

Comments of the American Dental Education Association
To the Committee on Energy and Commerce on
"Reforming the National Institutes of Health: Framework for Discussion"



Introduction

The American Dental Education Association (ADEA) appreciates the opportunity to provide feedback on the Committee's paper "Reforming the National Institutes of Health: Framework for Discussion."

Periodic review of organizational mission, structure and operations are important to any entity, including the continued efficient and effective biomedical research that will lead to advances in our knowledge of and cures for human ailments. Self-reflection has long been a hallmark of academic rigor and analysis, and all entities benefit from taking a step back and examining how they can be more effective and do better at their task.

Establishing a holistic life state approach, as the Committee suggests, requires that every funding decision includes thought and consideration of the relationship of oral health to overall health. As we have learned over time, many diseases first manifest in the oral cavity and oral health interventions modify systemic diseases (e.g., treatment of periodontal disease reduces morbidity and health care costs to control diabetes). The treatments for a range of diseases have implications or complications for the oral health of the individual (e.g., oral discomfort is the primary side effect of the 20 most common prescribed medications in the United States, which in turn may lead to other systemic health problems). Further, the incidence of oral cancer is increasing in the U.S. population and research is needed to understand earlier diagnosis and potential therapies. Oral cancer is still diagnosed late and has a poor 50% five-year survival rate¹.

Oral health is an essential component to overall health and well-being. Routine oral health care is as essential to good health as routine medical care. Oral health care provides the opportunity for early diagnosis and care, and expanding access, particularly to communities in rural areas, veterans, people who are housing insecure and communities of color, along with other underserved communities, will improve overall health, patient quality of life and bend the health care cost curve by encouraging prevention.

Therefore, an Institute dedicated to oral, dental and craniofacial research on the critical relationship of oral health to systemic health cannot be lost. The impact on oral health research would be dire as investigators lose valuable insights critical to research discoveries and research training opportunities are lost for the next generation. ADEA, representing the oral health education communities, cannot support such a restructuring plan.

¹ "Oral Cancer 5-Year Survival Rates by Race, Gender, and Stage of Diagnosis", survey by the National Cancer Institute, 2012-2018. <https://www.nidcr.nih.gov/research/data-statistics/oral-cancer/survival-rates>. Accessed August 5, 2024.

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The Importance of Oral, Dental and Craniofacial Research to Holistic Health

The National Institute of Dental and Craniofacial Research (NIDCR) just completed its 75th anniversary year. In 1948, President Harry S. Truman signed legislation creating an Institute at the National Institutes of Health dedicated to oral health research in response to an epidemic of tooth decay in the United States that adversely affected the oral health, overall health and military readiness of the nation during World War II. This national security readiness concern dates to the Civil War and continues to our time.^{2,3}

NIDCR has become the nation's and the world's primary dental, oral and craniofacial research and research training organization, advancing fundamental knowledge about dental, oral and craniofacial health and disease, disease prevention, early detection and treatment strategies to improve overall health for all individuals and communities across the lifespan. It is the steward of the nation's oral health research enterprise that supports research funding, management and science training across the country and the globe.

NIDCR researchers pioneered the use of epidemiology and preventive approaches to demonstrate that dental caries is an epidemic disease and community water fluoridation is a safe, effective, equitable and economical way to prevent and reduce tooth decay. Community water fluoridation is considered one of the 10 greatest public health achievements of the 20th century.

In addition, NIDCR opened the first multidisciplinary pain clinic devoted exclusively to research on the pathophysiology and treatment of pain; established major initiatives to support cutting-edge research on temporomandibular disorders (TMDs)⁴; sponsored an international technology assessment conference on the management of TMDs; launched the Orofacial Pain: Prospective Evaluation and Risk Assessment (OPPERA) clinical study to generate an evidence base to inform the development of novel approaches to treat TMD; co-sponsored the consensus study titled "Temporomandibular Disorders: Priorities for Research and Care" to help inform approaches to advancing TMD research and guide the development of evidence-based treatment and clinical management of TMD patients; established a TMD Multi-Council Working Group to develop a roadmap of TMD research and training priorities; and launched the national TMD Collaborative for Improving Patient-Centered Translational Research (TMD IMPACT) to advance research, training and translation to improved clinical care.

