

Director's Report to the National Advisory Council on Drug Abuse

Nora D. Volkow, M.D.

Director

National Institute on Drug Abuse

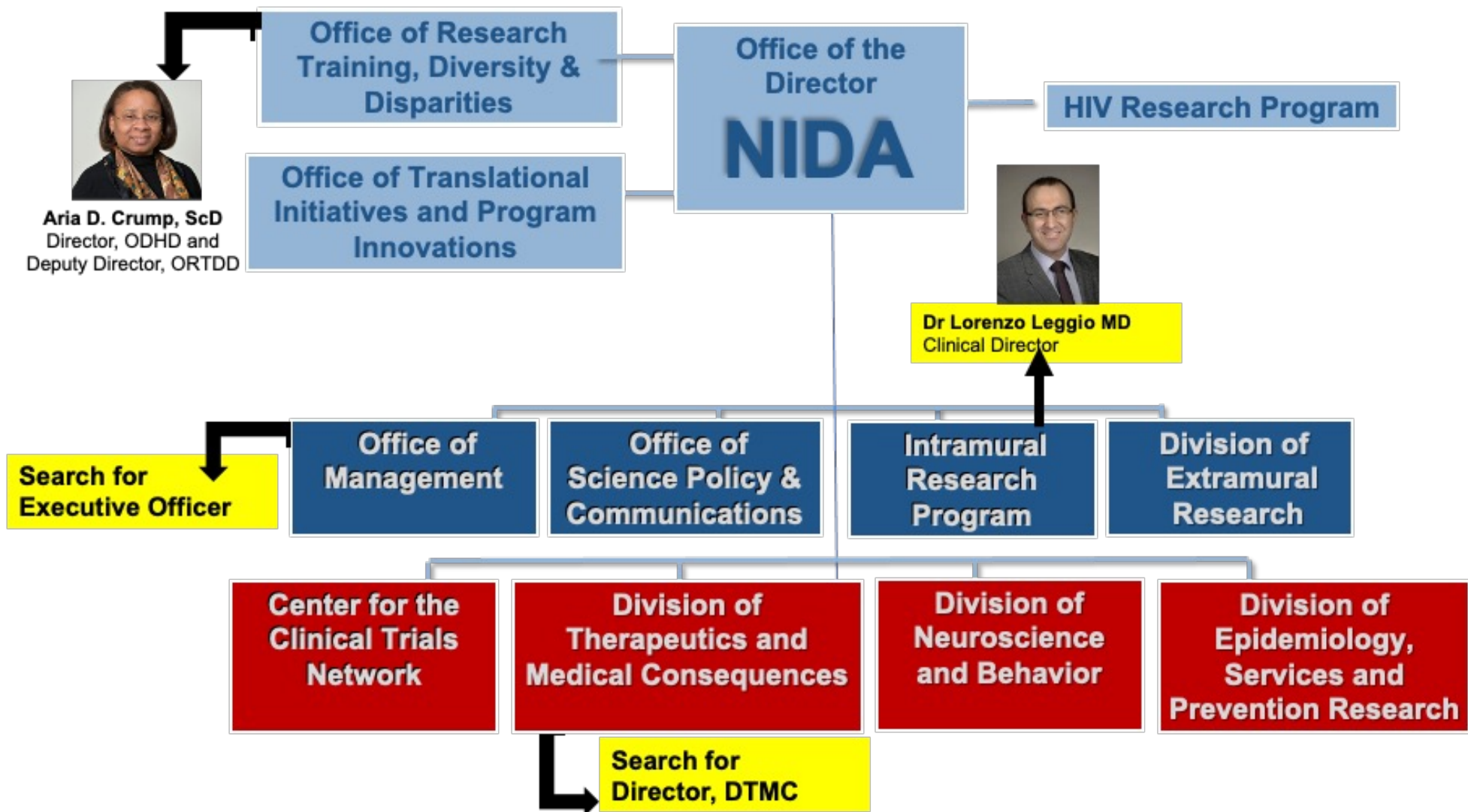
May 9, 2023

NIDA BUDGET

(all dollars are in \$k)

	FY 2022 Final	FY 2023 Enacted	FY 2024 President's Budget
Base	\$1,250,828	\$1,308,070	\$1,308,070
HEAL	\$345,295	\$355,295	\$355,295
Total	\$1,596,123	\$1,663,365	\$1,663,365

*NIDA's FY 23 budget includes a 3.8% general increase as well as a \$10m increase for the HEAL program and a \$10m increase for research on pain and pain management.

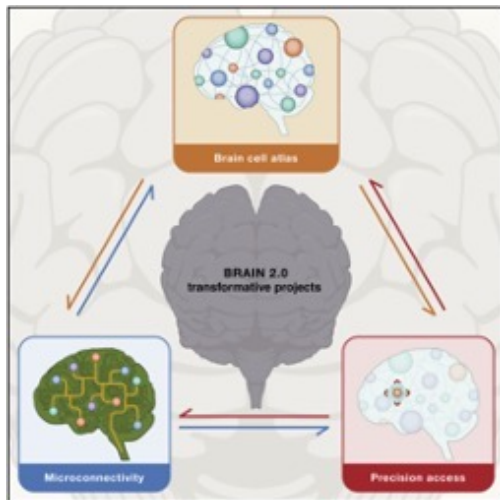
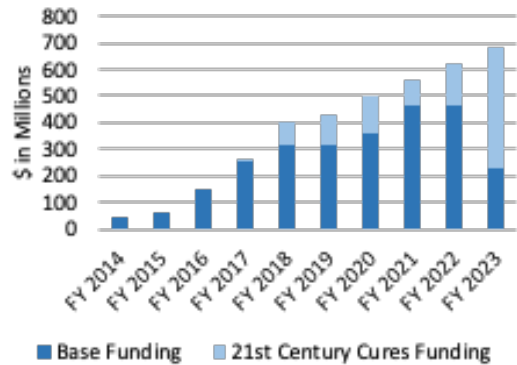




