

What is your work setting or profession/discipline?

- a. Community coalition
- b. School (K-12)
- c. Higher Education
- d. Community-based organization
- e. Faith-based organization
- f. Law enforcement or criminal justice
- g. Primary care or other medical setting
- h. Independent consultant/provider
- i. Local or County Government
- j. State/Jurisdiction Government



Pacific Southwest (HHS Region 9)

PTTC

Prevention Technology Transfer Center Network

Funded by Substance Abuse and Mental Health Services Administration

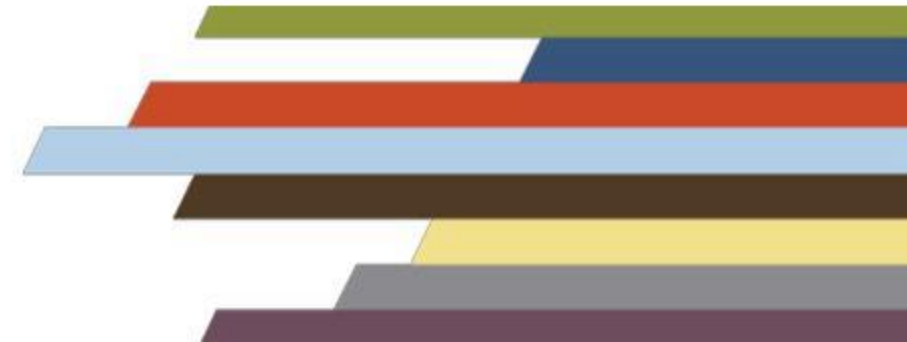


Pain and Pot

The Facts about Opioids and Marijuana

Roneet Lev, M.D.

Emergency and Addictions Physician



Disclaimer

The views expressed in this webinar do not necessarily represent the views, policies, and positions of the Substance Abuse and Mental Health Services Administration (SAMHSA) or the U.S. Department of Health and Human Services.

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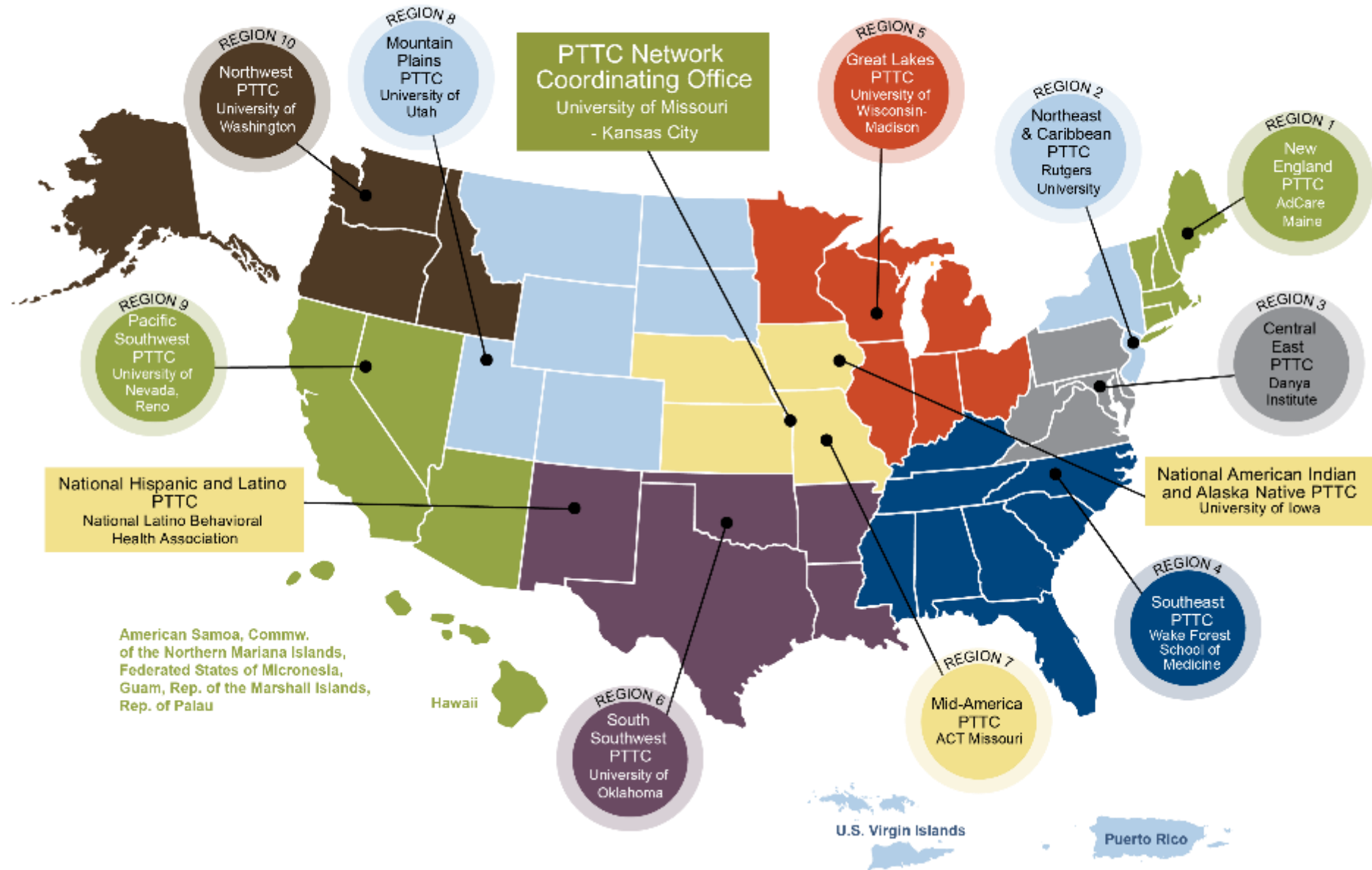
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H79SP081015-01



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PTTC Network



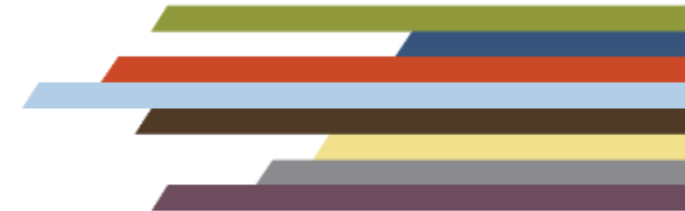
Purpose of the TTCs

1

Develop and strengthen the **workforces** that provide substance use disorder and mental health disorder prevention, treatment, and recovery support services.

2

Help people and organizations incorporate **effective practices** into substance use and mental health disorder prevention, treatment and recovery services.



PTTC Network Approach

The PTTCs...

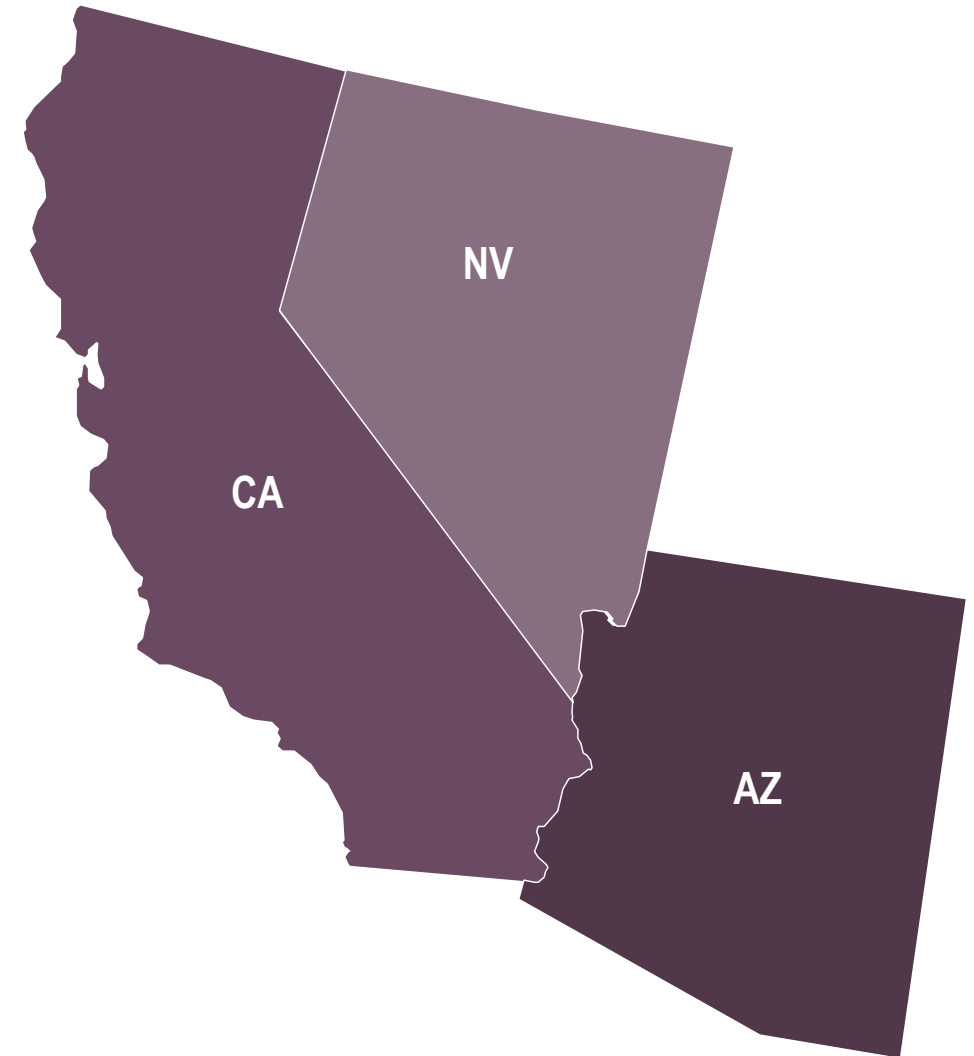
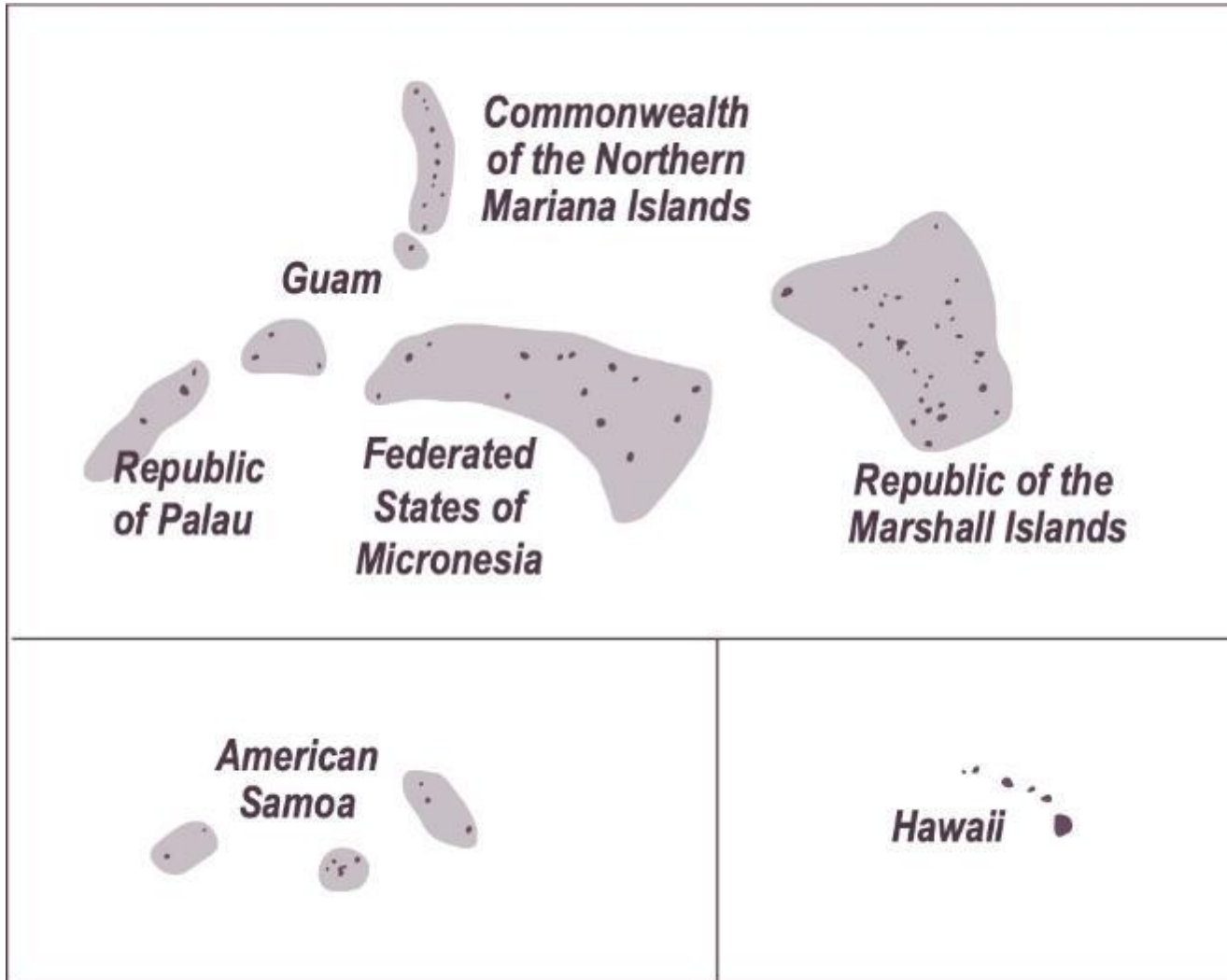
Develop and disseminate tools and strategies needed to improve the quality of substance abuse prevention efforts