NIDCR made strategic investments in all areas of dental, oral and craniofacial research funding to provide support for research grants in 33 states, which led to many scientific advances, including development of novel nanocomposites (a.k.a., advanced dental filling materials) and self-healing dental restorative materials; the Dental, Oral, and Craniofacial Tissue Regenerative

² "Dental Health Readiness: Keeping Soldiers Deployable and in the Fight", <https://www.defensemедianetwork.com/stories/dental-health-and-readiness/#:~:text=Lifestyle%20differences%20in%20deployed%20environments,wisdom%20teeth%2C%20or%20acute%20gingivitis>. Accessed July 31, 2024

³ Ryan JB, Scott T, McDonough R, Schindler D, Irwin SP, Badner VM. Oral health risk factors and overall dental treatment needs for incoming air force recruits. *J Public Health Dent.* 2023 Sep;83(4):371-380. doi: 10.1111/jphd.12590. Epub 2023 Oct 31. PMID: 37906178.

⁴ Temporomandibular disorders (TMDs) are a group of more than 30 conditions that cause pain and dysfunction in the jaw joint and muscles that control jaw movement. "

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Consortium (DOCTR-C), which was launched to develop methods for regenerating functional tissues of the human dental, oral and craniofacial complex; and an NIDCR-sponsored symposium focusing on the Science and Development of Autotherapies.

In collaboration with the Office of the Surgeon General, NIDCR supported the 2000 [Oral Health In America: A Report of the Surgeon General](#), the first Surgeon General report dedicated solely to oral health; and, in 2021, and the [Oral Health in America: Advances and Challenges](#) report, examining progress on the nation’s oral health and serving as a national call to action.

The [NIDCR Strategic Plan: 2021-2026](#) articulates the Institute’s vision. The report identifies investments designed to diminish disparities and yield the greatest impact for those with dental and oral diseases; expanded collaborations and partnerships to accelerate new discoveries, including examining the nerves in the jaw and temporomandibular joint as part of the Restoring Joint Health and Function to Reduce Pain (RE-JOIN) Consortium (NIH HEAL Initiative®); launched the Practice-based Research Integrating Multidisciplinary Experiences in Dental Schools (PRIMED), to expand research training into dental school clinics equipping future oral health practitioners with the knowledge to carry out research; and released the Advancement of Head and Neck Cancer Early Detection Research (AHEAD) initiative to develop biomarkers and novel technologies for early detection of malignant cells in order to halt oral cancer progression. NIDCR is looking to the future of biomedical science by continuing to support, discover and develop cutting-edge approaches to improve the dental, oral craniofacial, and overall health of all Americans.

NIDCR has supported various projects that translate research into commercial products. This includes innovations in dental materials, diagnostic tools and treatment methods. These projects often receive funding through programs aimed at accelerating product development and commercialization.⁵

By any measure, NIDCR is a vital, venerable and essential component of the NIH and America’s overall public health and science strategy. It is safe to say that none of these advances would have occurred if there was not an Institute dedicated solely to the research of oral health.

The Oral and Systemic Health Connection

The strong evidentiary links between oral health and systemic health are undeniable.

There is growing recognition of the importance of integrating oral health and primary care.⁶ A major limiting factor in improving patient outcomes is the lack of collaboration between health care professionals generally and the historic separation of dental medicine from the practice of medicine more broadly.

⁵ NIDCR75 Symposium: “Accelerating Product Innovation and Development – From Research to Commercialization”; March, 2024; <https://www.nidcr.nih.gov/news-events/events/2024/nidcr-75-accelerating-product-innovation-development-research-commercialization>. Accessed August 5, 2024.

⁶ West K. The Reciprocal Relationship Between Oral and General Health. A Message from the ADEA President and CEO. ADEA membership email communication, April 23, 2021. <https://adea.informz.net/informzdataservice/onlineversion/ind/bWFpbGluZ2luc3RhbmNlaWQ9OTk4NTE0NCZzdWJzY3JpYmVyaWQ9MTA3MTgxNTY3MQ==>. Accessed July 31, 2024.

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The oral cavity serves as a gateway to the rest of the body, and its health directly impacts and is impacted by our systemic well-being. The oral health team—dentists and allied dental professionals—are an integral part of the health care workforce and are well qualified and trained to work in an interdisciplinary manner within the primary care health system.⁷ In fact, research has shown that approximately 27 million people annually have a dental visit but not a physician visit.⁸ This presents an opportunity for dentists and allied dental professionals to perform screening for chronic disease conditions, such as diabetes and cardiovascular disease (heart attacks, hypertension and strokes), and then refer the patient to a primary care physician or other appropriate medical specialists. Many diseases manifest early in the oral cavity. Diagnosing diseases earlier improves outcomes, patient quality of life and lowers health care costs.