The BRAIN Initiative®

BRAIN 2.0 Transformative Projects

Over \$3B >1300 BRAIN projects



[Ngai, Cell 2022](#)



Leading Edge

Commentary

BRAIN 2.0: Transforming neuroscience

John Ngai^{1,*}

¹NIH BRAIN Initiative, National Institutes of Health, Bethesda, MD, USA

*Correspondence: john.ngai@nih.gov

<https://doi.org/10.1016/j.cell.2021.11.037>

- Building on BICCN, the **BRAIN Initiative Cell Atlas Network (BICAN)** will map brain cells and circuits across multiple species, with an emphasis on humans.
- **BRAIN Initiative Connectivity Across Scales (BRAIN CONNECTS) Network** will provide a wiring diagram by mapping all the connections in the brain.
- The **Armamentarium for Precision Brain Cell Access** leverages new brain cell census data to build a toolkit to access brain cells based on their molecular identity.





The BRAIN Initiative® Meeting

Open Science, New Tools

9th Annual BRAIN Initiative Meeting

In-person & Virtual: June 12-13, 2023



Featuring:

- ✓ Plenary lectures & symposia discussions
- ✓ Trainee highlights & contest winners
- ✓ Poster sessions & networking events
 - *Pre-meeting event: "BRAIN, Neuroscience, and Beyond: Building Our Early Career Community"*

All those interested in the U.S. BRAIN Initiative are encouraged to attend and participate.

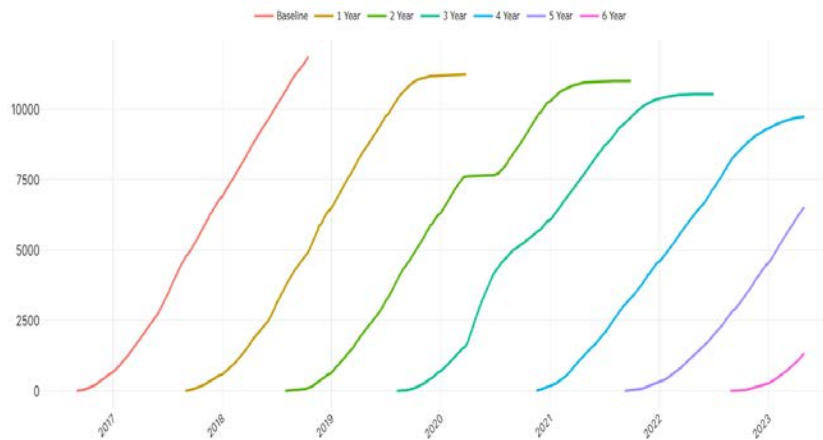


<https://brainmeeting.swoogo.com/2023/home>

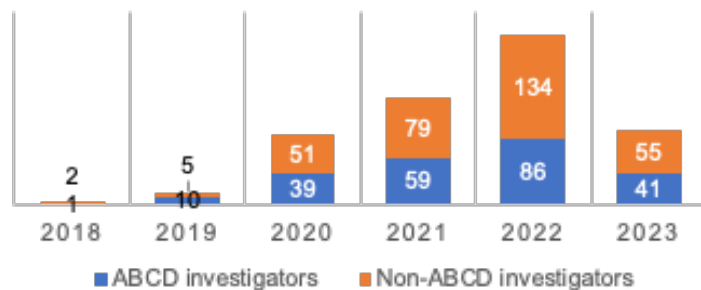


Adolescent Brain Cognitive Development Study

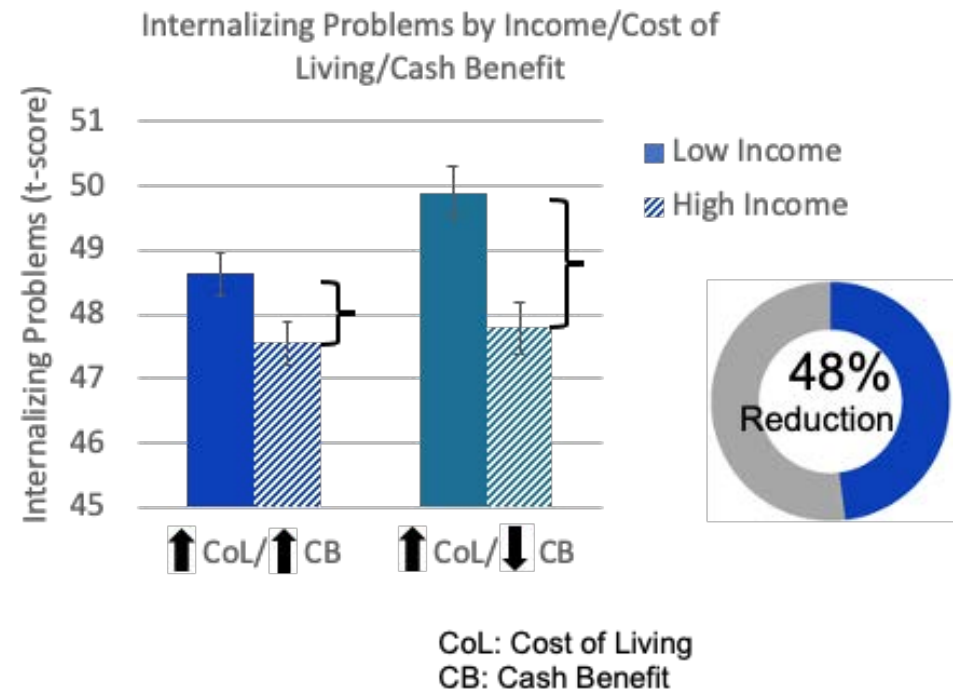
97.1% Percent Retained



PUBLICATIONS
N=562



Antipoverty Programs Associated with Reduced Disparities in Brain Development and Mental Health