Provide training and resources to prevention professionals to improve their understanding of

- prevention science,
- how to use epidemiological data to guide prevention planning, and
- selection and implementation of evidence-based and promising prevention practices.

Develop tools and resources to engage the next generation of prevention professionals

Pacific Southwest



Housekeeping

- Webinar recording and materials
- Certificates of attendance
- Are several people joining from one computer?



Mark your Calendars!

Let's Talk: Health Literacy and Health Equity

March 24

3:00 – 4:00 p.m. Pacific

Please visit pspttc.org for registration and more information!

Presenter



Roneet Lev, MD, FACEP, was the first Chief Medical Officer of the White House Office of National Drug Control Policy, ONDCP. She is a nationally acclaimed medical expert and speaker who continues to treat patients in the emergency department. As a mother of four, she relates to families who struggle. Dr. Lev is dually board certified in emergency and addiction medicine, bringing over 25 years of experience treating the frontline cases of addiction. She came to the White House as chief of the emergency department at Scripps Mercy Hospital in San Diego.

Quiz

Which statement is true?

- a. Medical marijuana is recommended to treat opioid use disorder.
- b. THC receptors work on the same receptors as pain receptors.
- c. Medical marijuana prescriptions are obtained from doctors who complete a standard of care medical evaluation.
- d. Marijuana use increases opioid use in people with chronic pain.
- e. A medical marijuana prescription includes dosage and drug interaction considerations.

Opioids and Marijuana

Objectives:



Opioid Epidemic



Chemistry of Pain,
Opioids and Marijuana

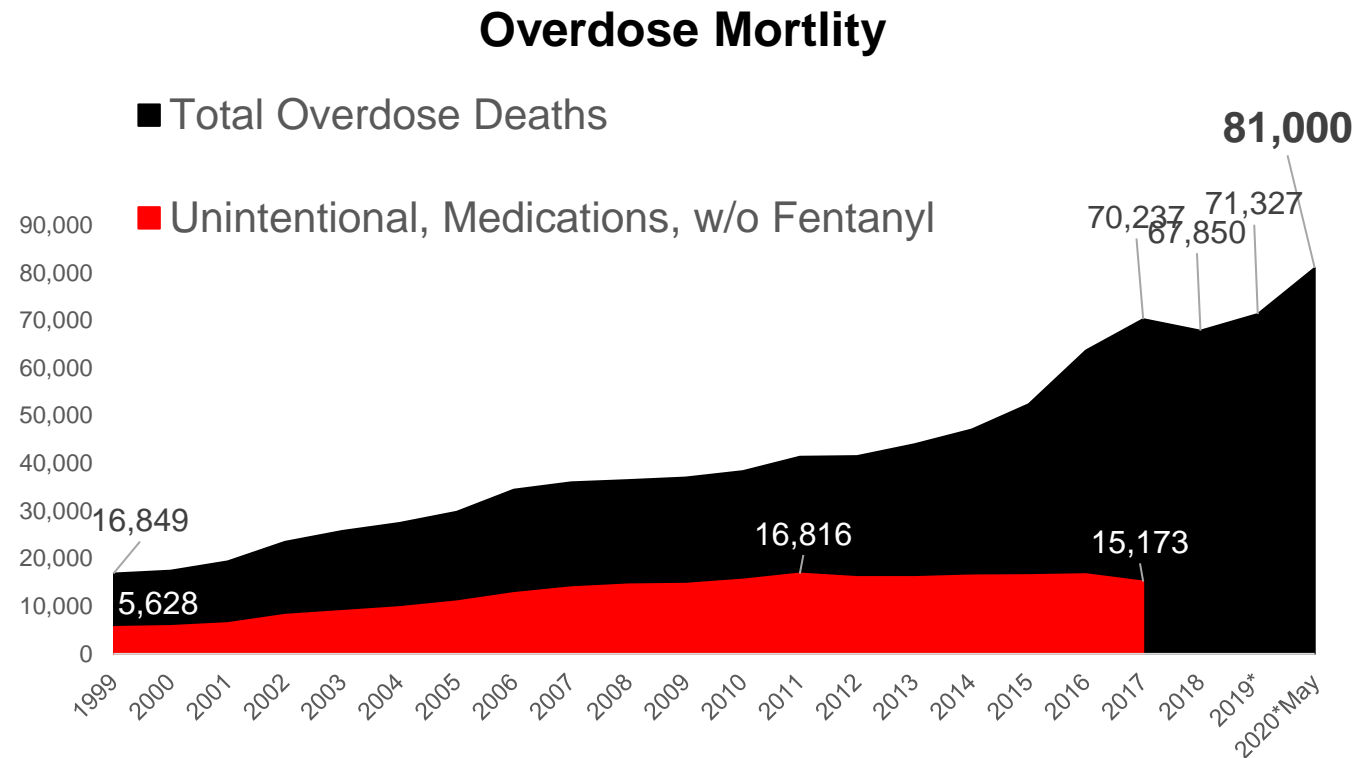


5 Reasons not to Use Marijuana for Pain/ OUD

Opioid Epidemic: Drug Overdose Mortality Data

Differentiate licit and Illicit Supply Chain

- **Supply:** Prescription death rate can be improved with safe prescribing
- **Demand:** Connect people with addiction to treatment



Wave 1:

1991 Rx Opioid

Wave 2:

2010 Heroin

Wave 3:

2013 Fentanyl

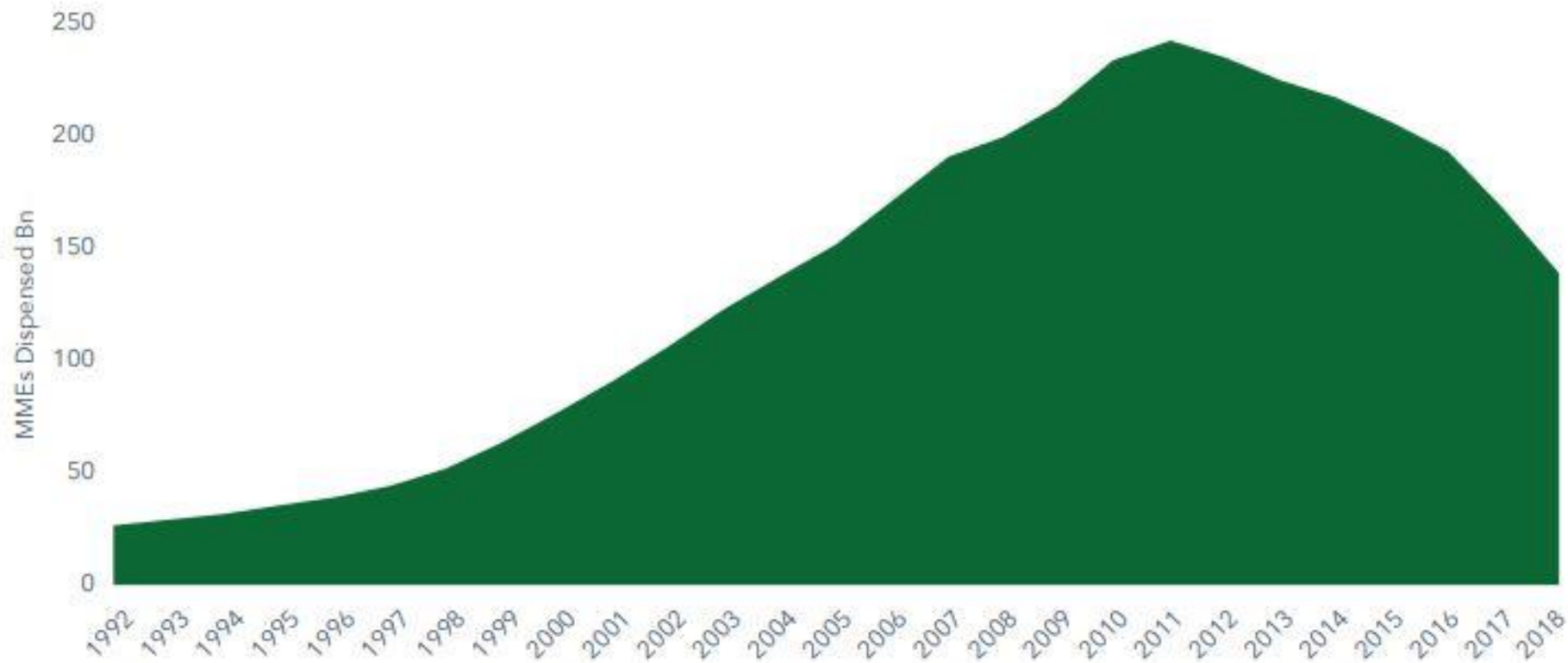
Meth:

Rising since 2008

Source: CDC Wonder

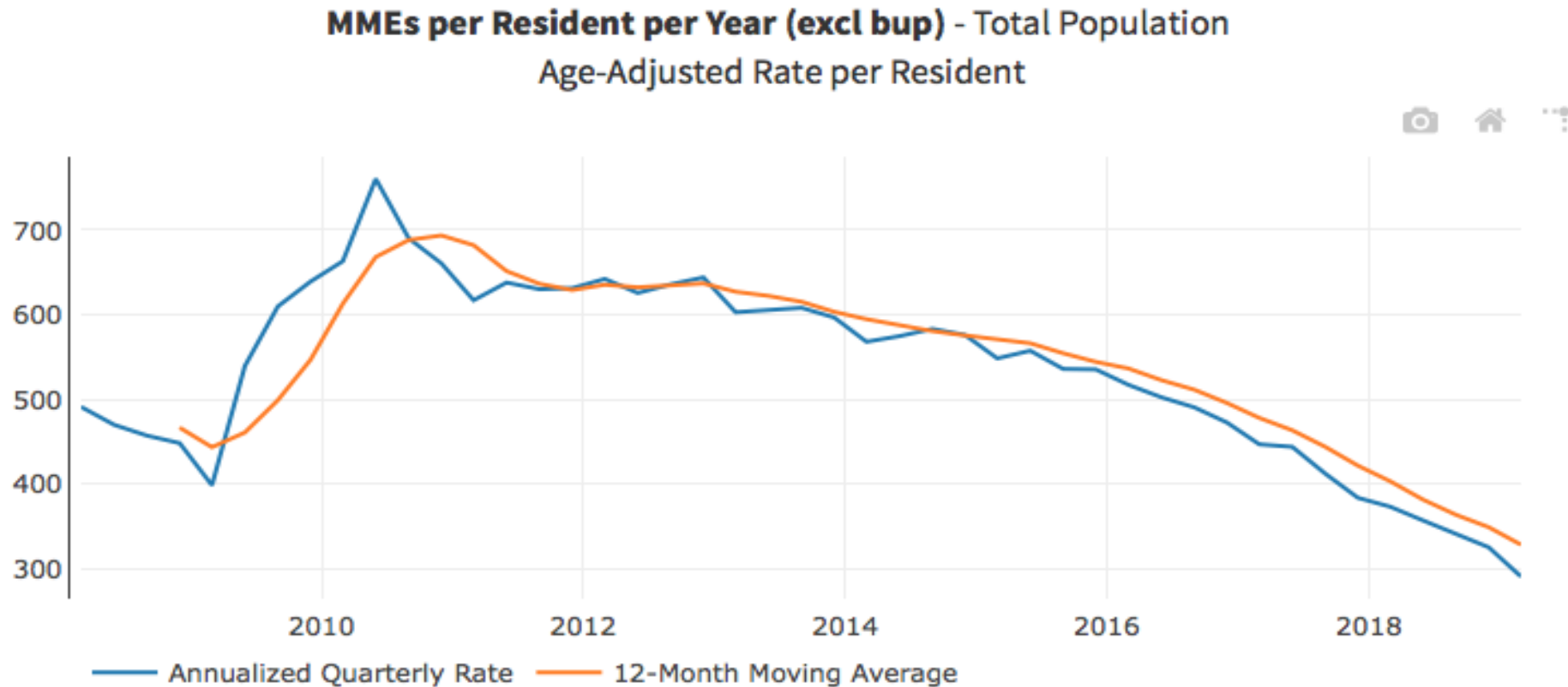
Opioid Epidemic: National Prescription Data

2018 had the largest decline in prescription opioid volume (MME) at **17%**
43% total decline since peak in **2011**



Opioid Epidemic: California Prescription Data

2019 Q 1 **decrease 62%** (MME) since peak 2010 Q2



Opioid Epidemic: The End of the Prescription Opioid Epidemic

The Importance of Prevention

Prevention – Front End



Safe Rx – Back End



Opioid Epidemic: Medication deaths not just from opioids

OPIOIDS **BENZODIAZEPINES** **SLEEP** **STIMULANTS** **OTHER**

Hydrocodone	123	Chloriazepoxide	17	Oxazepam	3
Oxycodone	84	Tempazepam	17	Oxymorphone	3
Clonazepam	44	Methadone	14	Phenobarbitol	3
Zolpidem	43	Fentanyl	13	Chloralhydrate	2
Alprazolam	39	Buprenorphine	11	Dronabinol	2
Lorazepam	37	Amphetamine	7	Zaleplon	2
Morphine	32	Testosterone	6	Clorazepate	1
Carisoprodol	30	Triazolam	6	Estrogen	1
Codeine	27	Lunesta	4	Lisdexamefetamine	1
Diazepam	26	Lyrica	4	Methylphenidate	1
Hydromorphone	20	Phentermine	4		

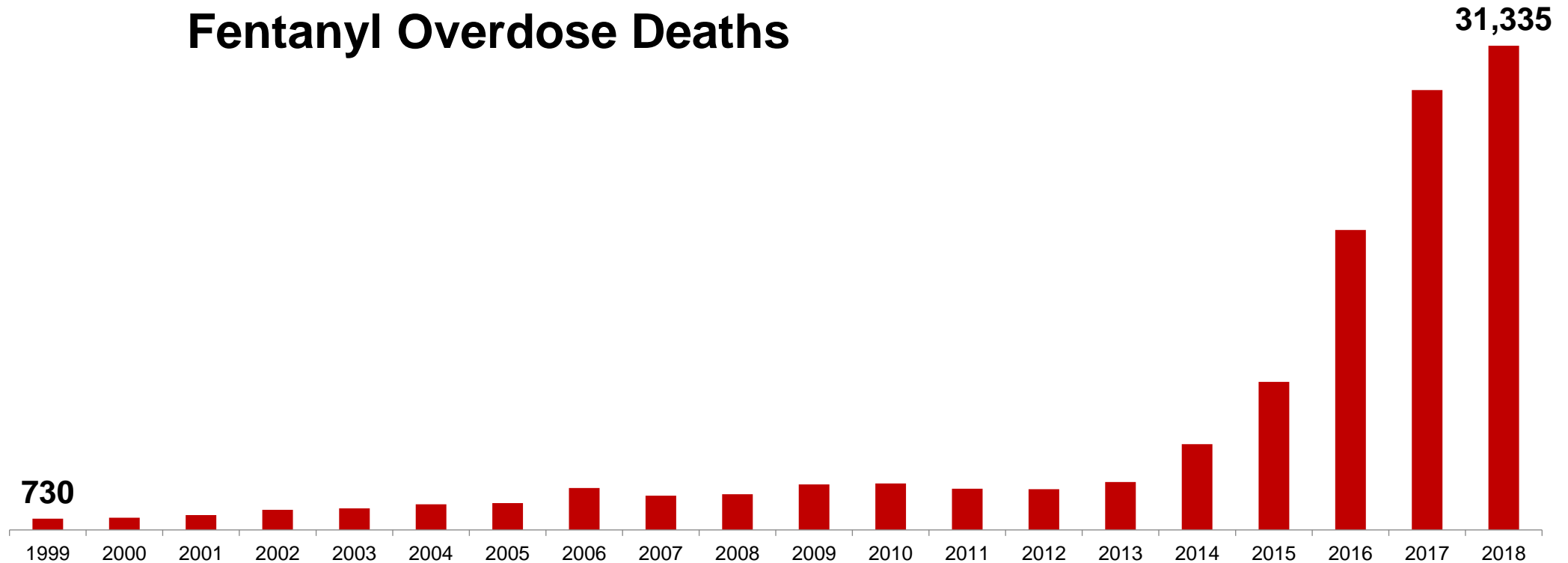
Opioid Epidemic: What is fentanyl?



- Fentanyl is a synthetic opioid that is 100 times more potent than morphine.
- As little as 2 mg of fentanyl can kill.
- Lethal Fentanyl comes from China or Mexico, not hospitals and pharmacies.
- It is mixed into other illegal drugs.

Opioid Epidemic: Fentanyl Mortality

Fentanyl Overdose Deaths



Source: CDC Wonder

Opioid Epidemic: Where is fentanyl found?

- Heroin – 50% of heroin deaths included fentanyl
- Cocaine – 50% of cocaine deaths included fentanyl
- Methamphetamine – 25% of methamphetamine deaths included fentanyl
- Fake hydrocodone pills
- Fake oxycodone 30 pills (M30)
- Fake hydrocodone pills (yellow)
- Fake Xanax pills
- Vaping products



Opioid Epidemic: A positive fentanyl test

1. Warn a provider
2. Warn a patient
3. Warn friends
4. Rx for naloxone
 - For the patient
 - For friends & loved ones
5. Connect to treatment



Opioid Epidemic: Fentanyl Testing Campaign



- **AUTOMATIC**
- **UNIVERSAL**
 - Fentanyl does not show up on a standard drug screen because it is a synthetic opioid , it requires a separate test
 - Any medical order for a urine drug screen should automatically include fentanyl
 - If a provider is concerned about THC, Cocaine, Methamphetamine, PCP or opioids, they are also concerned about fentanyl
- **SOLUTION**
 1. Purchase Fentanyl reagent for hospital chemical analyzer
 2. Create IT solution that automatically includes fentanyl with urine drug screen

Opioids and Marijuana: Chemistry

Objectives:



Opioid Epidemic



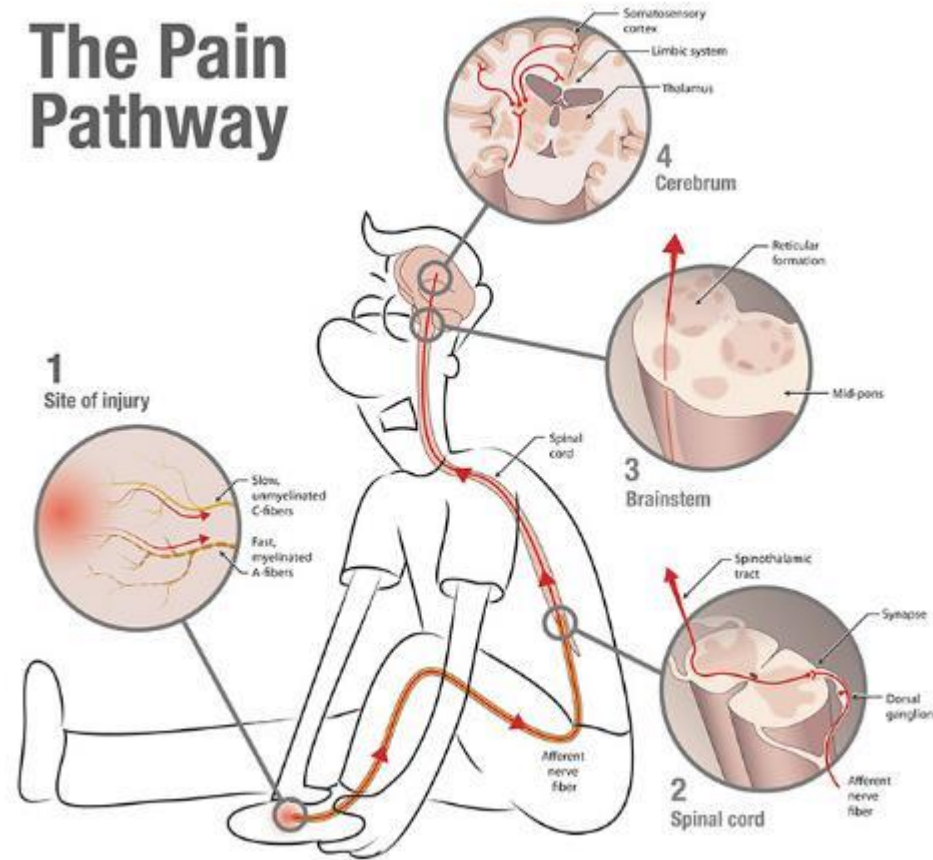
Chemistry of Pain,
Opioids and Marijuana



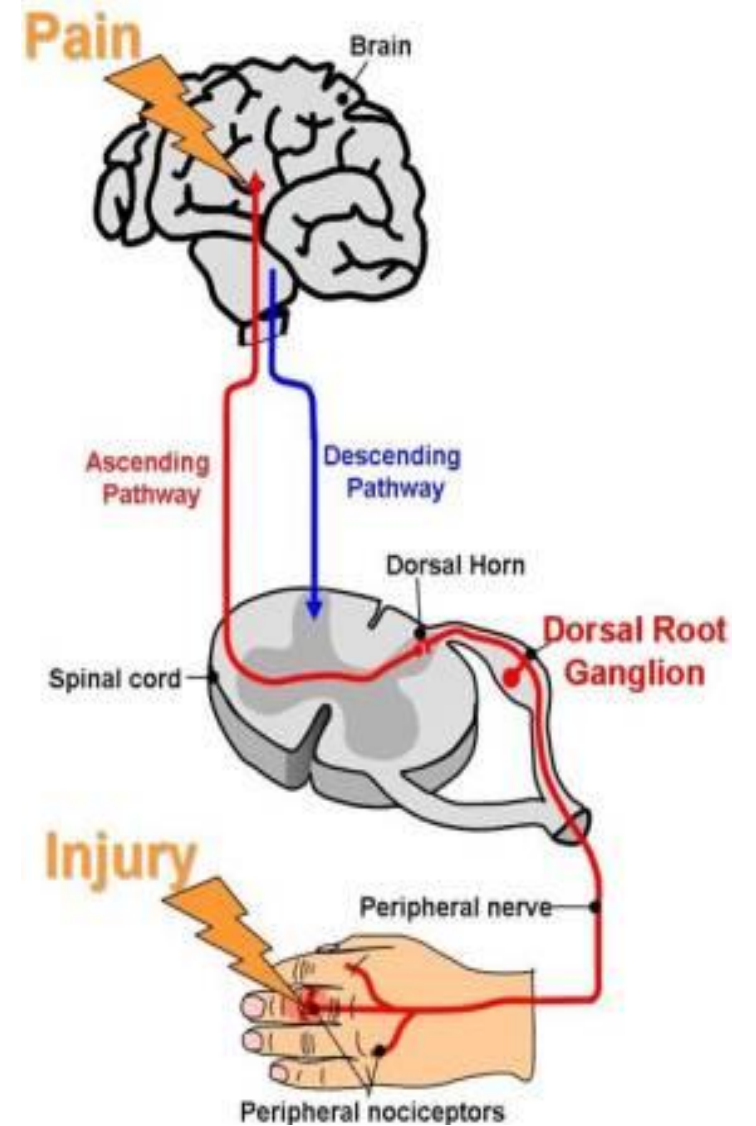
5 Reasons not to Use Marijuana for Pain/ OUD

Chemistry: Pain - Pathway

The Pain Pathway

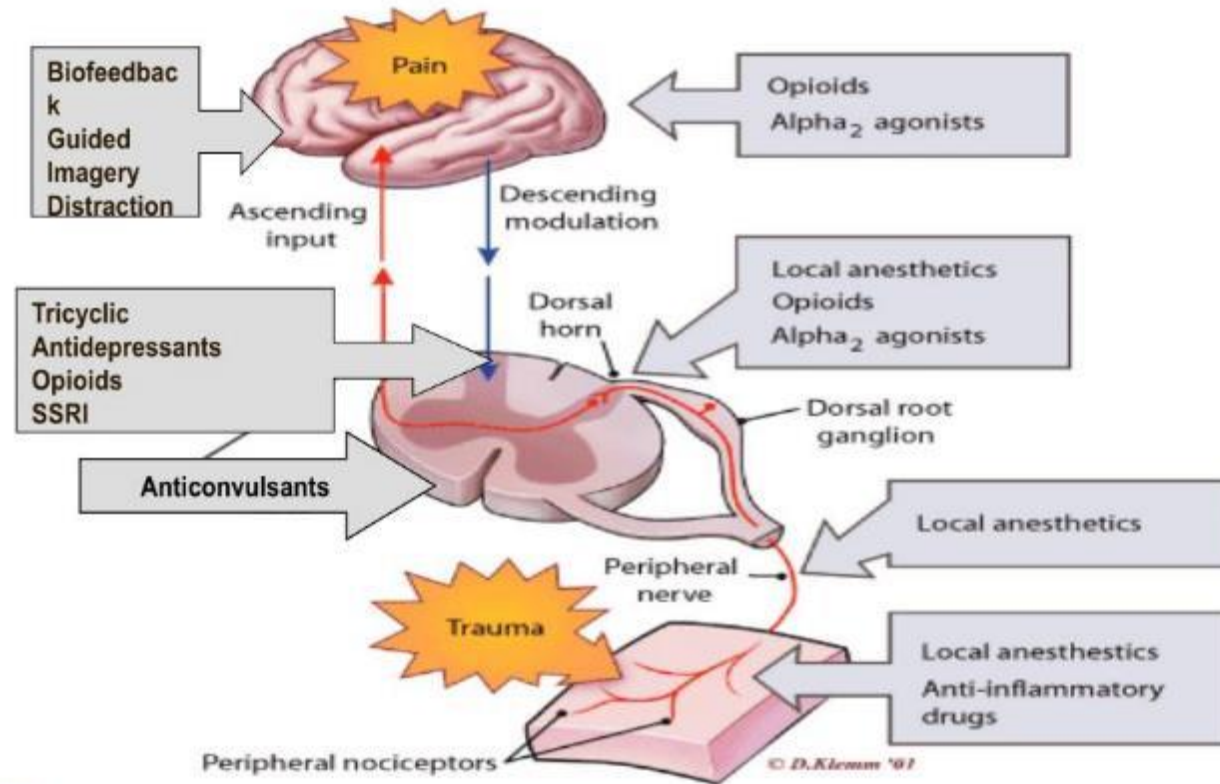


Pain is an unpleasant sensory and emotional experience associated with or resembling association with actual or potential tissue damage



Chemistry: Pain – Location of Treatment

Pain Pathway – Pain Management



http://www.pharmacology2000.com/Central/Opioids/postop_pain1.gif

MODIFIED

Chemistry: Pain Causes

Nociceptive (Tissue Damage)

- Tissue Damage
- Broken Bone
- Arthritis
- Cancer Pain
- Surgery pain

Neuropathic (Nerve Dysfunction)

- Diabetic Neuropathy
- Post Herpetic Neuralgia

Sensory/ Hypersensitivity (no tissue or nerve damage)

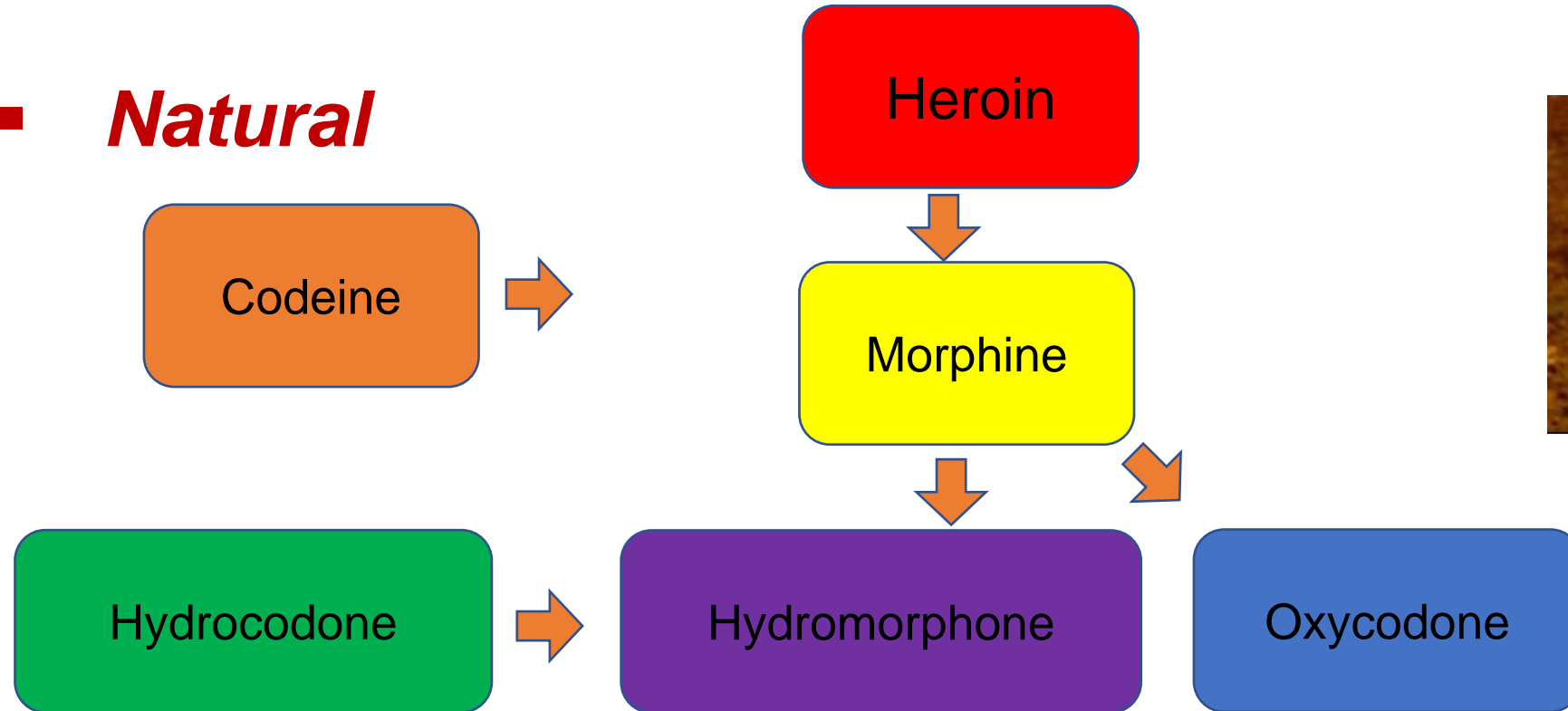
- Fibromyalgia
- Irritable Bowel Syndrome
- Chronic Fatigue
- Restless Leg Syndrome

Chemistry: What are opioids?

