to discuss and formulate policy solutions for addressing disparities in oral health with a focus on ECC through a lens of social justice and health equity. It was a pioneering event for advocating systems-change approaches in both the delivery of oral health care and primary care.

Methods

UCCOH is a multidisciplinary initiative that focuses on translating evidence-based research into clinical care in order to achieve policy developments and advocacy in the interest of improving children's oral health locally, nationally and internationally.⁸ The center, established in 2015, builds, strengthens and coordinates activities in children's oral health through developing and supporting interprofessional education in UCLA's pediatric training program with the UCLA schools of dentistry, medicine, nursing and public health.

The center's two-day interprofessional oral health innovation forum attracted close to 200 interdisciplinary/interprofessional attendees from the UCLA schools of dentistry, medicine, nursing, public health and public affairs. Attendees also included representatives from the American Dental Association, political representatives from Los Angeles County and UCLA students, residents, fellows and many community partners. The keynote speaker was chief economist and vice president for the American Dental Association's Health Policy Institute. Additional presenters were the California dental director, the Los Angeles County dental director, the executive director of the American Dental Association and Los Angeles-based political representatives.

The morning session of the forum on Day One consisted of presentations on updates and innovations at the UCLA School of Dentistry and how these innovations could be adapted to other schools of dentistry in the U.S., the importance of building a multicultural movement for oral health equity, how to transform dentistry from a focus on volume to

TABLE

Summary of Recommendations and Suggestions To Reduce Oral Health Disparities for Each of the Five Tracks

Track	Recommendations/Suggestions
Track 1: Financial issues regarding early childhood caries	<p>Institute value-based (patient outcomes-based) reimbursements systems.</p> <p>Utilize dental diagnosis codes and match billing codes.</p> <p>Merge medical and dental electronic records for patients.</p> <p>Provide microfinancial incentives to families/caregivers who promote early childhood toothbrushing and use fluoridated toothpaste.</p>
Track 2: Policy developments with a focus on early childhood caries prevention	<p>Implement a mandatory age-1 oral health visit.</p> <p>Require oral health screening/exams in day care centers and elementary schools and mandatory toothbrushing in schools.</p> <p>Mandatory inclusion of an oral health pamphlet in each child's school admission packet to inform and educate families about the importance of early dental care and provide resources on where to access dental care.</p> <p>Strengthen kindergarten oral health assessments.</p> <p>Actively support allocating a percentage of soda and marijuana taxes to promote oral health. Consider potential opioid lawsuits as source of funds for use in oral health promotion.</p>
Track 3: Diversity issues in the dental workforce	<p>Increase minority admissions to schools of dentistry (via outreach to deans and admissions committees).</p> <p>Support pipeline programs for low-income and minority students to enter higher education professional programs and continue support and long-term mentorship for admitted students.</p> <p>Increase tracking of graduates, including where they practice.</p> <p>Utilize, support and better integrate foreign-trained dentists.</p>
Track 4: Access to care and challenges to care	<p>Establish best-practice model for the virtual dental home/teledentistry model and increase support for the use of the virtual dental home/teledentistry model.</p> <p>Increase support for community (oral) health care workers (COHWs).</p> <p>Implement widespread interprofessional education (IPE) curricula and support interprofessional practice (IPP).</p> <p>Increase access to care for special needs patients.</p>
Track 5: Impact of emerging technology on future patient care	<p>Support equitable access to and support fair and safe use of newest technology (such as lasers, omics, robotics and artificial intelligence) for the improvement of oral health for all.</p>

a focus on value, the relevance of interprofessional education within oral health and primary health care and the role of community oral health workers. The afternoon was devoted to breakout sessions addressing five topics: financial issues regarding ECC, policy developments regarding ECC prevention, diversity issues in the dental workforce, access to care and barriers to care and emerging technologies for future patient care. Moderators for each breakout session are experts in their topic area and were chosen by the forum committee. In addition to the moderators, there were 12–15 other individuals in each of the five breakout sessions who were also experts in their topic area. The purpose of the breakout sessions was to establish a shared knowledge base, capture

collective insight and encourage innovative thought. The moderators for each session introduced the topic to the attendees and then gave them three to five questions to discuss. They were provided with an easel and markers to write down their thoughts and ideas. Dental students took notes. At the end of the day, the moderators presented each group's main thoughts/ideas to all participants of the forum.