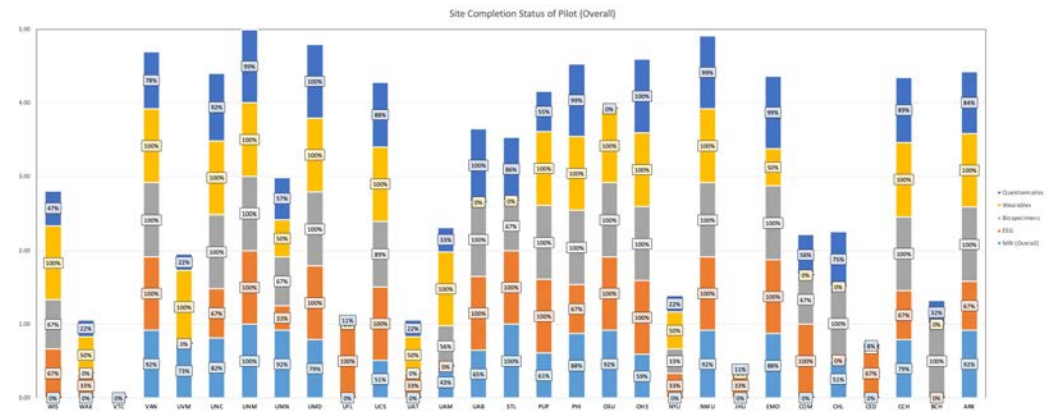
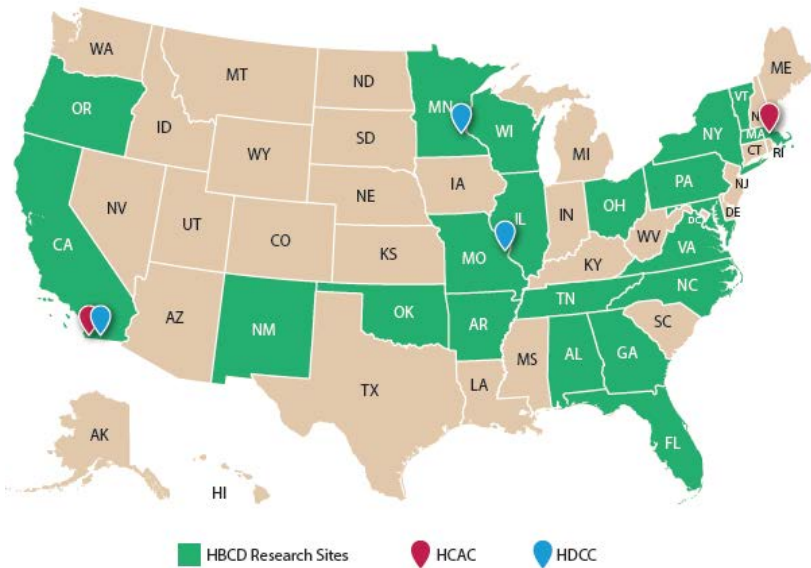


HEALTHy Brain and Child Development Study

- Funded through partnership of NIH Institutes, Centers, and Offices including **HEAL**
- Longitudinal study of normative neurodevelopment **from birth to 9-10 years** that will assess impact of *in utero* exposures to drugs and harmful environments
- Will enroll approximately **7,500 families** across the country

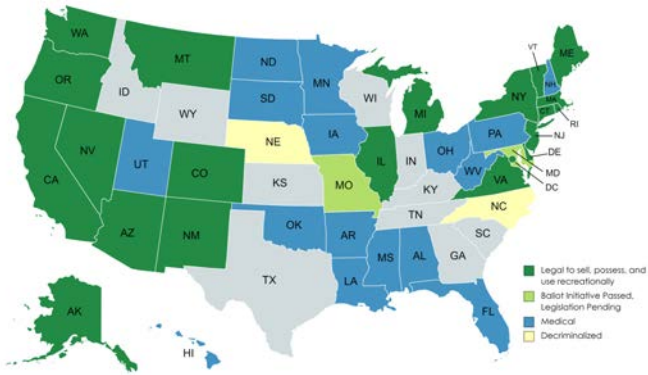
Pilot Study initiated in all sites

- 330 parents, 240 children
- 3 timepoints tested



- Enrollment of study cohort expected in May
- Child Welfare & Research workshop in development