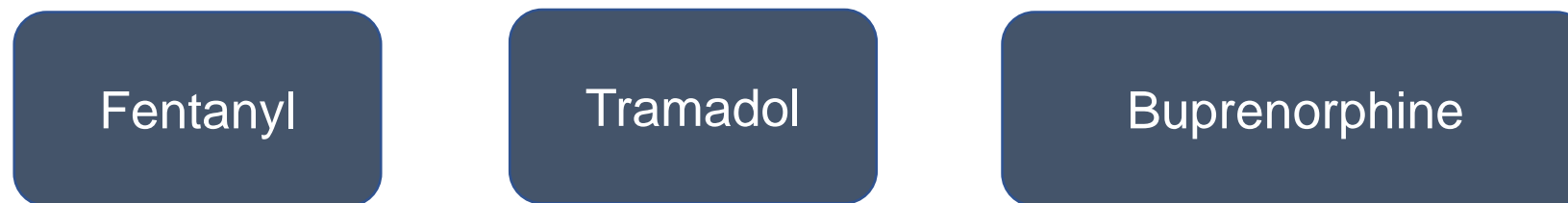
- Opioid is a class of narcotic drugs
- Legal or Illegal – Oxycodone or Heroin
- They attach to opioid receptors on nerve cells in the brain and body
- Opioids prevent body from sending pain signals to the pain
- Opioids also depress respirations in high dose

Chemistry: Types of opioids

- **Natural**



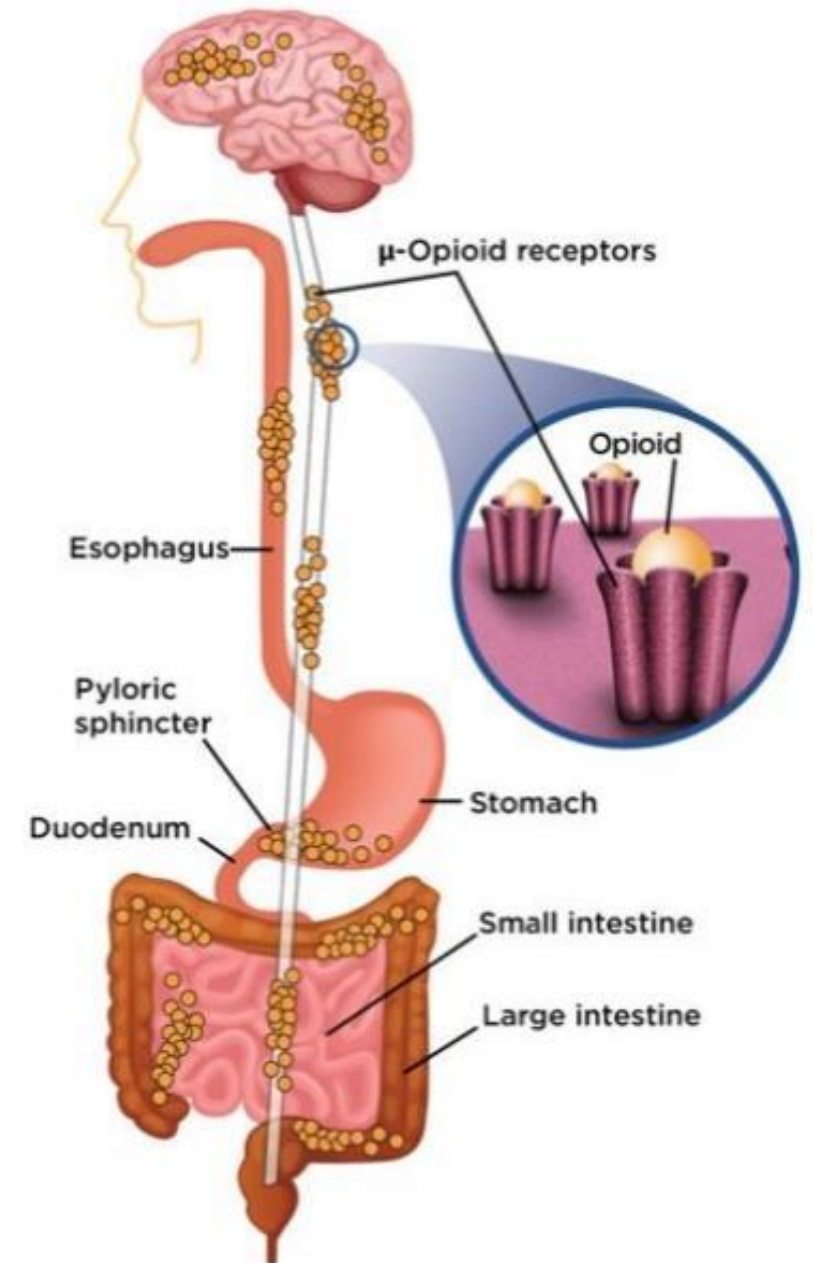
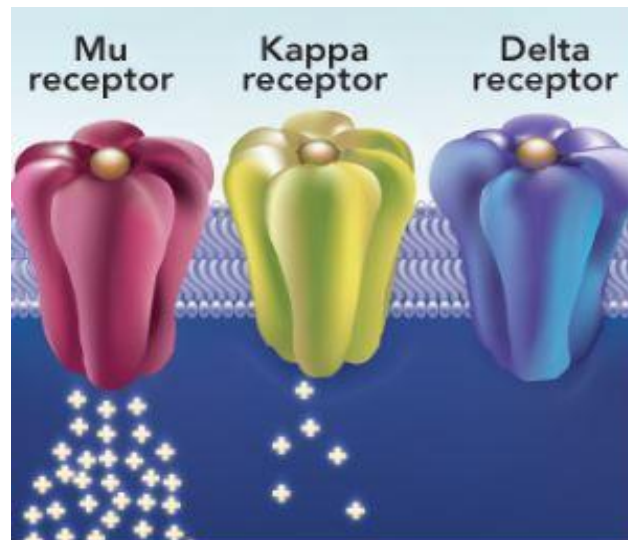
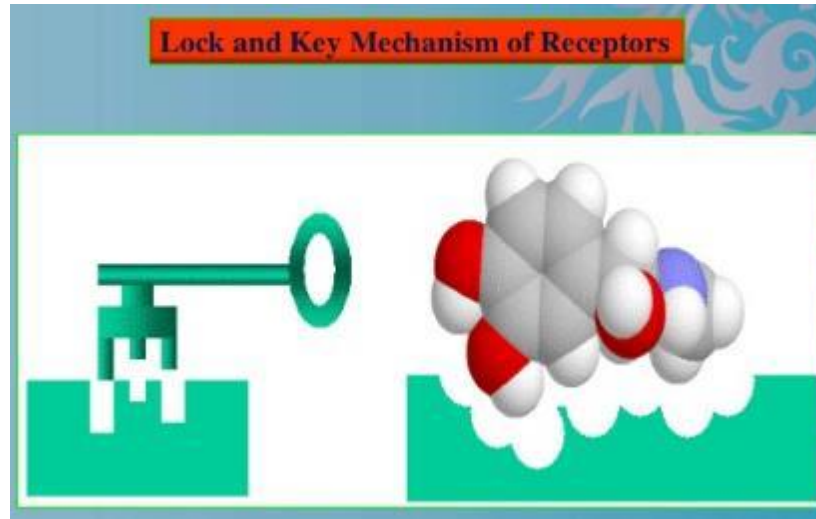
- **Synthetic**



Chemistry: Opioid Receptors

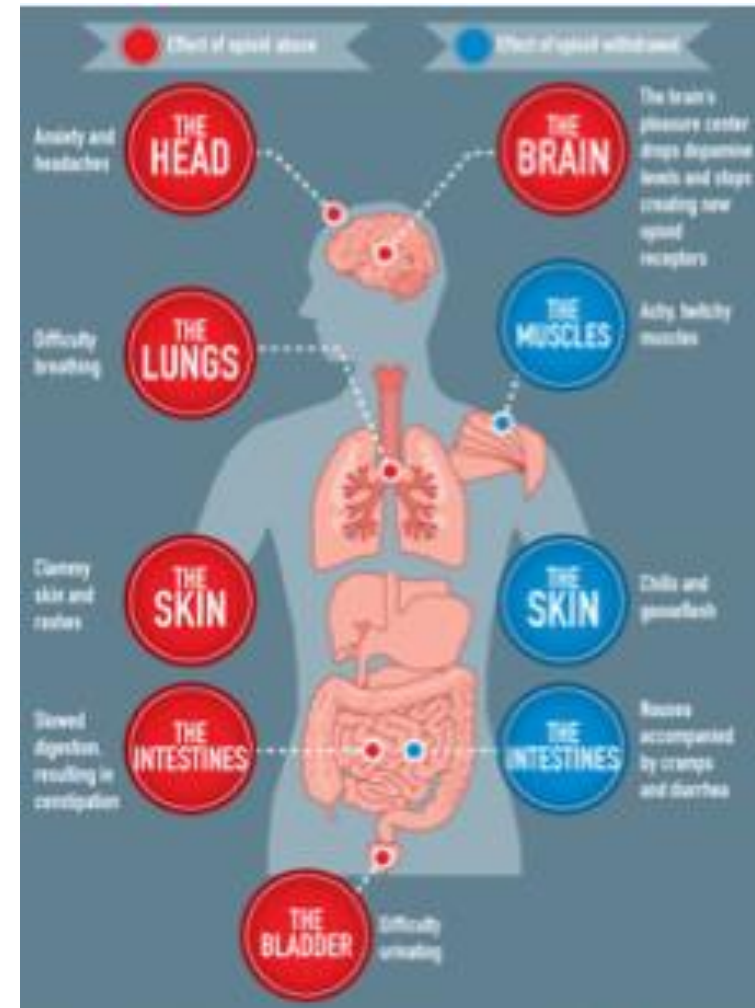
**LOCK =
Receptor**

**KEY =
Opioid**



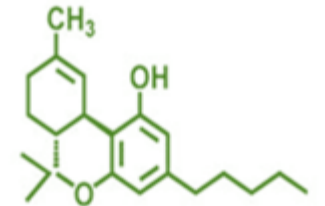
Chemistry: Opioids Activity on the Body

- Tolerance
- Addiction
- Anxiety, Headaches
- Depression
- Falls
- Irregular Heart Rate
- Body aches
- Respiratory Breathing
- Skin Infections
- Constipation
- Urine Retention

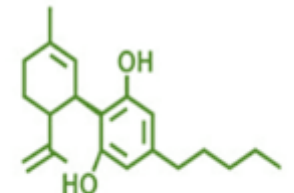


Chemistry: What is marijuana?

