

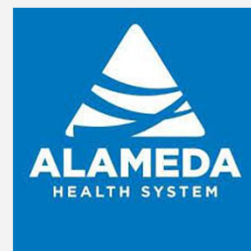
# A Neuropharmacological model of Buprenorphine Initiation After Opioid Overdose: Current observations from CA Bridge and Directions for Research

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PI and Founder  
Bridge | Treatment, Equity, Connection

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# Overdose is THE LEADING CAUSE OF DEATH among 15-44 year olds in California.

*Urgency to create a survival ENVIRONMENT*

ADDICTIVE DISORDERS: EDITED BY JOHN B. SAUNDERS AND LINDA B. COTTLER

## The rise of illicit fentanyls, stimulants and the fourth wave of the opioid overdose crisis

Ciccarone, Daniel [Author Information](#)

Current Opinion in Psychiatry: July 2021 - Volume 34 - Issue 4 - p 344-350



Drug and Alcohol Dependence

Volume 222, 1 May 2021, 108673



Voting with their feet: Social factors linked with treatment for opioid use disorder using same-day buprenorphine delivered in California hospitals

Mariah M. Kalmin <sup>a, g, h</sup>, David Goodman-Meza <sup>a, b</sup>, Erik Anderson <sup>c</sup>, Ariana Abid <sup>a</sup>, Melissa Speener <sup>d</sup>, Hannah Snyder <sup>d, e</sup>, Arianna Campbell <sup>d, f</sup>, Aimee Moulin <sup>d, g</sup>, Steve Shoptaw <sup>a</sup>, Andrew A. Herring <sup>c, d</sup>

NIDA'S NATIONAL DRUG ABUSE TREATMENT  
CLINICAL TRIALS NETWORK

# Prehospital Treatment for Opioid Use Disorder

Tuesday, September 6, 2022  
11:00 a.m. - 5:00 p.m. ET



# EMS Buprenorphine Project Expansion

- Buprenorphine is local optional scope of practice for all California paramedics
- CDPH invested \$2.4 million
- 11 LEMSAs in the coming year



Clinically confirmed  
opioid overdose



Overdose  
Suspected

Respiratory rate recovers  
but remains sedated or  
confused



ED engagement,  
initiation of treatment,  
and Peer navigation

Wakes up fully in some  
degree of withdrawal



General Paramedic  
administers Bup



Paramedicine Overdose  
team directs Bup initiation

# Overdose, naloxone, 16mg SL Bup

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## Patient Experience

*“I was very sick, in precipitated withdrawal. They (EMS) were able to offer me the Suboxone medication... I was able to take the medication right there on the spot. That 30 minutes was vital in getting back to normal, even though it was only 30 minutes that helped me a lot. We were able to go to the hospital where I received care and I got more suboxone... it made the biggest difference in how I felt and was able to come to and realize what was going on.”*

## Two part theory of Precipitated Withdrawal

COWS

Receptor level  
disruption  
(Acute)

Rate of agonist displacement by Bup

Opioid deficit  
(Chronic  
exposure/physical  
dependence)