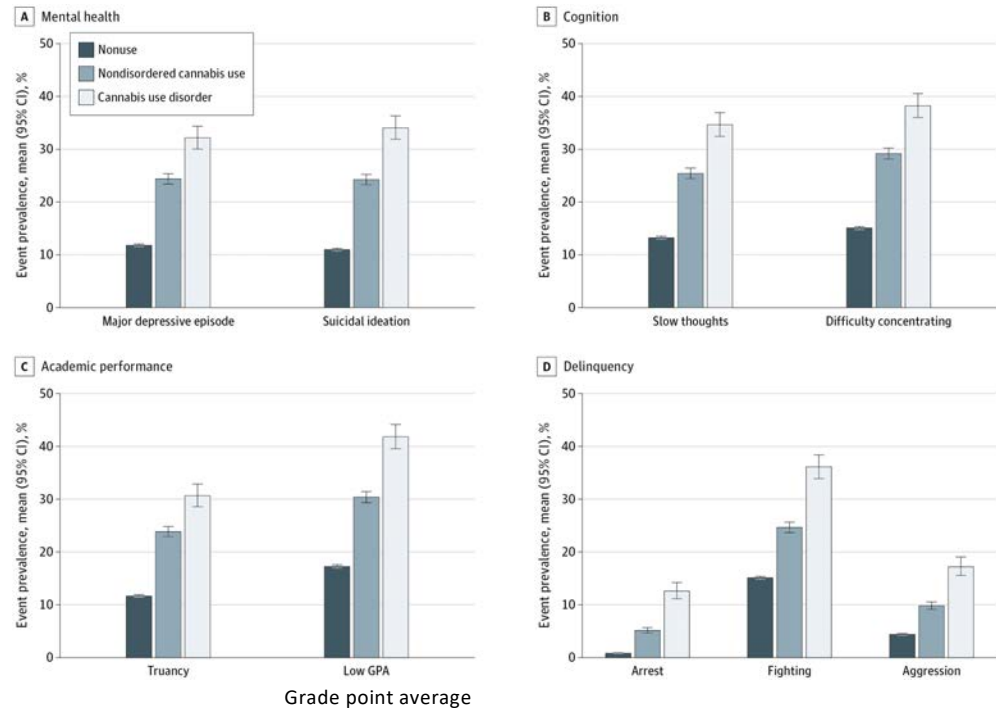
US State Cannabis Laws



38 States & DC with MML
 22 States & DC with Adult Use Laws

Adverse Adolescent Psychosocial Events Among Nonuse, Non-disordered Cannabis Use, and Cannabis Use Disorder

NSDUH Data 2015-2019

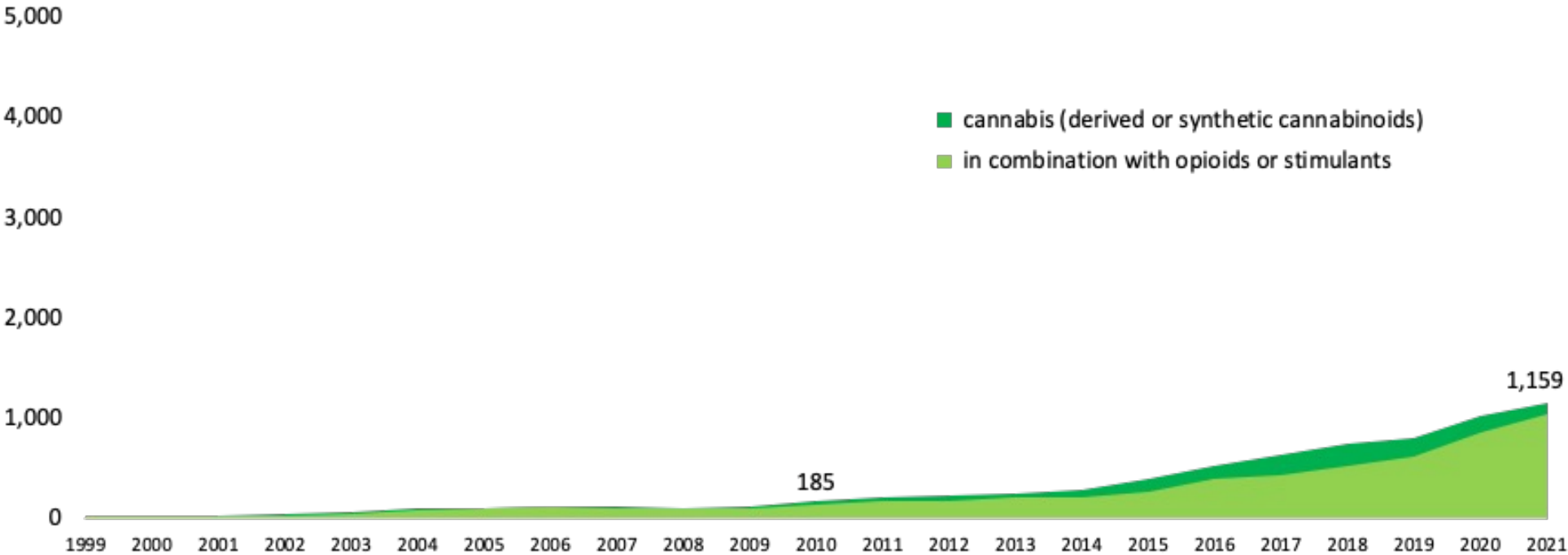


NDCU and CUD were significantly associated with adverse psychosocial events in a stepwise gradient manner

Cannabis-Involved Overdose Deaths Number of fatalities, by Year

In 2021, 90% of fatalities involving cannabis products also involved opioids or stimulants.

*There is no evidence that cannabis products are being laced with fentanyl.