- Marijuana – products from the Cannabis sativa plant with substantial THC
 - Only female plants grow flowers
 - Flowers/ Buds have highest THC
- Industrial Hemp – Cannabis plants with little THC
- Cannabis – all 540 products from the Cannabis sativa
- Cannabinoids – group of substances in the cannabis plant
 - 60 active cannabinoids
 - THC: Delta -9-Tetrahydrocannabinol, psychoactive substance
 - CBD: Cannabidiol – blocks psychoactive effect



Δ^9 -tetrahydrocannabinol
(THC)



Cannabidiol
(CBD)

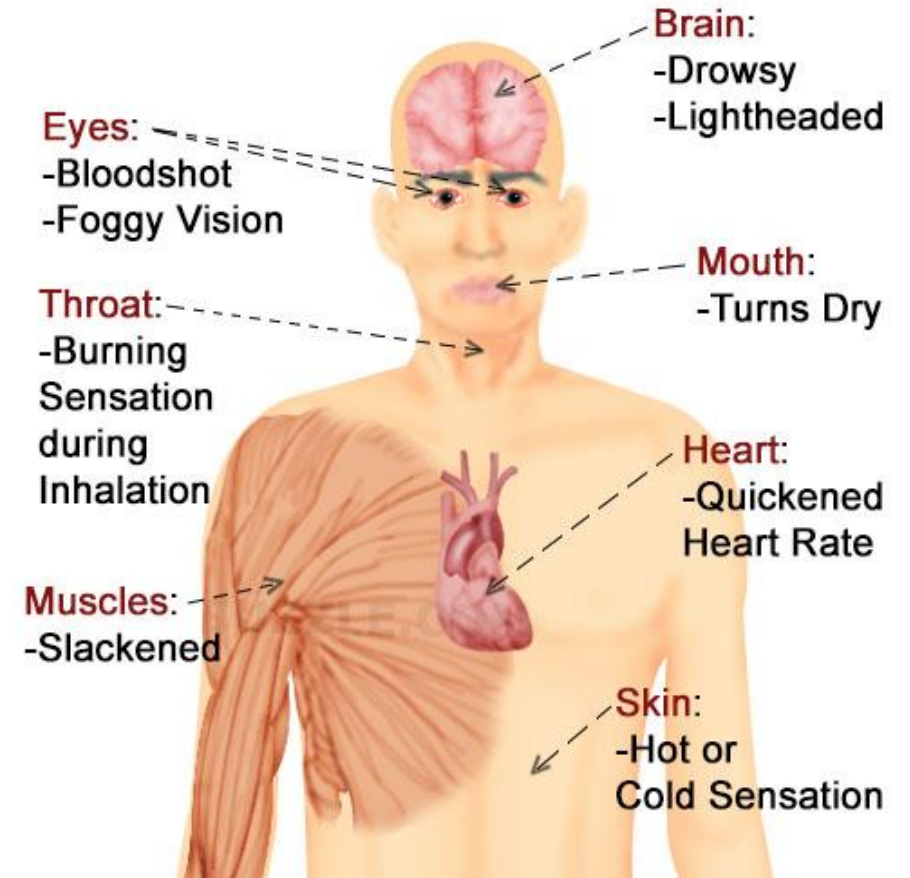
Chemistry: Cannabinoid Receptors

- Two Main Receptors – G proteins (the lock)
 - **CB1** – brain and spinal cord (1990)
 - **CB2** – immune system, blood and spleen (1993)
- Endogenous (naturally produced) (the keys)
 - **Anandamide (AEA)**
 - – **partial agonist** to **CB1**
 - Endocannabinoid 2-arachidonoylglycerol (**2-AG**)
 - – **full agonist** **CB1** and **CB2**
- Marijuana
 - **THC** – partial agonist **CB1**, similar structure to **Anandamide**
 - **CBD** – **weak antagonist** to endocannabinoid receptors
- Anandamide action (rodent studies)
 - “runner’s high”, impair memory, fertility



Chemistry: Marijuana Activity on the Brain

- Hippocampus – Memory
- Cerebellum- balance, posture, coordination, reaction time
- Stimulant symptoms: fast heart rate, chest pain
- Neuropsychiatric symptoms
- Immune and Gastrointestinal effects



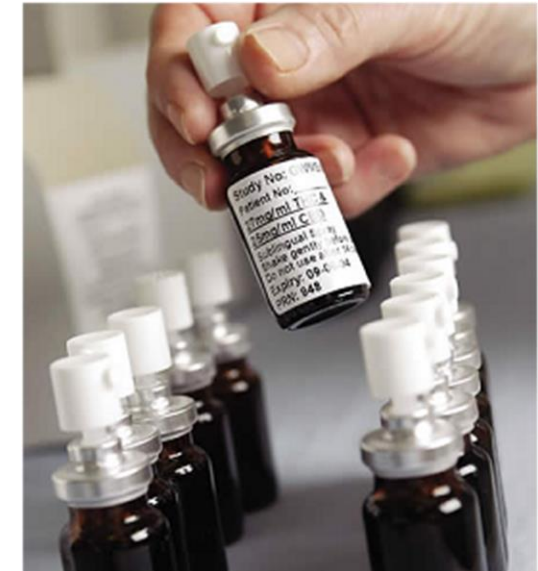
What is “Medical Marijuana”?

- “Medical” is **political** definition not a scientific definition
- **No different** in plant quality
- Not held to international medicinal standards of prescribing
- “Medical” users
 - **Less than 3%** of California users have cancer, HIV, seizures
 - Average age **32**



THC Available by Prescription

- Dronabinol (Marinol)
- Nabilone (Cesamet)
 - THC medications
 - Schedule III and II
 - 2.5 – 10 mg/ 0.25 – 1 mg
 - Treat nausea caused by chemotherapy and boost appetite in patients with AIDS wasting syndrome
- Nabiximols (Sativex)
 - approved in *UK and Canada*
 - 2.5 mg THC and 2.5 mg CBD / 0.1 cc for multiple sclerosis



THC in Pot Shops

- Varied state regulations
 - CA: no regulation on smoked products
 - Edibles: no packaging attractive to children
 - Dose 10 mg per serving, 100mg per package
- Product Diversity
 - smoke, vape, edible, suppositories, drinks, wax, creams
- Wax products – up to 99% THC
- Impurities including pesticides



Truth in Labeling
75 products, 45 brands
17% accurate labeling
23% under label/ 60%
over label THC levels
THC = 0 – 6.4 mg/ml
JAMA study

CBD Available by Prescription

- Indication: Dravet Syndrome or Lennox-Gastaut syndrome
- The only FDA regulated CBD product is Epidiolex
- FDA studies show clinical side effects and adverse reactions



-----INDICATIONS AND USAGE-----

EPIDIOLEX is indicated for the treatment of seizures associated with Lennox-Gastaut syndrome or Dravet syndrome in patients 2 years of age and older (1)

-----WARNINGS AND PRECAUTIONS-----

- **Hepatocellular Injury:** EPIDIOLEX can cause transaminase elevations. Concomitant use of valproate and higher doses of EPIDIOLEX increase the risk of transaminase elevations. See Full Prescribing Information for serum transaminase and bilirubin monitoring recommendations. (5.1)

-----ADVERSE REACTIONS-----

The most common adverse reactions (10% or more for EPIDIOLEX and greater than placebo) are: somnolence; decreased appetite; diarrhea; transaminase elevations; fatigue, malaise, and asthenia; rash; insomnia, sleep disorder, and poor quality sleep; and infections. (6.1).

Warning:

- Liver damage
- Suicide
- Somnolence
- Sleep Disorder
- Infections

CBD in Pot Shops

- CBD = cannabidiol, in marijuana plant, hemp
- CBD products are Not Regulated
- Common Side Effects – liver damage, suicide
- Medication Interactions (pain, psychiatric, anti-histamines, blood thinners)
- Impurities including pesticides

Truth in Labeling

84 products

31% correct labeling

THC = 0 – 6.4 mg/ml

JAMA study



USP Seal = Dietary
Supplement Standard
Verified

Opioids and Marijuana: Reasons Not to Use Marijuana for Pain/ OUD



Opioid Epidemic



Chemistry of Pain,
Opioids and Marijuana



5 Reasons Not to Use Marijuana for Pain/ OUD

1. Lack of Science

- Lack of science in pain relief
- Lack of science as an opioid substitute
- Studies using Cannabis for pain are very small
- Studies using Cannabis for pain do not use high potency dispensary marijuana



Cannabis and Pain: A Clinical Review. Hill et al. Cannabis Cannabinoid Res. 2017
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5549367/>

Marijuana as Medicine? The Science Beyond the Controversy. Alison Mack, Janet Joy.
<https://www.ncbi.nlm.nih.gov/books/NBK224394/>

Cannabis for Chronic Pain: Not Ready for Prime Time. Carr and Schatman. Am J Public Health
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6301389/>

Lack of Science



- Goldfrank's Toxicologic Emergencies. 10th Edition. LaPoint.
 - Smoked marijuana failed to attenuate thermal pain in volunteers and oral THC had no effect on post surgical pain.
 - Design flaws severely limit quality of medical evidence in treatment of neuropathic pain.
- 18 healthy women - oral cannabis vs placebo for **sunburn pain** (Kraft, 2008)
 - **No pain relief with pot**
 - Unexpected **Hyperalgesia**
- 15 volunteers given capsaicin induced pain – smoked high, med, low vs placebo (Wallace, 2007)
 - Less pain with medium dose; **More pain with high dose**

Lack of Science, cont'd



- 28 studies with 2,454 patients: cannabis vs placebo (Whiting, 2015)
 - 37% vs 31% greater pain reduction
 - Patients had mostly **neuropathic pain**
 - More **adverse effect** and **serious adverse effects** in cannabis group
- 10 Advance Cancer patients: THC pills vs placebo (Noyles)
 - Reported pain relief with high dosages at 15- 20 mg
 - At highest doses patient were very sedated, disorganized thoughts
 - No comparison with opioids
 - In initial selection for study, 5 patient excluded due to severe anxiety after THC
 - Repeated study with **Codeine vs THC – no difference in pain relief**

2. Increase in Opioid Use

- Marijuana use **does not reduce opioid** use for people in chronic pain
- Marijuana users **increase opioid use** without obtaining more pain relief
- Concurrent marijuana and opioid use **interferes with treatment of opioid use disorder**
- Studies that show marijuana is helpful for pain use low dose THC, low number of patients and do not balance the risks
 - neuropathic pain with smoke cannabis and dronabinol
 - *4% THC 3x per day for 5 days, 50 patient study*
 - Modest analgesia for cancer pain
 - *No analysis of harms of contamination in immunocompromised patient*



- Larkin PJ, Madras BK. Opioids, overdoses, and cannabis: is marijuana an effective response to the opioid abuse epidemic? The Georgetown Journal of Law and Public Policy.
- Nugent SM, et al. Patterns and correlates of medical cannabis use of pain among patients prescribed long term opioid therapy. Gen Hosp Psychiatry 2018.
- Lee DC, et al. Systemic review of outcome domains and measures used in psychological and pharmacological treatment trials for cannabis use disorder. Drug Alcohol Depend. 2018.
- Shover LE, et al. Association between medical cannabis laws and opioid overdose mortality has reversed over time. Proc Nat Acad Sci. 2019.