Total mu agonist

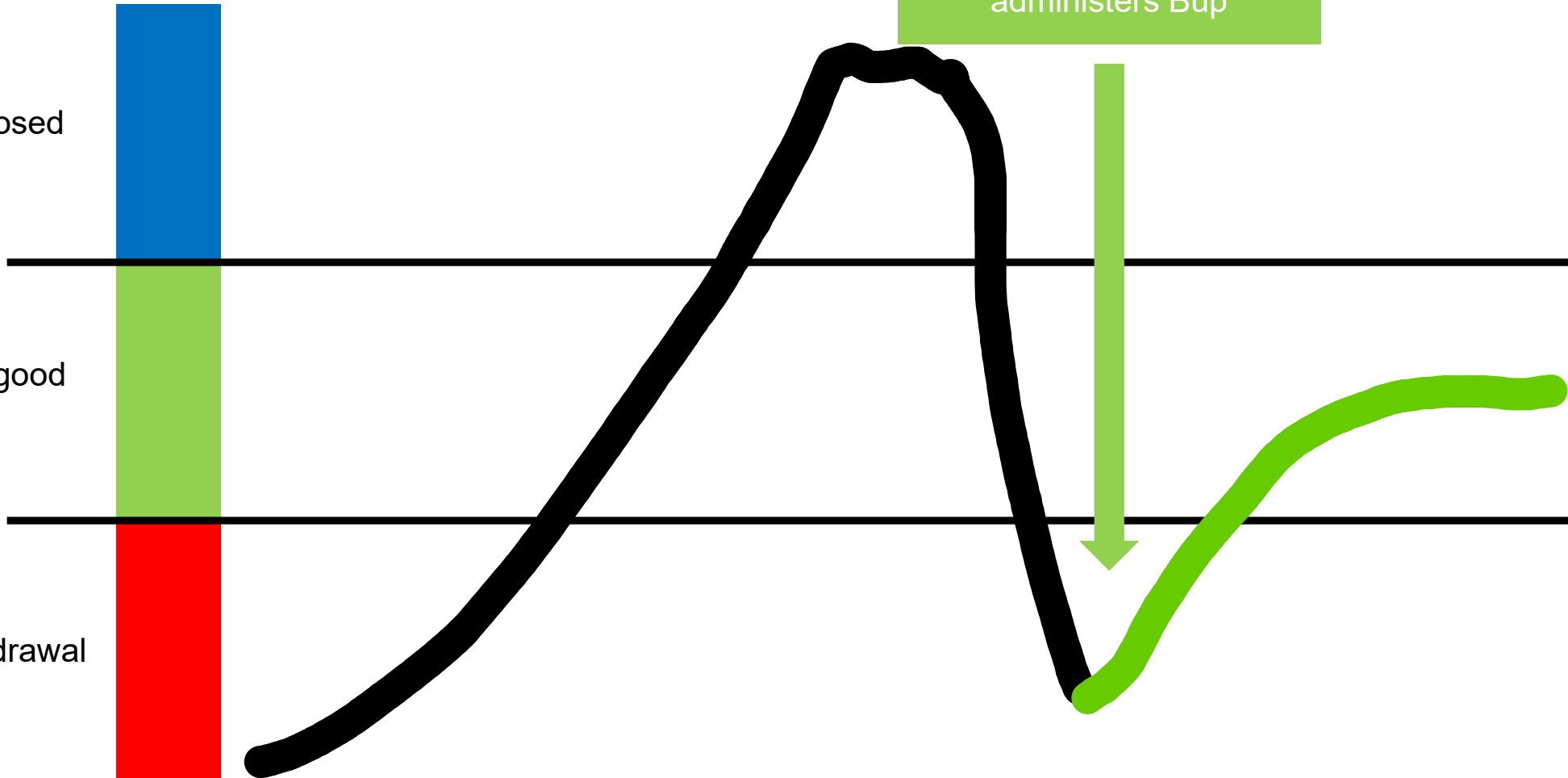
Opioid Balance

Overdosed

Feels good

In withdrawal

General Paramedic  
administers Bup





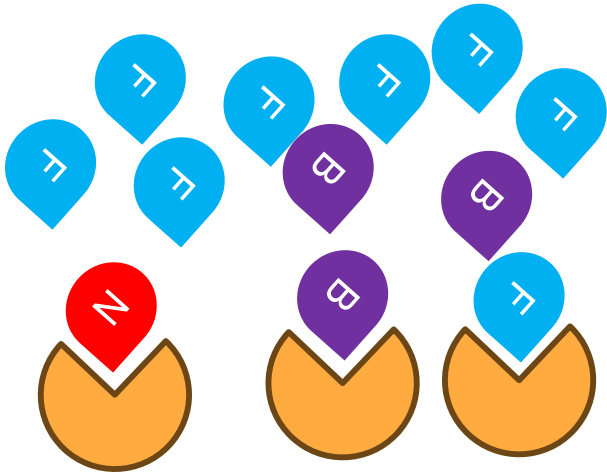
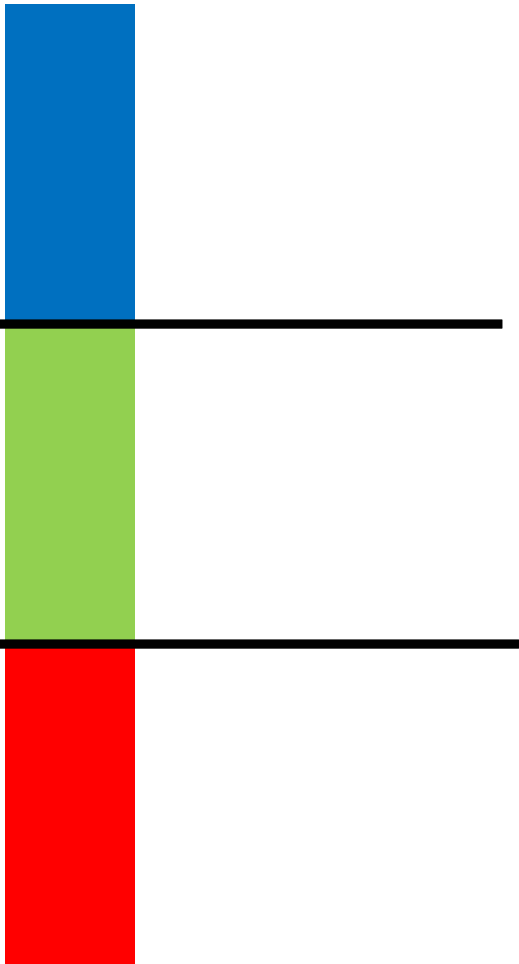
# Buprenorphine and Fentanyl are Additive after overdose

Opioid Balance

Overdosed

Feels good

In withdrawal