National Vital Statistics System: https://www.cdc.gov/nchs/nvss/mortality_public_use_data.htm.
* Poisoning by, adverse effect of cannabis (derivatives) including synthetic cannabinoids

Provisional* Drug Overdose Deaths 12-months ending in select months

	ALL DRUGS	HEROIN	NAT & SEMI SYNTHETIC	METHADONE	SYNTHETIC OPIOIDS (mainly illicit fentanyl)	COCAINE	OTHER PSYCHO-STIMULANTS (mainly meth)
11/2021*	108,076	9,707	13,938	3,737	71,321	24,487	33,100
12/2021*	109,179	9,411	13,906	3,765	72,484	25,174	33,637
11/2022*	108,712	6,143	11,945	3,346	74,507	27,529	34,135
Percent Change 11/21-11/22	0.58%	-36.7%	-14.3%	-10.5%	4.5%	12.4%	3.1%

*NCHS Provisional drug-involved overdose death counts are PREDICTED VALUES, 12 months ending in select months.
<https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm>

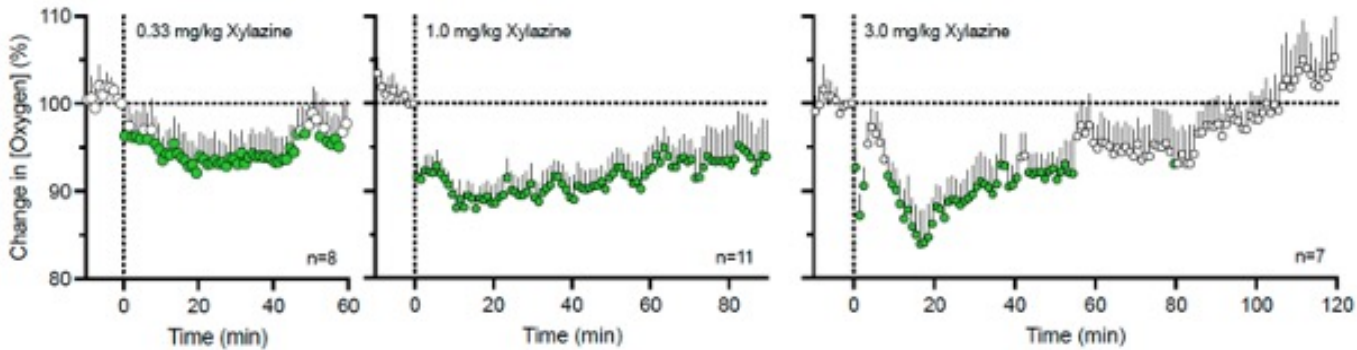
States with at least one positive xylazine detection, 2019-2021



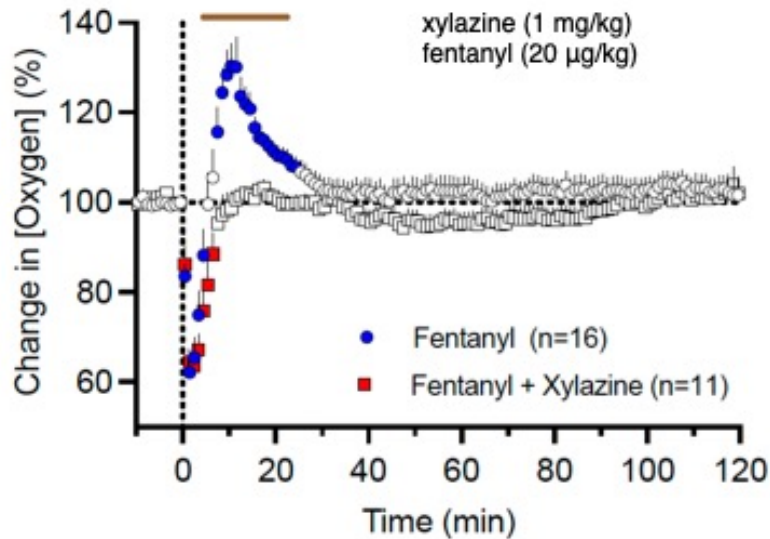
Xylazine

- Alpha-2 adrenergic agonist used as a veterinary sedative
- Inhibits release of norepinephrine, decreasing sympathetic activity
- By itself it induces hypoxia as severe as that from fentanyl but longer lasting
- When combined with Fentanyl it blocks the compensatory hyperoxemia observed with fentanyl (also with heroin)
- When combined with Fentanyl and Heroin it appears to extend the duration of their pharmacological effects (analgesia, respiratory depression, reward)
- Toxic doses in humans range from 40 to 2400 mg (0.6-34.3 mg/70 kg)
- Not reversed by naloxone
- Associated with severe tissue injury

Xylazine effects on Brain Oxygenation



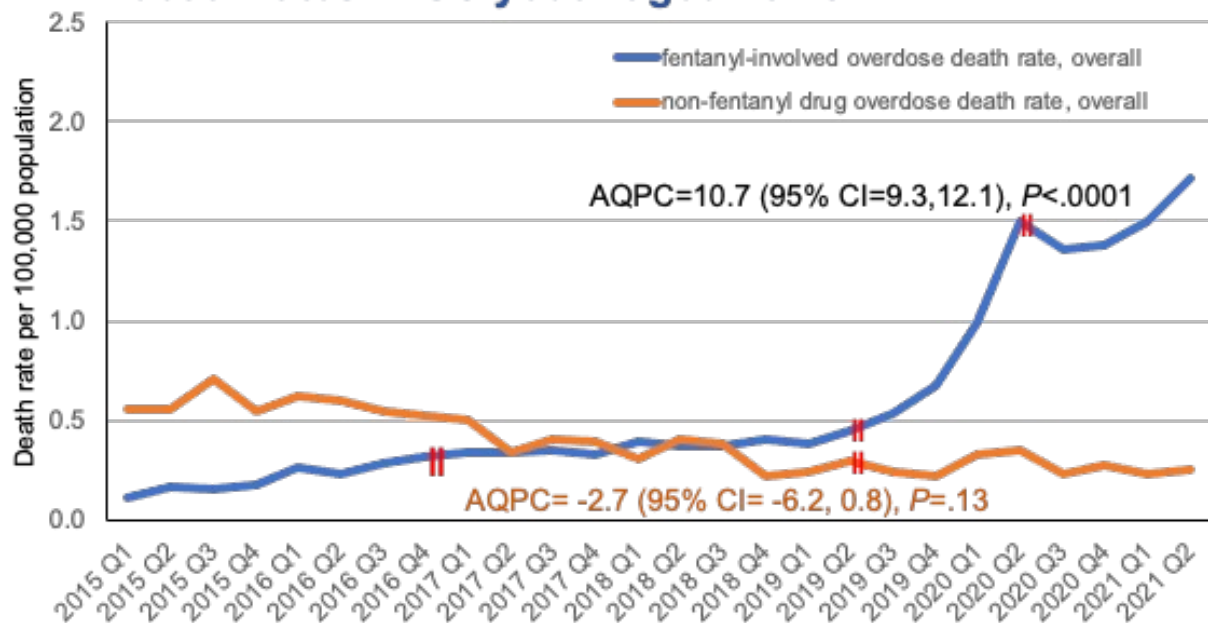
Xylazine by itself induces long lasting decreases in oxygenation of the brain



