

Discover how NIDCR-funded research is enhancing knowledge and improving public health.

Oral Health & Opioids

Overview

Prescription opioid misuse and addiction is a dangerous and lethal problem in the U.S. In 2022 an average of 224 Americans died each day from an opioid-related overdose.¹ Nearly 14% of all drug overdose deaths involved prescription opioids.² When taken as prescribed for short periods under a clinician's care, opioids can be an effective pain management tool. However, prescription opioids carry the risk of misuse, addiction, and overdose — particularly if they are used for non-medical purposes.



The Prescription Opioid Crisis

- Approximately 125 million opioid prescriptions were dispensed to American patients in 2023.³
- From 1999 to 2022, approximately 294,000 people in the U.S. died from overdoses involving prescription opioids, a fourfold increase over this time frame.²

What Is the Link Between Oral Health and Opioids?

Dentists, including oral and maxillofacial surgeons, may prescribe opioids to treat acute, short-term pain after dental procedures or orofacial surgery. Adolescents and young adults are often first exposed to opioids following dental procedures such as wisdom tooth extraction. Prescribing opioid pain medication after a dental procedure to manage post-procedure, short-term pain increases the risk of opioid misuse, opioid use disorder, and overdose — particularly among adolescents and young adults. In addition, overuse of opioids can cause oral health problems such as reduced saliva flow, which can increase the risk of tooth decay and other harmful oral complications.

Although dental opioid prescriptions have declined by about 45% between 2016 (16 million prescriptions) and 2022 (8.9 million prescriptions) in the U.S., the rate of this decline has slowed substantially. Between June 2020 and December 2022, 6.1 million more dental opioid prescriptions were dispensed than would have been expected if the downward trends had continued.⁴ Therefore, reduction efforts are still needed to reduce opioid use and misuse.

How Is NIDCR Investing in Opioid Research?

NIDCR invested about \$4 million into opioid-related research in fiscal year 2024.

NIDCR is funding research aimed at providing scientific solutions to help Americans overcome the opioid crisis by developing strategies to treat chronic pain, end opioid misuse, and live healthy lives.

Examples of NIDCR-supported Research Projects

- **Implementing alternative pain management strategies.** Scientists are developing tools to help change dental care providers' reliance on prescribing opioid pain medications. They are assessing interventions such as interactive educational outreach, patient education, use of non-opioid medications, and utilization of alternative pain management strategies.
- **Collaborating with dentists.** The [National Dental Practice-Based Research Network](#) (PBRN), a collaborative nation-wide initiative, engages more than 8,500 U.S. dental practitioners. One PBRN study is surveying dentists' practices regarding opioid screening for adolescents and adult patients, with the goal of developing tools and procedures for use in dental settings to better identify and address individuals at risk for opioid misuse.
- **Developing non-opioid treatments.** Clinician-scientists are developing a gene therapy treatment approach to modify genes involved in pain signaling or addiction pathways as a treatment for opioid use disorder and chronic pain such as oral cancer pain.
- **Understanding the mechanisms of pain modulation.** Opioids alter gut microbes and cause inflammation. Researchers are exploring how dietary interventions can influence microbes in the digestive system to potentially reduce opioid-induced pain sensitivity and increase tolerance to chronic pain.
- **Exploring noninvasive techniques.** Investigators are studying how stimulating specific areas of the brain involved in pain perception and modulation can activate the body's natural pain-suppressing mechanisms. This approach holds promise for developing new, noninvasive treatments for chronic pain conditions.
- **Partnering with the Helping to End Addiction Long-term® (HEAL) Initiative.** NIDCR is an active partner with the NIH HEAL Initiative to help advance scientific knowledge about the opioid crisis and support research on oral complications associated with pharmacotherapies used to treat opioid use disorders.

Additional Resources

- [NIH Pain Consortium](#) – Established to enhance pain research and promote collaboration among researchers across the many NIH institutes and centers that have programs and activities addressing pain.
- [NIH HEAL \(Helping to End Addiction Long-term®\) Initiative](#) – Trans-agency effort to speed scientific solutions to address the national opioid epidemic through understanding, managing, and treating pain and improving prevention and treatment for opioid misuse and addiction.
- [NIH National Institute on Drug Abuse \(NIDA\): Opioids](#) – Basic facts from NIDA on opioid drugs.

References

1. Centers for Disease Control and Prevention (CDC). [Understanding the opioid overdose epidemic](#) [Internet]. Atlanta (GA): CDC; 2024 Nov.
2. CDC. [Prescription opioids awareness](#) [Internet]. Atlanta (GA): CDC; 2024 Oct.
3. CDC. [Overdose prevention](#) [Internet]. Atlanta (GA): CDC; 2024 Nov.
4. Zhang J, Nalliah RP, Waljee JF, Brummett CM, Chua KP. [Association between the COVID-19 outbreak and opioid prescribing by U.S. dentists](#). PLoS One. 2023 Nov 2;18(11):e0293621. doi: 10.1371/journal.pone.0293621.

Learn more about NIDCR's research investments and advances in regenerative medicine, salivary diagnostics, temporomandibular disorders and more at:

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