## Opioid Exposure



Smokes 80-90  
fentanyl tablets  
3 years

Profound  
Desensitization

Small changes  
cause large  
disruptions

Traumatized  
Unsupported



Snorts 1/2 gm  
black tar per day  
6 months

Moderate  
Desensitization

Intact resilience  
supported

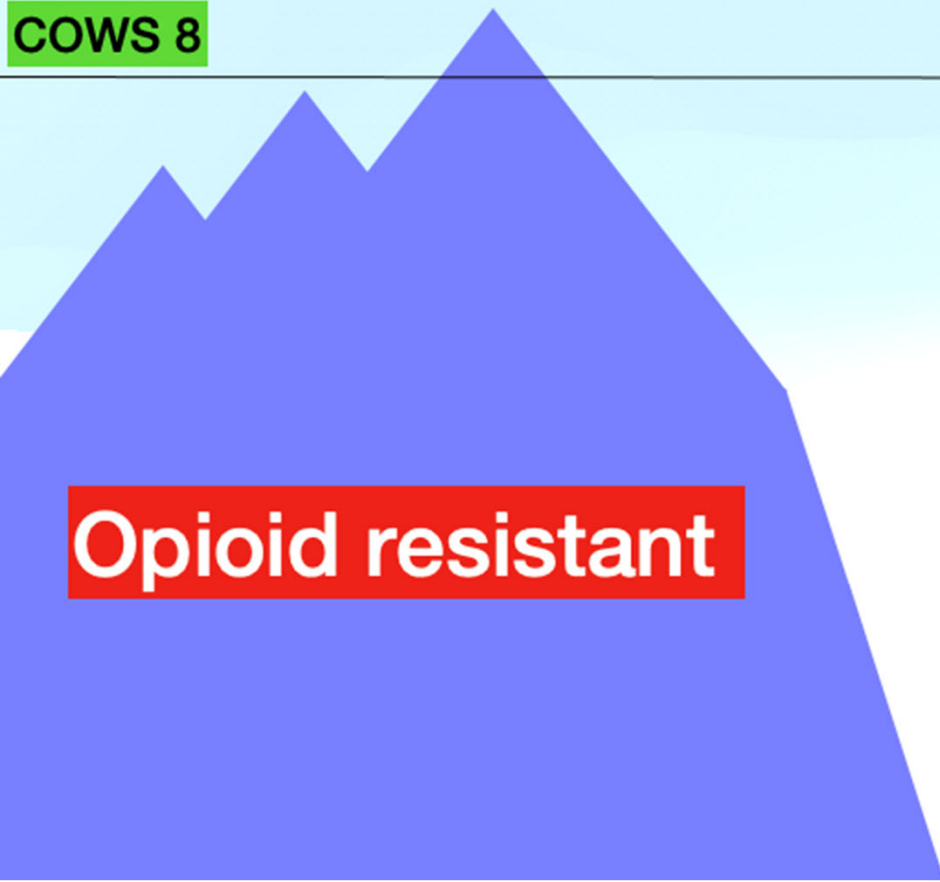
## “Neuroadaptive Hurdle”