Xylazine + Fentanyl combination induced a similar peak hypoxic response as Fentanyl alone but blocked the compensatory hyperoxic response observed with fentanyl

Choi et al., bioRxiv preprint doi: <https://doi.org/10.1101/2023.03.31.535103>

Fentanyl-involved and non-fentanyl overdose death rates in US youth aged 15-19



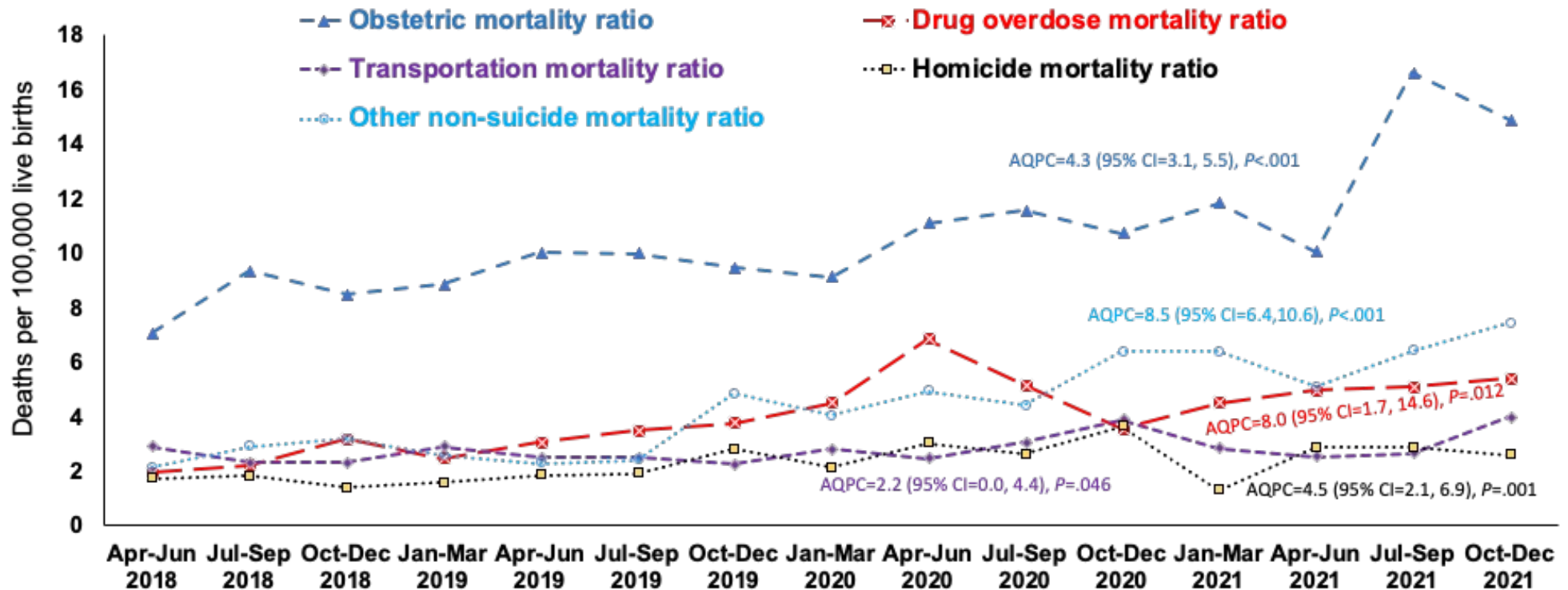
National Vital Statistics System multiple-cause-of-death 2015-2020 final and 2021 provisional data U.S. census monthly data.

! Joinpoints indicate significant changes in nonlinear trends using Bayesian Information Criterion. AQPC=average quarter percentage change during 2015 Q1-2022 Q2. ICD-10 cause of death code: synthetic opioids other than methadone (T40.4, primarily fentanyl and analogs).