Chronic diseases are among the most prevalent conditions in the United States and are often linked with the chronic diseases of oral health. Today, six in 10 adult Americans have one chronic condition, and diabetes and cardiovascular disease are two of the top 10 leading causes of death in the United States.⁹ Periodontitis, a severe inflammatory oral disease that can lead to tooth loss, is a risk factor for poor metabolic control and diabetes.¹⁰ The bidirectional relationship between periodontitis and diabetes is evident. Research finds that type 2 diabetes elevates the risk of periodontitis by 34%, while periodontitis contributes to the incidence of type 2 diabetes by 53%.¹¹

In addition to being a risk factor for diabetes, the inflammation associated with periodontal disease may contribute to the development of atherosclerosis, a condition characterized by the buildup of plaque in arteries, potentially increasing the risk of heart attacks and strokes.¹² In fact, the risk of developing heart disease is 1.4 times greater in groups with periodontal disease than in those with no periodontal disease.¹³ Moreover, studies suggest that periodontal disease may

⁷ MacNeil RLM, Hilario H. The Case for Integrated Oral and Primary Medical Health Care Delivery: Synopsis and Recommendations. *J Dent Educ*, 2020;84(8):936-938. <https://doi.org/10.1002/jdd.12287>.

⁸ Vujcic M, Israelson H, Antoon J, Kiesling R, et al. A Profession in Transition. *J Am Dent Assoc*, 2014;145(2):118-21. <https://doi.org/10.14219/jada.2013.40>.

⁹ Centers for Disease Control and Prevention. Leading Causes of Death. <https://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm>. January 18, 2023. Accessed August 5, 2024.

¹⁰ Lamster IB, Lalla E, Borgnakke WS, Taylor GW. The Relationship Between Oral Health and Diabetes Mellitus. *J Am Dent Assoc* 2008;139 Suppl:19S-24S. <https://doi.org/10.14219/jada.archive.2008.0363>.

¹¹ Wu CZ, Yuan YH, Liu HH, et al. Epidemiologic Relationship Between Periodontitis and Type 2 Diabetes Mellitus. *BMC Oral Health* 2020;20(1):204. <https://doi.org/10.1186/s12903-020-01180-w>.

¹² Harvard Medical School. Gum Disease and Heart Disease: The Common Thread. <https://www.health.harvard.edu/heart-health/gum-disease-and-heart-disease-the-common-thread>. February 15, 2021. Accessed August 5, 2024.

¹³ Sia SK, Jan MS, Wang YH, Huang YF, Wei JC. Periodontitis is Associated with Incidental Valvular Heart Disease: A Nationwide Population-Based Cohort Study. *J Clin Periodontol* 2021;10.1111/jcpe.13478.

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worsen the symptoms of rheumatoid arthritis.¹⁴ Alzheimer’s disease and dementia have also both been found to have a link to periodontal disease.¹⁵

The immune system plays a pivotal role in maintaining balance between oral health and systemic health. A healthy mouth serves as a barrier to prevent harmful microorganisms from entering the body. Conversely, systemic conditions that compromise the immune system can weaken this defense mechanism, allowing oral infections to take hold. For example, human immunodeficiency viruses (HIV) is the virus responsible for acquired immunodeficiency syndrome (AIDS). HIV weakens the immune system, leaving a person susceptible to opportunistic infections. These infections can enter the body through the mouth and cause systemic as well as oral health problems.¹⁶ Some of the most common oral health problems for people living with HIV/AIDS are chronic dry mouth, gum disease (gingivitis), bone loss around the teeth (periodontitis), canker sores, oral warts, fever blisters, thrush (oral candidiasis), hairy leukoplakia (which causes a rough, white patch on the tongue) and tooth decay.¹⁷ Therefore, maintaining good oral health directly impacts successfully managing HIV and overall health.

According to the National Financial Partners (NFP)’s “US Benefits Trend Report 2023,” approximately two out of every three employers offer at least one dental plan, with 46% offering one plan, 18% offering two plans and 3% offering three or more plans.¹⁸ Furthermore, according to Kaiser Family Foundation (KFF), among firms offering health benefits in 2019 included in the report, 59% of small firms (3-199 workers) and 92% of large firms (200 or more workers) offered a dental insurance program to their workers separate from the health plan(s).¹⁹ However, despite these numbers, 68.5 million U.S. adults do not have oral health care coverage. By the end of 2023, that number may have risen to 91.4 million due to the loss of Medicaid coverage caused by the unwinding of the Medicaid continuous enrollment provision due to the COVID-19 public health emergency.²⁰

Ensuring Health Equity

In 1999, NIDCR introduced its “Strategic Plan to Reduce Racial and Ethnic Health Disparities,” supporting research to end oral health disparities and increase research and clinical workforce

¹⁴ Bingham III, C, Mallini, M. Periodontal Disease and Rheumatoid Arthritis: The Evidence Accumulates for Complex Pathobiologic Interactions. *Curr Opin Rheumatol*. 2013 May; 25(3): 345–353. doi: 10.1097/BOR.0b013e32835fb8ec.