**Withdrawal Assessment  
is a snap shot only**



**COWS 8**



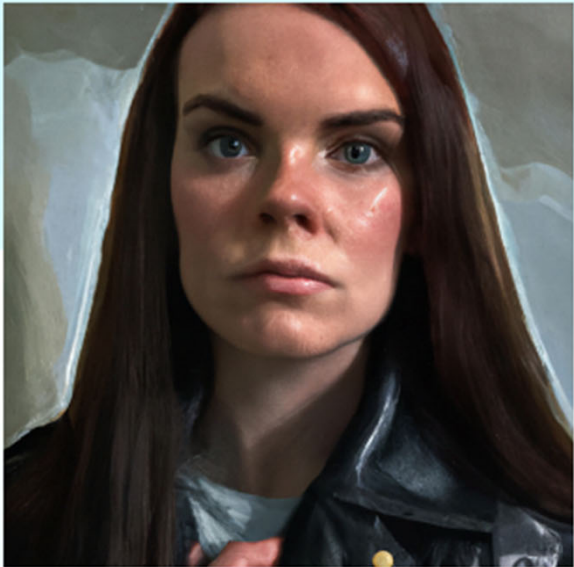
**Opioid resistant**



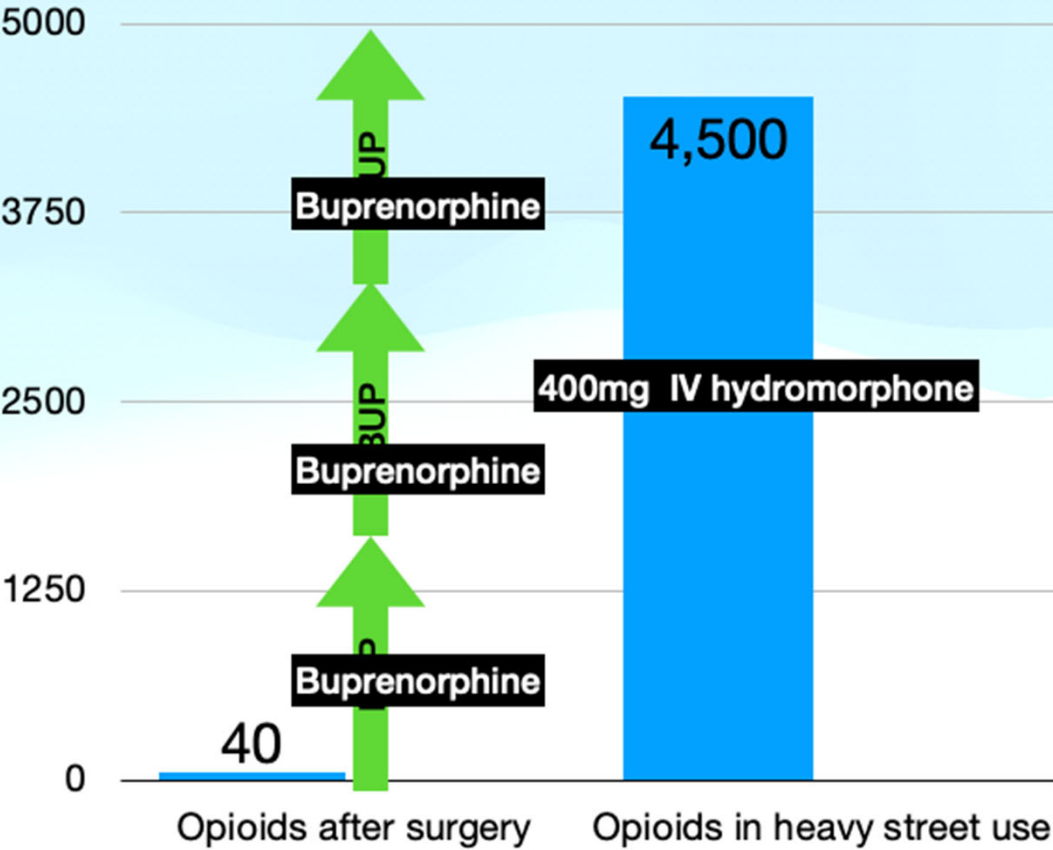
**Opioid sensitive**

**EZ-BUP**

**Profound opioid resistance / tolerance**



### Daily Prescribed Oral Morphine Equivalents



Caulfield, Mackenzie Duncan Gregory, et al. "Transitioning a patient from injectable opioid agonist therapy to sublingual buprenorphine/naloxone for the treatment of opioid use disorder using a microdosing approach." *BMJ Case Reports* CP 13.3 (2020): e233715.

# Buprenorphine Precipitated Withdrawal

## Target

Opioid deficit

Opioid  
resistance

Symptom  
Feedback loops  
(somatic & affective)

## Treatment

Full agonist opioids  
Buprenorphine

Ketamine

**Adjuncts:**

Alpha-2 agonists, benzodiazepines,  
anticonvulsants, antipsychotics,  
loperamide, D2/D3 agonists

# Buprenorphine Precipitated Withdrawal

## Early

1. Act quickly
2. Calm & confident
3. Benzo PO
4. High-dose Bup (16mg)

Clonidine  
D2/3 agonist  
Gabapentinoid

## Acute

1. Monitored bed
2. Bup- 64mg SL
3. Ketamine 20 IV q 30
4. Fentanyl 200mcg Q 10 min

## Residual

1. Pramipexole 0.5mg
  2. Clonidine 0.3mg
  3. Benzo (loraz 1mg IV)
  4. Pregabalin 100-300mg po
- Olanzapine 10mg IM

## Goal

Sublocade



# Published Evidence

## Paramedic administered buprenorphine

- Buprenorphine used for opioid withdrawal treatment by Paramedics
  - Abstinence withdrawal
  - Bup Precipitated withdrawal
  - Naloxone precipitated withdrawal
- No additional staff, simple algorithm, expert MD available by phone



Prehospital Emergency Care



ISSN: 1090-3127 (Print) 1545-0066 (Online) Journal homepage: <https://www.tandfonline.com/loi/pec20>

### Buprenorphine Field Initiation of ReScue Treatment by Emergency Medical Services (Bupe FIRST EMS): A Case Series

Gerard G. Carroll, Deena D. Wasserman, Aman A. Shah, Matthew S. Salzman, Kaitlan E. Baston, Rick A. Rohrbach, Iris L. Jones & Rachel Haroz