Research Needs

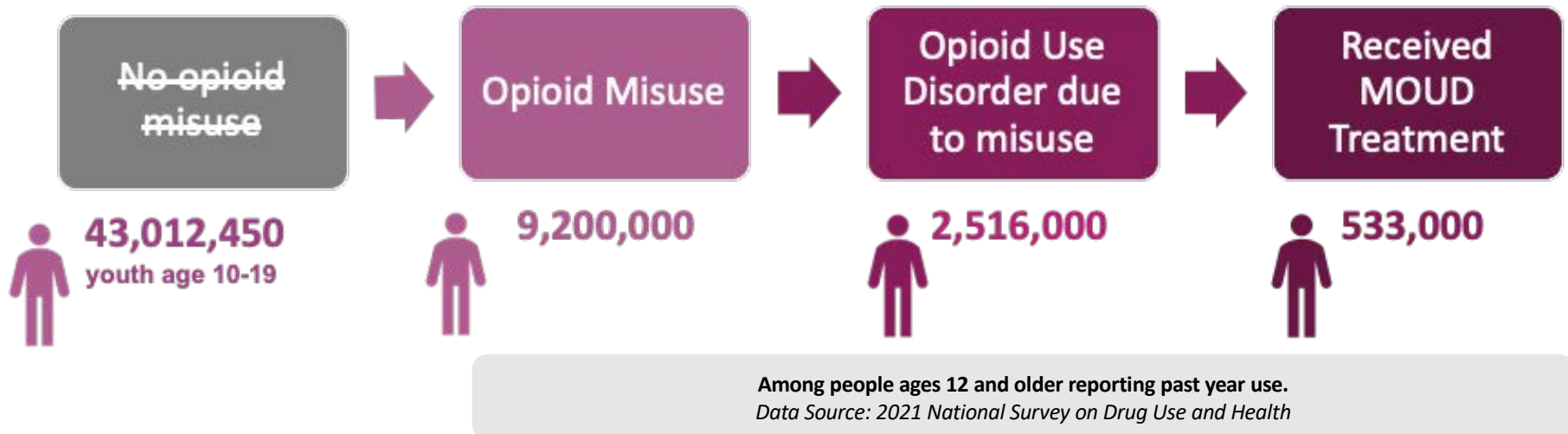
- Implementation research of screening interventions for substance misuse and SUD in teenagers
- Research on interventions to prevent drug misuse in teenagers and in the transition into young adulthood
- Treatment of SUD in teenagers including mild, moderate and severe OUD

Trends in mortality ratios by cause among pregnant women in 50 states and DC



National Vital Statistics System: 2018-2021 final mortality data and 2018-2021 final birth data. Mortality ratio=deaths among pregnant women by causes/live births*100,000; AQPC=average quarter percentage change. "Drug overdose" deaths included overdose deaths with unintentional or undetermined intent only. Other non-suicide deaths included deaths caused by COVID-19 infection, myocardial infarction, cancer, etc.

SUD/ODU Prevention Cascade in US



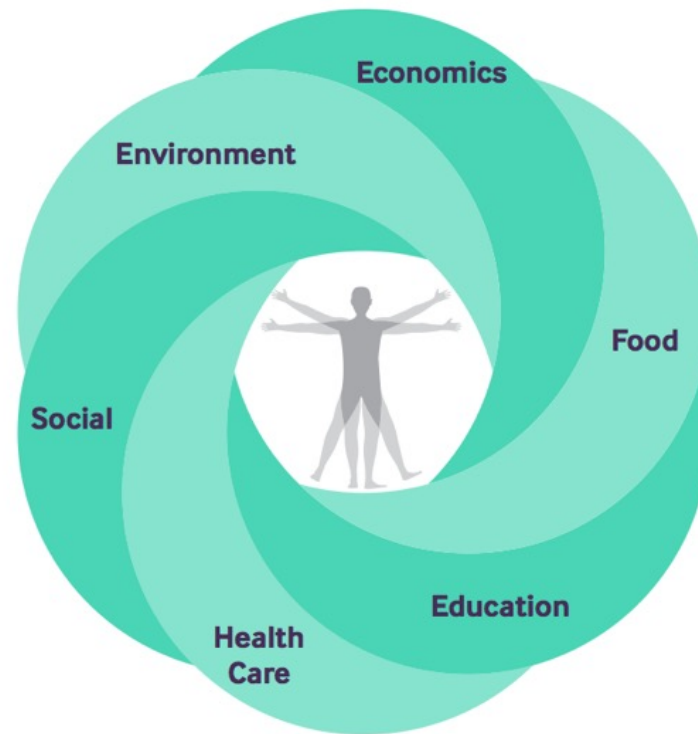
- **Social determinants of health**
- Interventions informed by scientific and technological advances
- Implementation, scale-up and sustainment of prevention services

**INFRASTRUCTURE NEEDED TO DEPLOY
AND SUSTAIN PREVENTION**

Fentanyl OUD (fOUD) and OUD Clinical Research Priorities

Research Gaps	Goal
Optimal strategies to treat individuals with fOUD	Determine comparative effectiveness of methadone, sublingual buprenorphine, XR-buprenorphine and NXT-XR
Induction protocols for treatment of fOUD and comparisons of doses	Determine doses needed to initiate and retain in treatment individuals with fOUD
Improve entry into and retention in MOUD treatment	Expand the number of individuals suffering from OUD that receive MOUD treatment and increase treatment retention
Treatment of mild or subthreshold OUD	Determine the role of NXT-XR or buprenorphine in overdoses in high-risk opioid misusers
Treatment of adolescents with OUD	Determine the efficacy of the various MOUD and best strategies to increase retention and recovery
Patient-specific optimal medication, doses and length of treatment	Personalize interventions to increase retention and recovery
Treatment of patients with OUD and co-morbid psychiatric disorders or with co-morbid pain	Improve outcomes on patients with dual diagnoses