Increase in Opioid Use

- Cannabis users have a **greater pain severity score**, great pain interference score, **lower pain self efficacy** scores, and **great anxiety**.
- **No** evidence that cannabis resulted in **discontinued opioids**.
 - 1514 participants followed over 4 years : Campbell, The Lancet Public Health, 2018
- Marijuana use **increased risk** of developing nonmedical prescription opioids and **opioid use disorder**.
 - 34,653 participants, Olfson., Am J of Psychiatry, 2017.
- THC in urine = Increased history of SUD, **more future opioid misuse**
 - 209 patients 2011 – 2014: Dibenedetto, Pain Medicine. 2017
- “Medical” Marijuana Users are **more likely to use prescription drugs medically and non medically**.
 - Caputi. J Addiction Medicine. 2008. 2015
 - NSDUH data, 57,147 people

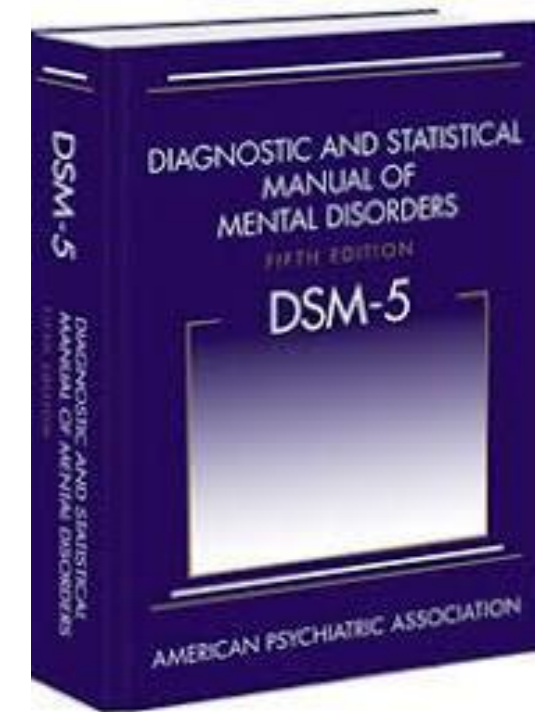
Increase in Opioid Use, cont'd

- **Misleading Science – “Marijuana Protection Hypothesis”**

- Bauchhuber. JAMA. From 1999-2010 states with medical cannabis laws experienced slower increases in opioid overdose mortality.
- Shover. Proceedings National Academy of Science. Extended exact same study from 1999-2017 and found the opposite. **States** passing medical cannabis laws experienced a **22.7% increase** in overdose deaths.
- Association of county level cannabis dispensary counts and opioid related mortality rates in the United States. The BMJ. 2021. Claim 17% reduction in opioid deaths with increase of 1-2 store fronts. Evaluated 23 states.
- Archie Bleyer. Oregon Science and Health University. Updated the “marijuana protection hypothesis” with opioid mortality trends to 2017 looking at all states and District of Columbia. Of the **23 legalizing states, 78%** had statistically significant **acceleration of opioid death** rates after medical or recreational legalization.

3. Addiction

- **4.4 million** people age 12 and older meet criteria for marijuana use disorder in past year
- Youth age 12 – 18 who use marijuana are **4 – 7 times** more likely than adults to develop a cannabis use disorder
- **9 – 50%** of those who use marijuana develop some degrees of use disorder
 - 9% adults
 - 17% youth
 - 25-50% chronic users



- NSDUH .Results of 2018 National Survey on Drug Use and Health.
- Winters. Likelihood of developing an alcohol and cannabis use disorder during youth: Association with recent use and age. Drug Alcohol Dependence. 2008.
- Bell. DSM IV. 1994

4. Withdrawal

- Cannabis Withdrawal Syndrome (CWS) occurs in **90%** of patient diagnosed with cannabis dependence.
- Symptoms
 1. Sleep Difficulty
 2. Anger
 3. Anxiety
 4. Headache
 5. Depression
- Onset with 24 hours, peak 1 week, resolve 2 weeks
 - Sleep difficulty can last weeks.



5. Risk/Benefit Calculation

- Surgeon General Warning
- Medical Organization Warning
- Health Risks
- Drug Interactions
- Contamination
- Evaluating the Research



Opioid Epidemic
based on NEJM Letter
to the Editor and study
of 38 patients

Surgeon General Advisory on Marijuana and the Developing Brain - Adolescents

- No amount of marijuana use in adolescence is safe
- 9.2 million youth 12 – 25 reported marijuana use in past month (NSDUH 2019)
- Brain continues to develop up **mid 20s**
 - Changes in front lobe
 - Reduced school performance
 - Reduced life satisfaction
 - Impaired Driving
 - Psychosis, Schizophrenia
 - **130% greater** likelihood of misusing opioids

Surgeon General Advisory on Marijuana and the Developing Brain - Pregnancy

- Pregnant woman **should not use marijuana**
- No one should smoke marijuana or tobacco **around a baby**
- Women who are **breast feeding** should not use marijuana
- Marijuana use in past month among pregnant women doubled from 3.4% to 7% between 2002 and 2017
- Marijuana use may make it hard for a mother to properly care for baby
 - Association with low birth weight and stillbirth
 - May disrupt fetal brain development
 - May cause preterm labor

Neonatal Exposure: 2.3 x increase risk of stillbirths

Marijuana AND Pregnancy If you use marijuana during pregnancy, you may be putting your health and your fetus's health at risk.

Possible Effects on Your Fetus	Possible Effects on You
Disruption of brain development before birth	Permanent lung injury from smoking marijuana
Smaller size at birth	Dizziness, putting you at risk of falls
Higher risk of stillbirth	Impaired judgment, putting you at risk of injury
Higher chance of being born too early, especially when a woman uses both marijuana and cigarettes during pregnancy	Lower levels of oxygen in the body, which can lead to breathing problems
Have from secondhand marijuana smoke	
Behavioral problems in childhood and trouble paying attention in school	

DID YOU KNOW?

- Medical marijuana is not safer than recreational marijuana. Recreational and medical marijuana may be legal in some states, but both are illegal under federal law.
- There's no evidence that marijuana helps morning sickness (ask your obstetrician-gynecologist [ob-gyn] about safer treatments).
- You also should avoid marijuana before pregnancy and while breastfeeding.

Marijuana and pregnancy don't mix. If you're pregnant or thinking about getting pregnant, don't use marijuana.

If you need help quitting marijuana, talk with your ob-gyn or other health care professional.

Research is limited on the harms of marijuana use for a pregnant woman and her fetus. Because all of the possible harms are not fully known, the American College of Obstetrics and Gynecology (ACOG) recommends that women who are pregnant, planning to get pregnant, or breastfeeding not use marijuana. ACOG believes women who have a marijuana use problem should receive medical care and counseling services to help them quit.

ACOG
American College of Obstetrics and Gynecology
1000 19th Street, N.W., Washington, DC 20036-4501
www.acog.org

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CDC/FDA Investigation on Electronic/Vaping Associated Lung Injury - EVALI

- **2807** cases, **68** fatalities, associated with EVALI (peak Sept 2019)
- Vitamin E acetate association
- Youth and young adults should not use e-cigarette products
- Pregnant women should not use e-cigarette products
- Anyone who uses an e-cigarette should not buy them off the street and should not modify or add any substances to these products
- Do not return to smoking cigarettes

For every **1** adult who quits cigarettes using e-cigarettes, **80** adolescents who never smoked will eventually become daily smokers through e-cigarette use



American Heart Association

- Cardiac **death rates** increased 2.3% in men and 1.3% in women since legalization of medical cannabis – *US National Vital Statistics 1990-2014*
- Cannabis use is associated with increased **systolic** but not diastolic blood pressure – *US National Health and Nutritional Examination*
- 3 -year incidence of **Acute Myocardial Infarction** was higher in cannabis abuse group – *Explorys 2011-2016*
- Increasing trend of **arrhythmias** with cannabis users – *National Inpatient Sample 2010-2014*
- 3.3 x increase **stroke** rate in cannabis users – *1999-2002*



- Cannabis use shows **substantial risks, no benefits** for cardiovascular health; more research is critical

- American Heart Association Scientific Statement

American Society of Addiction Medicine (ASAM)

- Cannabis for medicine should be **FDA approved**.
- Non-FDA approved cannabis recommendations should be **reported to PDMP**.
- Health professional should **discourage vaping** drug delivery.

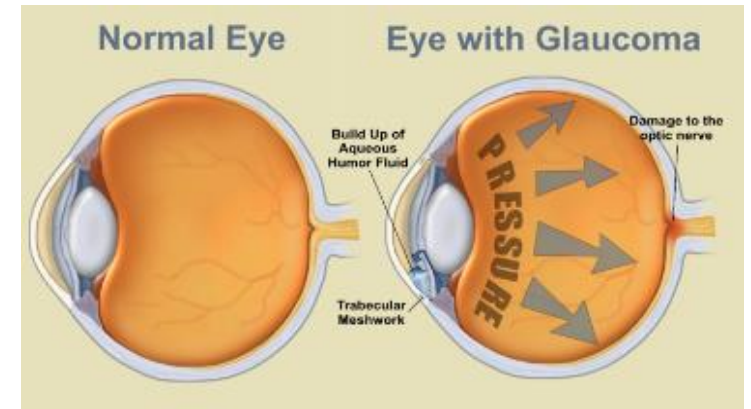
American Lung Association

Smoking marijuana is **bad for the lungs**.

- **American Lung Association** cautions the public against smoking marijuana because of the risks it poses to the lungs.
- Smoke from marijuana combustion contain many of the same **toxins, irritants and carcinogens** as tobacco.
- Marijuana smokers tend to inhale more deeply and hold their breath longer than cigarette smoking which leads to **greater exposure per breath to tar**.
- No one should be exposed to **secondhand marijuana smoke**.
- EVALI – Electronic and Vaping Associated Lung Illness resulted in 68 documented deaths. It was associated with Vitamin D acetate in marijuana products.