Prehospital Emergency Care



ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/pec20>

### Prehospital Initiation of Buprenorphine Treatment for Opioid Use Disorder by Paramedics

H. Gene Hern, David Goldstein, M Kalmin, S Kidane, S Shoptaw, Ori Tzvieli & Andrew A Herring

# Contra Costa County EMS Buprenorphine Project Impact

- Contra Costa County
- Alameda County
- San Francisco County



**1,500+**

Patients screened  
for OUD



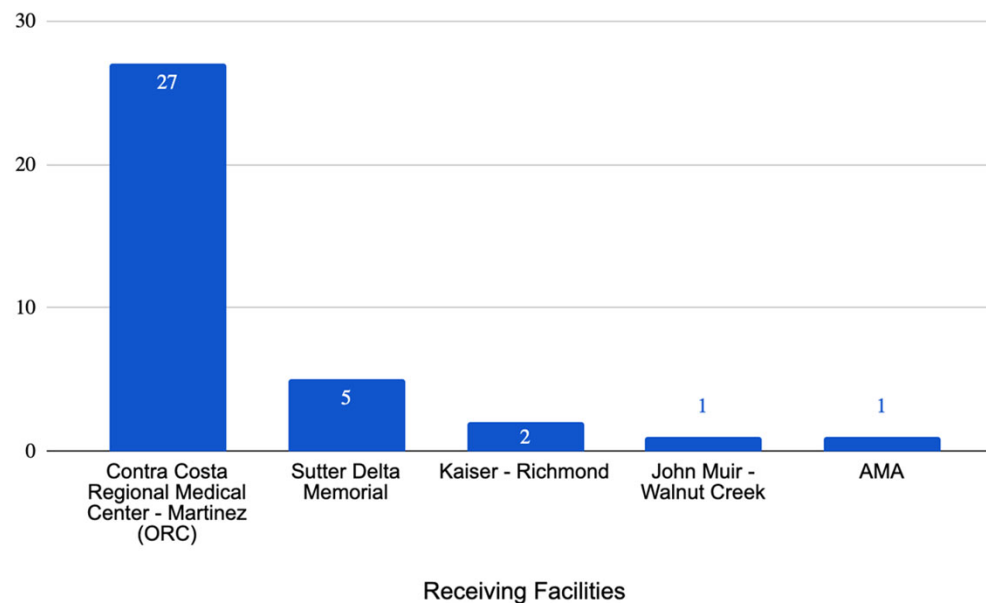
**110**

Patients given  
Buprenorphine by  
EMS



# Receiving Facilities

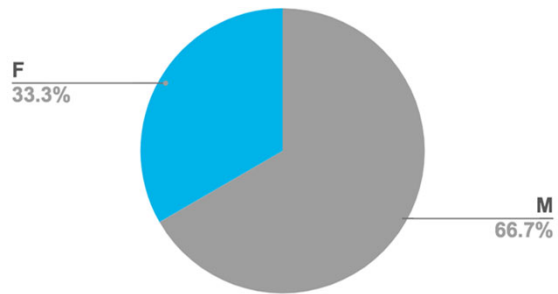
The graph displays the hospitals patients are transported to following buprenorphine administration by EMS. Paramedics encourage patients to go to the overdose receiving facility (ORC), Contra Costa Regional Medical Center - Martinez to receive optimal substance use disorder (SUD) care.



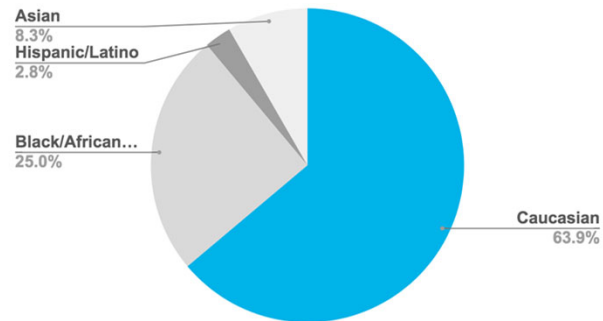
# Many use fentanyl

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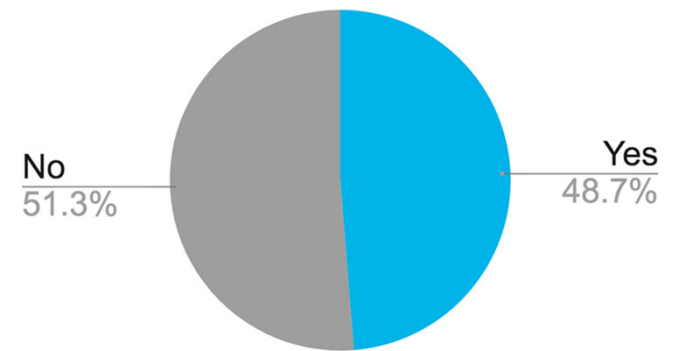
Gender