¹⁵ American Dental Association. Oral-Systemic Health. <https://www.ada.org/resources/research/science-and-research-institute/oral-health-topics/oral-systemic-health>. September 11, 2023. Accessed August 5, 2024.

¹⁶ National Institute of Dental and Craniofacial Research. HIV/AIDS and Oral Health. <https://www.nidcr.nih.gov/health-info/hiv-aids>. May 2023. Accessed August 5, 2024.

¹⁷ *Id.*

¹⁸ National Financial Partners (NFP). US Benefits Trend Report 2023. https://www.nfp.com/media/djsfwbiu/2023_usbenefitstrendreport.pdf. 2023. Accessed August 5, 2024.

¹⁹ KFF. Employer Health Benefits 2019 Annual Survey. <https://files.kff.org/attachment/Report-Employer-Health-Benefits-Annual-Survey-2019>. September 2019. Accessed August 5, 2024.

²⁰ CareQuest Institute for Oral Health. State of Oral Health Equity in America Survey. <https://www.carequest.org/about/press-release/new-report-685-million-adults-us-dont-have-dental-insurance-may-rise-914>. September 6, 2023. Accessed July 31, 2024.

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diversity, then funded five Centers for Research to Reduce Oral Health Disparities, which were among the first NIH centers focused on reducing health disparities.

In the article by CareQuest Institute for Oral Health, "Integrating Oral and Systemic Health: Innovations in Transdisciplinary Science, Health Care and Policy," the authors note that the perception that oral health is less important to overall health and well-being has resulted in decreases in funding, and lack of access to care has led to underserved communities having significant and consequential disparities in oral health compared to those seen in other areas of health.²¹

Access to preventive oral health services among vulnerable communities is dependent on health care coverage. Such coverage will not only produce better access to oral health care, but also reduce health inequities by lowering a major barrier to care, cost. In a recent study, 32% of adults and 26% of seniors with low incomes report that cost is a barrier to accessing oral health care.²²

According to the Centers for Disease Control and Prevention (CDC), non-Hispanic Black or Mexican American adults have twice as many untreated cavities as non-Hispanic White adults, and among working-age U.S. adults, over 40% of low-income and non-Hispanic Black adults have untreated tooth decay.²³ The impact of untreated oral disease continues to accrue as these populations age. More than nine in 10 adults 65 and older have had cavities, and one in six have untreated cavities.²⁴ Older non-Hispanic Black or Mexican American adults have two to three times the rate of untreated cavities as older non-Hispanic White adults.²⁵ Untreated and active dental disease inequitably affects the general health outcomes of chronic diseases leading to increased morbidity and healthcare costs in underserved communities.

Oral Health Research Contributes to Reducing Health Care Costs

Chronic diseases are costly. According to the CDC, chronic diseases account for \$4.5 trillion in annual health care costs,²⁶ with an average of \$5,300 per person annually.²⁷ For example, the

²¹ Somerman M, Mouradian WE. Integrating Oral and Systemic Health: Innovations in Transdisciplinary Science, Health Care and Policy. 2020. *Front. Dent. Med.* 1:599214. <https://doi.org/10.3389/fdmed.2020.599214>.

²² Vujicic M, Fosse C, Reusch C, Burroughs M. Making the Case for Adults in All State Medicaid Programs. Health Policy Institute White Paper. American Dental Association in partnership with Community Catalyst and Families USA. July 2021. https://www.ada.org/-/media/project/ada-organization/ada/ada-org/files/resources/research/hpi/whitepaper_0721.pdf?rev=a70876d749bf4e00965b122aed23ceb0&hash=38CB60D2D0BE01DA90BD606423142A2D. Accessed August 5, 2024.

²³ Centers for Disease Control and Prevention. Disparities in Oral Health. https://www.cdc.gov/oral-health/health-equity/?CDC_AAref_Val=https://www.cdc.gov/oralhealth/oral_health_disparities/. February 5, 2021. Accessed August 5, 2024.

²⁴ [Id.](#)

²⁵ [Id.](#)

²⁶ Centers for Disease Control and Prevention. Chronic Disease in America. https://www.cdc.gov/chronic-disease/about/index.html#cdc_disease_basics_overview-chronic-diseases-in-america. May 15, 2024. Accessed August 5, 2024.