The second day of the forum was open to the public and attended by UCLA students, residents, fellows and many community partners. The day consisted of several presentations on topics pertaining to integrating oral health into overall health care, the importance of oral health equity and social justice, the state of dental insurance and children's oral health

issues and the importance of policy, advocacy and interprofessional collaboration regarding children's health. The afternoon session included a panel discussion that presented a summary from Day One's breakout sessions. This summary discussion led to the creation of a strategic plan (including goals and next steps) for improving children's oral health locally, nationally and internationally. Dental students and UCLA School of Dentistry staff took notes throughout the two-day forum. All notes were reviewed and edited by forum committee members and then combined into a complete forum report.

The thoughts/ideas resulting from the breakout sessions for each of the five key forum topics are discussed in the next section. The **TABLE** provides a summary of the following discussions.

Results

Track 1: Financial Issues Regarding ECC

The Track 1 group discussed how to train and incentivize health care professionals (both dentists and medical care providers) to provide equitable and integrated oral health care and how to align and balance financing preventive efforts to support innovative and evidence-based care.

To address these topics, the group recommended instituting a value-based reimbursement system that emphasizes quality of care over quantity of services provided, which would focus on incentivizing early oral health prevention and intervention strategies for children and reduce incentives that prioritize treatment over prevention. For example, instituting a bundled payment approach that would cover three to five preventive services to be provided at the same time was suggested (e.g., oral health exam, caries risk assessment, fluoride application, nutritional counseling). This might increase the probability that a child would receive their needed preventive care, as it is sometimes challenging for lower-income parents to bring their children to the dentist multiple times for various services. Providers would then be reimbursed only if all services were rendered and documented in the patient's chart.

Getting insurance companies/payers and primary care providers (PCPs) to reimburse accordingly for oral health-related preventive behavior was also discussed by the group. Providing data-driven evidence to insurance companies demonstrating that paying for preventive behavior modification will lower overall costs by reducing the incidence of dental caries should be a priority.

The group also stressed the need to integrate electronic medical records (EMR) and electronic dental records (EDR) to improve interprofessional relationships and enhance interprofessional practice (IPP) as well as utilize diagnostic dental codes similar to medical diagnostic codes (International Classification of Diseases [ICD] 10), which would allow for a more consistent diagnosis identification and analysis of the oral health status of patients and would improve patient outcome tracking and elicit more individualized treatment plans.

The group recommended instituting a value-based reimbursement system that emphasizes quality of care over quantity of services provided.

Track 2: Policy Developments With a Focus on Early Childhood Caries Prevention

The Track 2 group focused their discussion on how to promote and increase the use of evidence-based policies pertaining to ECC prevention, concentrating on ensuring oral health visits for all infants. The group suggested a life course continuum of risk assessment and early intervention with a policy system change approach of a mandatory age-1 dental visit for all infants in addition to mandatory oral health assessments as children enter school (as required by AB 1433). Data gathered through these assessments is crucial for monitoring oral health status, developing strategies to address needs, establishing priorities for the

use of resources and evaluating the outcomes of implemented actions.⁹ Mandatory age-1 dental visits should also apply to infants and preschoolers in day care centers, Women, Infants and Children (WIC) centers and Early Head Start (EHS). Additionally, Track 2 suggested expanding mandatory oral hygiene/health services education into elementary schools (requiring brushing and flossing at least once during the school day and providing dental referrals and follow-ups), similar to the mandate in day care centers and full-day Head Start programs.