Race/Ethnicity

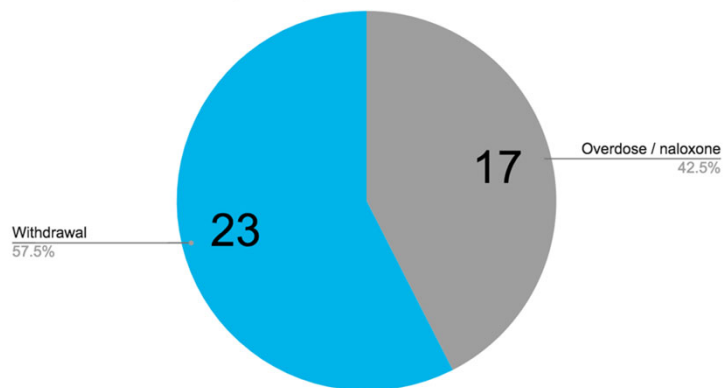


Report of fentanyl use in last 72 hours

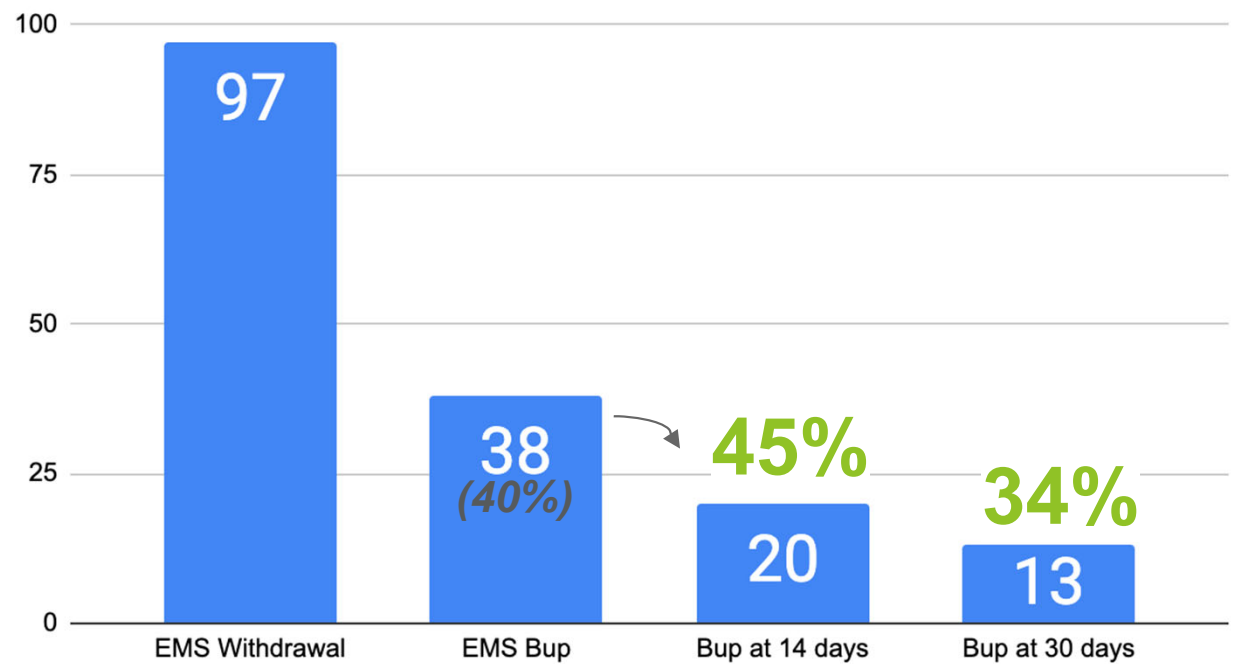


# Follow-up is very high

Reason for EMS buprenorphine



EMS Withdrawal, Buprenorphine, and Engagement



# Research Questions?

**Scope?** How many overdose victims are eligible for treatment

**Treatment details**—staff structure dose, timing etc

**Effectiveness? Does EMS Bup lead to engagement? Decreased mortality?**

**Implementation** strategy to scale?