²⁷ Raghupathi W, Raghupathi V. An Empirical Study of Chronic Diseases in the United States: A Visual Analytics Approach to Public Health. *Int J Env Res Pu* 2018;15(3):431. <https://doi.org/10.3390/ijerph15030431>.

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American Diabetes Association estimates that direct medical expenditures related to diabetes on average are 2.6 times higher than expenditures in the absence of diabetes.²⁸ According to Million Hearts®, a national initiative focused on improving cardiovascular health co-led by the CDC and the Centers for Medicare & Medicaid Services, heart disease and stroke cost the nation an estimated \$316.6 billion in health care costs and lost productivity in 2011.²⁹ For low-income patients with periodontal disease who are receiving treatment and care, research indicates that medical costs would be reduced between \$900–\$2,840 per patient with diabetes and by \$1,090 per patient with heart disease had they received care sooner.³⁰

Screening for such health conditions by oral health professionals, including dentists and allied dental providers, can be a valuable public health service. Long-term cost reductions occur when disease is detected early and treatment may reverse or mitigate its effect, thus saving future chronic disease management and treatment costs. A study of medical screenings performed in dental offices for diabetes and cardiovascular disease conditions (high blood pressure) estimated potential health care cost savings from \$42.4 million (\$13.51 per person screened) to \$102.6 million (\$32.72 per person screened) over a one-year period.³¹ As the integration of dental care and primary health care becomes widely accepted, not only will early detection of chronic health conditions be more efficient, but the costs associated with the treatment and management of these conditions will also be lowered.

Maintaining optimal oral health is not just about preserving a bright smile; it is a crucial element in the broader context of overall well-being. By recognizing and addressing the connections between oral and systemic health, NIDCR is taking action to improve overall population health and patient quality of life, and to reduce the cost of health care.

Conclusion

The future of health care is collaborative practice. It is the promise of Accountable Care Organizations and the growing focus of health professions education where oral health and medical professionals are being trained together and with other professions in clinical settings together to provide truly comprehensive care to patients.

The importance of the relationship oral health and dental and craniofacial research has to systemic health cannot be lost and must remain at the forefront of biomedical research as an

²⁸ Parker ED, Lin J, Mahoney T, Ume N, Yang G, Gabbay RA, ElSayed NA, Bannuru RR. Economic Costs of Diabetes in the U.S. in 2022. *Diabetes Care* 2023; Nov 1: dci230085. <https://doi.org/10.2337/dci23-0085>.

²⁹ Department of Health and Human Services. Million Hearts National Initiative. <https://millionhearts.hhs.gov/learn-prevent/cost-consequences.html>. February 26, 2021. Accessed August 5, 2024.

³⁰ Vujicic M, Fosse C, Reusch C, Burroughs M. Making the Case for Adults in All State Medicaid Programs. Health Policy Institute White Paper. American Dental Association in partnership with Community Catalyst and Families USA. July 2021. https://www.ada.org/-/media/project/ada-organization/ada/ada-org/files/resources/research/hpi/whitepaper_0721.pdf?rev=a70876d749bf4e00965b122aed23ceb0&hash=38CB60D2D0BE01DA90BD606423142A2D. Accessed August 5, 2024.

³¹ Nasseh K, Greenberg B, Vujicic M, Glick M. The Effect of Chairside Chronic Disease Screenings by Oral Health Professionals on Health Care Costs. *Am J Public Health*, 2014;04(4), 744-750. <https://doi.org/10.2105/ajph.2013.301644>.

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integrated part of whole-body health. Advancing oral health research across all segments of the population results in cost savings, improved health and maintains or improves quality of life.

Thank you again for the opportunity to provide comments, and if you have any questions or want further information please contact Tim Leeth, ADEA Chief Advocacy Officer, at leetht@adea.org or 202-236-5354. Thank you for your consideration of these comments.

About ADEA: The American Dental Education Association (ADEA) is The Voice of Dental Education. Our mission is to lead and support the health professions community in preparing future-ready oral health professionals. Our members include all 80 U.S. and Canadian dental schools, more than 800 allied and advanced dental education programs, more than 55 corporations and approximately 15,000 individuals. Our activities encompass a wide range of research, advocacy, faculty development, meetings and communications, including the peer-reviewed *Journal of Dental Education*. We also offer the dental school application services ADEA AADSAS[®], ADEA PASS[®], ADEA DHCAS[®] and ADEA CAAPID[®].

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