Track 2 also suggested mandatory inclusion of an oral health pamphlet, written in English, Spanish and other languages based on the community's demographics, in each child's school admission packet to inform and educate families about the importance of early dental care. This pamphlet should include resources on where to access dental care and information (including websites) about obtaining affordable dental insurance.

Funding Oral Health

Track 2 recognized the need for consistent funding for oral health initiatives and suggested advocating for using a percentage of soda and marijuana taxes to promote oral health as well as trying to pursue funds from opioid lawsuits to promote oral health care in day care centers, WIC, EHS and primary care sites.^{10,11}

Other policy developments and recommendations included improving access to fresh and healthy foods, incentivizing retail outlets to sell healthy foods in low-income neighborhoods through tax credits and rebates, implementing healthy vending machine policies and enacting laws that would restrict advertising for unhealthy and highly processed foods.

Track 3: Diversity Issues in the Dental Workforce

Participants in Track 3 agreed the makeup of the current provider pool did not match the racial/ethnic composition of the patient pool, and therefore focused on how to diversify the dental workforce and how to eliminate barriers for international dentists to obtain licenses to practice in the U.S.^{2,12}

To increase the number of educated, well-trained health care providers of all racial/ethnic backgrounds, Track 3 suggested expanding pipeline programs in mostly minority and low-income middle and high schools and support efforts to address disparities that exist in dental education. The group also suggested supporting minority students during their professional training with focused and deliberate mentorship programs and grants as well as supporting them during their education period to become licensed health care providers with increased scholarships and loan repayment programs.

Track 3 recognized there is a pool of well-trained, ethnically and culturally diverse foreign-trained dentists in California and recommended establishing a California foreign-trained dentists association that could provide strategies and grant opportunities for supporting foreign-trained dentists' transition to licensed status in California.

Track 4: Access to Care and Barriers to Care

The group's key recommendations for increasing access to care and decreasing barriers to care include expansion of the virtual dental home, support of community oral health workers (COHW) and promoting interprofessional education (IPE) and interprofessional practice (IPP).

Virtual Dental Home/Teledentistry

Virtual dental homes and teledentistry are increasingly being used to increase access to care, as it is a challenge for many people to visit a dental office due to factors such as distance, lack of transportation and inflexible work schedules. Track 4 recommended schools be responsible for helping children who do not have a dental home find one. The group discussed how to incentivize school principals to ensure all children have a dental home. One suggestion was that kids with dental caries sequelae should

The Track 4 group suggested training and supporting nurses and medical assistants to provide proper patient oral health education.

not be allowed to attend school until they receive care. Because schools are paid per daily student attendance, this would provide a strong financial incentive to comply with this requirement.

Community (Oral) Health Workers (COHWs)

Community health workers (CHWs) are valuable resources, particularly for high-risk and vulnerable communities, and are an important link between the community and utilization of health care services. They can provide counseling, referrals and follow-up appointments. The group suggested having CHWs with oral health training (COHWs) educate and train other oral health stakeholder organizations on oral health care, as AARP, PTAs, nurse-family partnerships

and EHS do. All COHWs should be trained to have a general knowledge of oral health and should have access to a limited number of dentists with whom they can consult to ask specific questions. COHWs should connect with the entire health care network (both medical and dental) and should be part of an integrated team (versus a silo) that will follow up with patients to maintain continuity of care. There should be a formalized system of getting COHWs into the community that is both systematic and efficient. They can then connect families with the right type of care. Providing referrals to patients in person and offering to assist them in setting up appointments may help ensure children actually see a provider and obtain any needed follow-up care, as opposed to just receiving a piece of paper with a referral written on it.