Medical Society Position Statements

- **American Academy of Ophthalmology**
- **American Glaucoma Society**
 - Marijuana **not** recommend for glaucoma
- **American Epilepsy Society**
 - No recommendation of THC for seizure
 - Epidiolex for specific seizures
 - Caution in buying CBD from dispensaries
- **American Academy of Neurology**
 - Does not recommend “medical” marijuana for neurological disorders



Medical Society Position Statements, cont'd

- **American Society of Addiction Medicine**
 - Oppose legalization of marijuana
- **American Academy of Pediatrics**
 - Oppose marijuana use ages 0 – 21
 - Oppose “medical marijuana”
- **American College of Obstetrics and Gynecology**
 - Discourage marijuana use preconception, pregnancy, lactation
- **American Heart Association**
 - Alert to possibility of cannabis as cause of cardiovascular disease

Cancer

Marijuana can cause cancer

- **American Cancer Association** cautions against relying on marijuana alone while avoiding or delaying medical care for cancer
- ACA notes marijuana may be helpful in nausea for cancer chemotherapy, neuropathic pain, HIV wasting syndrome, slow growth of some cancer cells in a lab.
- **Testicular germ cell** cancer has a **2-fold** increase in marijuana users.
- New Zealand Cancer Association associated marijuana use with **lung cancer**

Daling JR et al. Association of marijuana use and the incidence of testicular germ cell tumors. *Cancer*. 2009;115(6):1215-1223. doi: 10.1002/cncr.24159

Lackson JC, Carroll JD, Tuazon E, Castelao EJ, Bernstein L, Cortessis VK. Population-based case control study of recreational drug use and testis cancer risk confirms an association between marijuana use and nonseminoma risk. *Cancer*. 2012;118(21):5374-83. doi: 10.1002/cncr.27554

Traber B, Sigurdson AJ, Sweeney AM, Strom SS, McGlynn KA. Marijuana use and testicular germ cell tumors. *Cancer*. 2011;117(4):848-53. doi: 10.1002/cncr.25499.

Aldington, et. Al. Cannabis use and risk of lung cancer: A case control study. *Eur Resp J*. Feb 2008.

Marijuana Drug Interactions

Marijuana has *hundreds of drug interactions* with prescription medications.

Drugs.com

Cannabis – THC

- 377 drugs interact with cannabis
- 24 Major reactions
- 353 moderate reactions

Cannabidiol – CBD

- 519 moderate reactions
- 529 drugs interact with cannabis
- 9 Major reactions

Do not take
with Marijuana



Do not take
with CBD



TAKE WITH
FOOD



NOON



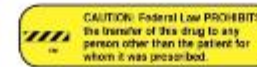
CAUTION: THIS DRUG ALONE OR WITH
ALCOHOL, MAY IMPAIR YOUR
ABILITY TO DRIVE



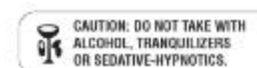
MAY CAUSE
DISCOLORATION
OF URINE OR FECES



FOR ORAL USE
ONLY



CAUTION: Federal Law PROHIBITS
the transfer of this drug to any
person other than the patient for
whom it was prescribed.



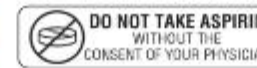
CAUTION: DO NOT TAKE WITH
ALCOHOL, TRANQUILIZERS
OR SEDATIVE-HYPNOTICS.



KEEP OUT OF REACH OF
CHILDREN: This type of
container may be opened
by children.



SHAKE WELL



DO NOT TAKE ASPIRIN
WITHOUT THE
CONSENT OF YOUR PHYSICIAN



Marijuana Poisoning

Daily marijuana poisoning in emergency visits.



- Psychosis
- Suicidal ideation
- Scromiting
- Excited Delirium
- Seizures
- Cardiovascular Collapse
- Pneumothorax
- Motor Vehicle Collisions
- Stroke-like symptoms
- Anxiety
- Tachycardia
- Amotivational Syndrome
- Over sedation – can't wake up
- Chest Pain and Palpitations
- Excessive Bleeding
- Allergic Reaction

Contamination

*Medical marijuana is **not** safer than non-medical marijuana.*

Marijuana plant is known to carry various fungus and bacteria.

- 20 out of 20 licensed dispensaries in California were found to can contamination in their marijuana such as fungus and bacteria.
- Truth in Labeling JAMA study
 - CBD: 84 products studies, 31% accurate labeling
 - THC: 75 products studied, 17% accurate labeling



Schizophrenia

*Marijuana can cause **permanent schizophrenia**.*

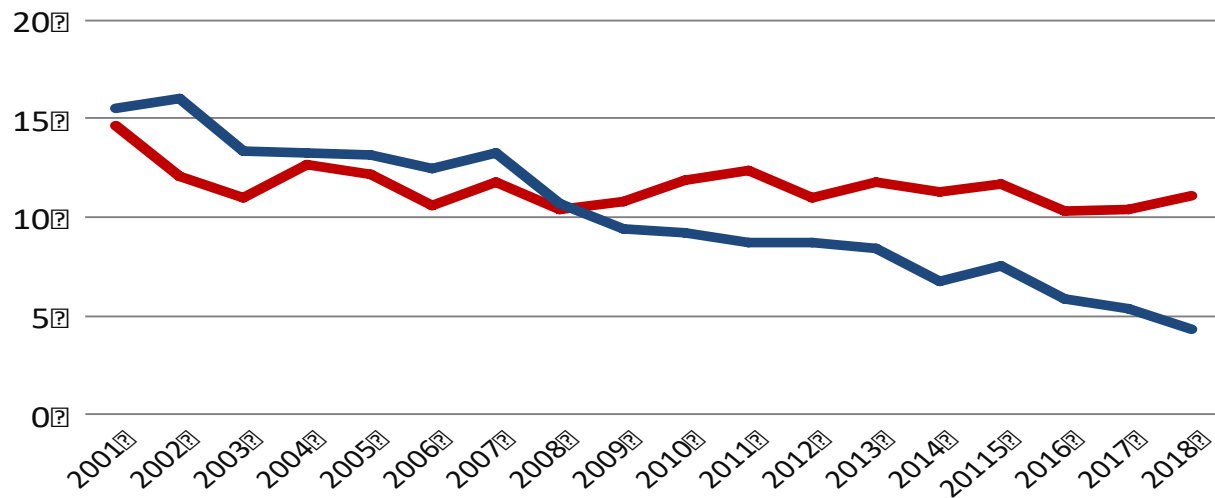
- Marijuana causing psychosis meets all 7 Bradford-Hill criteria for epidemiological causation vs association.
- **5x** risk chronic psychotic disorder for heavy marijuana users.
- **7x** increase risk suicide attempt in Caucasians who begin using in teens.
- **Recovery** of a psychotic break from marijuana occurs **50%** of the time compared to recovery from other drugs 70% - 95% recovery.

Drugged Driving

*Marijuana can cause **drugged-driving collisions**.*

- **2 x risk** of Motor Vehicle Collision
- Since 2009, more high school seniors reports driving after smoking marijuana than driving after drinking alcohol

During the LAST TWO WEEKS, have you driven a car, truck, or motorcycle after ...



Source: Monitoring the Future



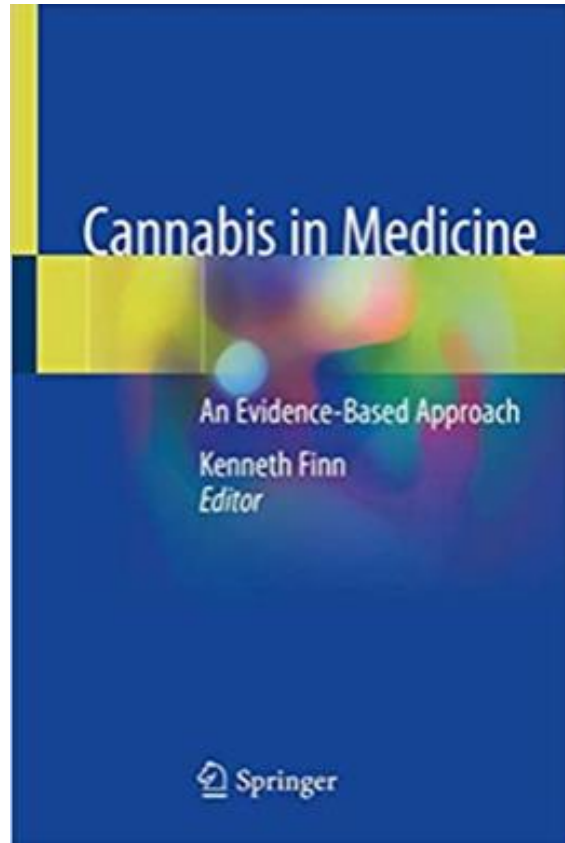
- 36 year old [Hyun Choi](#) convicted vehicular manslaughter while high on marijuana, March 2016.
- 22 year old [Jennifer Gasper](#) died by driver going 82 mph through red light and high on marijuana

Quiz

Which statement is true?

- a. Medical marijuana is recommended to treat opioid use disorder.
- b. THC receptors work on the same receptors as pain.
- c. Medical marijuana prescriptions are obtained from doctors who complete a standard of care medical evaluation.
- d. **Marijuana use increases opioid use in people with chronic pain.**
- e. A “medical marijuana” prescription includes dosage and drug interaction considerations.

Cannabis in Medicine



IASIC
INTERNATIONAL ACADEMY ON THE SCIENCE AND IMPACT OF CANNABIS
Doctors Educating on Cannabis

High Truths on Drugs and Addiction



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Thank you!



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Contact Information

Alyssa O'Hair
Project Director
aohair@casat.org

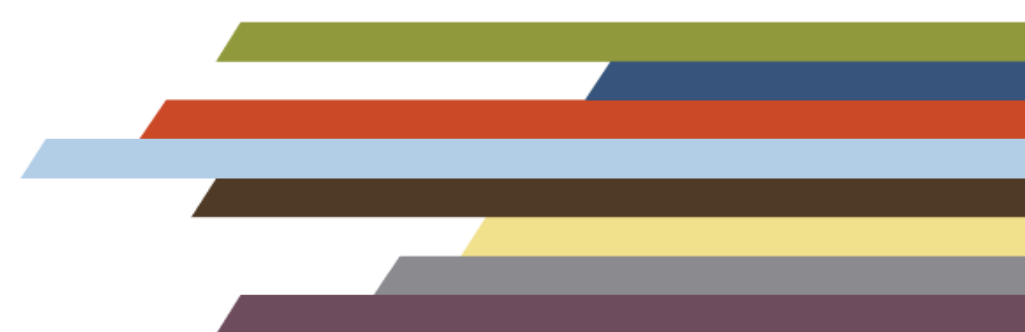


Pacific Southwest (HHS Region 9)

PTTC

Prevention Technology Transfer Center Network
Funded by Substance Abuse and Mental Health Services Administration

Thank You!



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