Social Determinants of Health: Impact on Treatment Responses in Clinical Trials

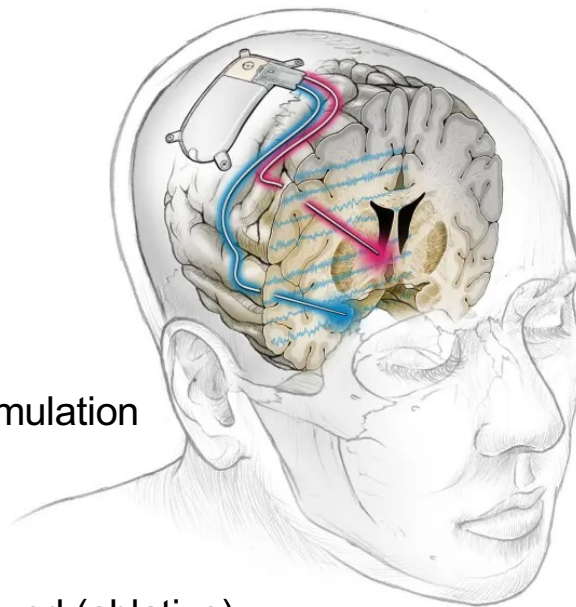


Treatment Research

Identification of the brain networks underlying SUD provide therapeutic targets for neuromodulation

Invasive Neuromodulation Techniques

Deep Brain Stimulation



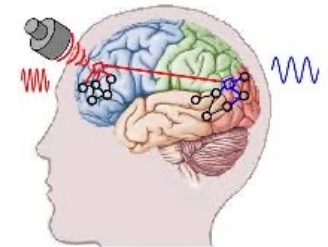
High Intensity Ultrasound (ablative)

Non Invasive Neuromodulation Techniques

Transcranial
Magnetic
Stimulation
(TMS)



Transcranial Direct
Current Stimulation
(tDCS)



Low Intensity Ultrasound



Drug Enforcement Administration

Headquarters @DEAHQ

February 24, 2023
Contact: Media Relations
Phone Number: (571) 776-2508

For Immediate Release

DEA Announces Proposed Rules for Permanent Telemedicine Flexibilities

DEA extends many telemedicine flexibilities adopted during the COVID-19 PHE with appropriate safeguards

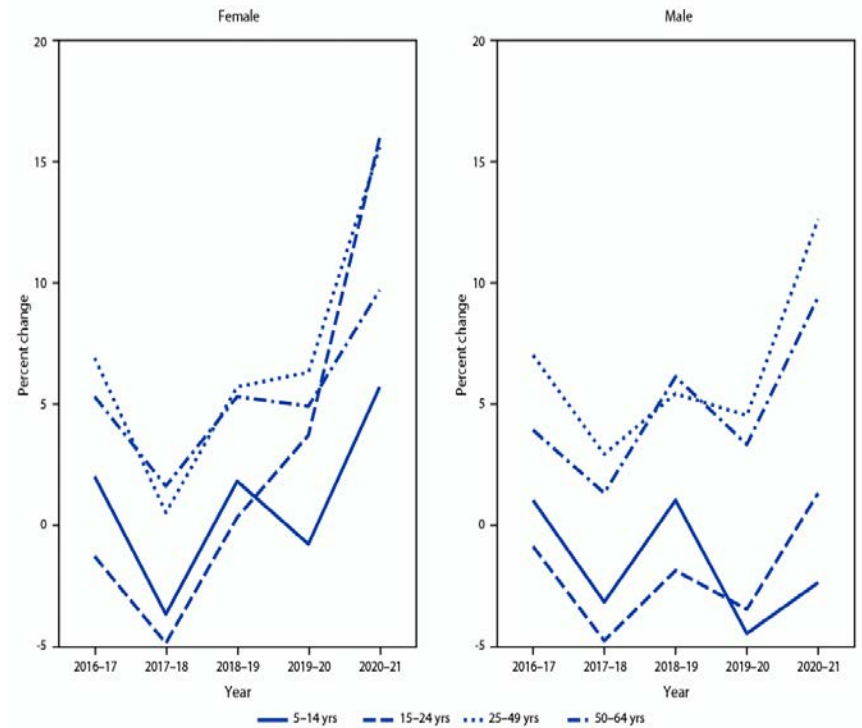
WASHINGTON - Today, the Drug Enforcement Administration announced proposed permanent rules for the prescribing of controlled medications via telemedicine, expanding patient access to critical therapies beyond the scheduled end of the COVID-19 public health emergency.

The proposed rules would provide safeguards for a narrow subset of telemedicine consultations – those telemedicine consultations by a medical practitioner that has: never conducted an in-person evaluation of a patient; AND that result in the prescribing of a controlled medication.

- a 30-day supply of Schedule III-V non-narcotic controlled medications;
• a 30-day supply of buprenorphine for the treatment of opioid use disorder

without an in-person evaluation or referral from a medical practitioner that has conducted an in-person evaluation, as long as the prescription is otherwise consistent with any applicable Federal and State laws.

Percent change in Persons with a Stimulant Prescription Fill (aged 5-64 years)



Danielson et al., MMWR Morb Mortal Wkly Rep 2023.

FDA NEWS RELEASE

FDA Approves First Over-the-Counter Naloxone Nasal Spray

*Agency Continues to Take Critical Steps to Reduce Drug Overdose Deaths Being Driven
Primarily by Illicit Opioids*

Narcan, 4 mg naloxone nasal spray for OTC, nonprescription. To be **sold in places like drug stores, convenience stores, grocery stores and gas stations, as well as online.**



A Review of the President's Fiscal Year 2024 Funding Request and Justification for the National Institutes of Health

- The Senate LHHS Subcommittee Hearing was held Thursday, May 4, 2023 at 10am.
- ICDs joining Dr. Tabak included:
Drs. Lowy, Hodes, Volkow, & Gordon

THANK YOU!