Interprofessional Education (IPE) — Interprofessional Practice (IPP)

Interprofessional education is being discussed all over the nation but has not yet been universally implemented. Systems are needed to establish formal communication, collaboration and referral networks across professions at all levels.^{13,14} The Track 4 group suggested training and supporting nurses and medical assistants to provide proper patient oral health education (e.g., conduct oral health screenings and apply fluoride varnish) and increasing collaboration among dental and medical professionals, beginning when they are in training. The committee discussed how dentists and PCPs could better work together to improve their patients' oral health and overall health by viewing IPE as part of the core curricula rather than as supplemental. Working closely with dental hygiene schools was also suggested.

Track 4 also recognized that increasing access to care for special needs patients should be a priority and recommended incentivizing dentists to provide care to these patients because the work is time and labor intensive. Additionally, it was recommended to improve system structures and protocols to ensure effective referrals and aligned responses across clinical care, social services and family support for patients with special needs.

Track 5: The Impact of Emerging Technology on Future Patient Care

Track 5 participants discussed the role of emerging technologies in the field of dentistry, such as lasers, robotics and omics (the use of biological molecules/biomarkers as diagnostic tools). Technology can connect, empower and support health professionals wherever they practice. Harnessing the power of technology allows providers to impact communities by creating a culture of health, supporting health care education and providing preventive care practices.

Group members also discussed the importance of ensuring underrepresented populations have access to technologies intended to be used by patients, such as smartphone apps and e-health communication.

Discussion

The Path Forward

While achievements in expanding health care to all have been made in recent years, improving the quality of oral health care and funding innovative local oral health pilots that reach underserved populations are desperately needed. ECC is still the most common chronic disease of children, and communities of color still experience the burden of disease and persistent health disparities.

The group members for each of the five tracks proposed many insightful policy and advocacy recommendations and suggestions for how to promote social justice and health equity in oral health and ECC prevention for California's children and underserved populations. Key recommendations included the following:

- Instituting a value-based/patient outcome-based reimbursement system that removes current incentives that prioritize treatment over prevention. For example, the Centers for Medicare & Medicaid (CMS) funded a California-based pilot program known as the Dental Transformation Initiative (DTI). This five-year program, implemented in California's Medi-Cal Dental Program, utilizes four "domains" to emphasize investment in preventive strategies, payment incentives for dentists who deliver appropriate care, continuity of care and risk assessment.¹⁵ In particular, Domain 2 provides an additional monetary incentive for dental providers to perform a preventive caries risk assessment and provide nutritional counseling and self-management goals to patients.¹⁶
- Implementing a mandatory age-1 visit for all children and mandatory oral health assessment at all elementary schools as required by AB 1433. Mandatory age-1 visits should also apply to infants and preschoolers in day care centers, WIC centers and EHS. Currently, Head Start encourages parents to take their children to a dentist before age 3, but parents are not required to provide a written form documenting a dental visit until their child is 3 years old. Fully implementing and enforcing

AB 1433 is crucial, as it would hold schools accountable for collecting, tracking and following up on oral health assessment forms for kindergarteners entering schools.¹⁷

- Using portions of soda and marijuana taxes and, potentially, funds from opioid lawsuit judgments for oral health promotion.
- Increasing the number of educated, well-trained health care providers of various racial/ethnic backgrounds by expanding pipeline programs in mostly minority and low-income middle and high schools and supporting efforts to address racial/ethnic disparities in dental education.
- Tapping into the underutilized pool of well-trained, ethnically and culturally diverse foreign-trained dentists and establishing a California foreign-trained dentists association that could provide strategies and grant opportunities for supporting foreign-trained dentists' transition to licensed status in California.
- Maximizing the use of successful CHW models to improve access to care for underserved and minority populations. For example, a pilot study conducted by Salcedo et al. used a *promotoras de salud* (promoters of health) model to examine changes in caregivers' knowledge, attitudes and practices regarding their children's oral health after the implementation of a targeted and culturally appropriate educational intervention.¹⁸ Caregivers trained by dental students and pediatric dental residents were assessed prior to the start of the training/intervention and six weeks after its completion. The results showed