**Equity**-is this a strategy to reach people not successful accessing treatment in traditional ways?

# Research Questions?

## Develop a Protocol

*Delphi Consensus Method and focus groups with all partners (EMS, ED, patients)*

## Pilot Implementation

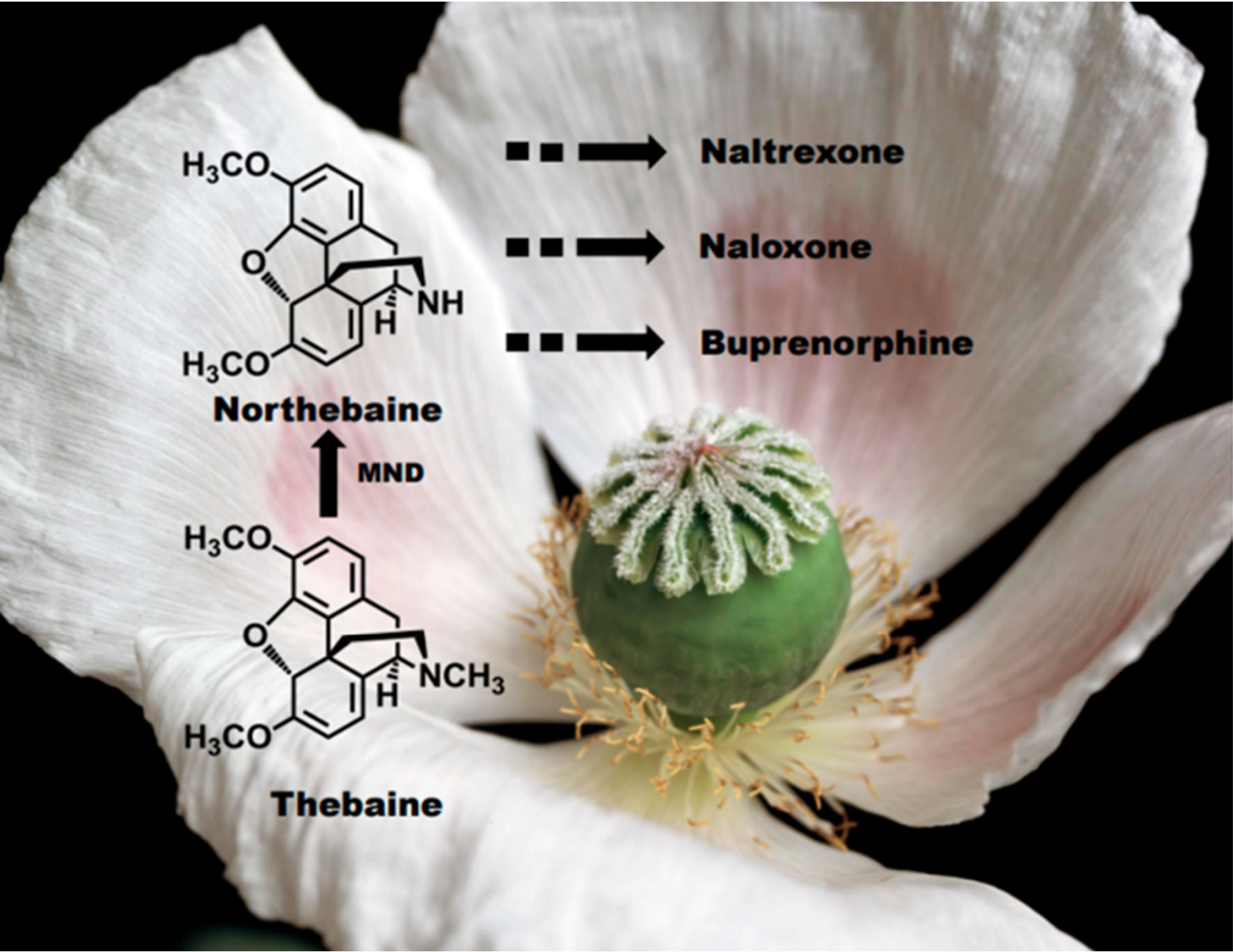
Procedures  
Feasibility  
Acceptability

## Effectiveness Trial

Primary outcome of engagement in treatment after EMS  
Buprenorphine initiation



Clinical Trials Network



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