

Opioid overdose is a global health concern

For 50 years, our best tool against overdose has done one thing:
reverse it after it's already happening.

What if we could stop it before it starts?

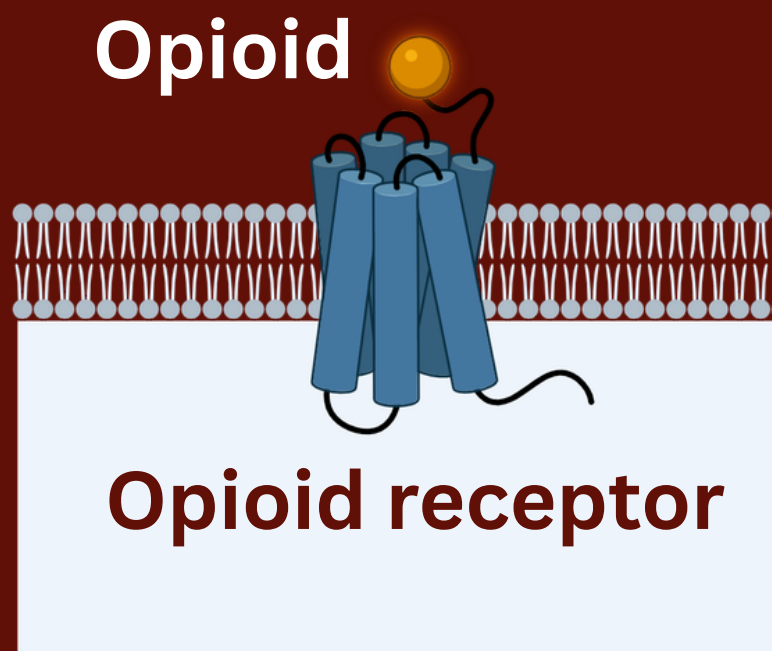


In 2019, drug use
resulted in 600,000
deaths worldwide

- Among these, 80% was due to opioids
- In the US, fentanyl overdose is now the leading cause of death for adults aged 18–44

Why Opioids Kill?

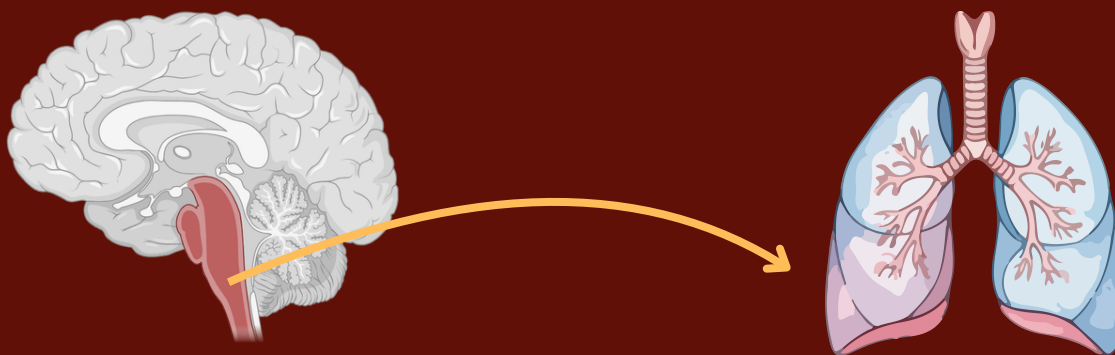
Opioids bind to μ -opioid receptors in the brain. That triggers the dopamine surge people feel as a "high."



Common Opioids

- Fentanyl
- Morphine
- Tramadole

But the same receptors are present on the brainstem, that controls breathing.

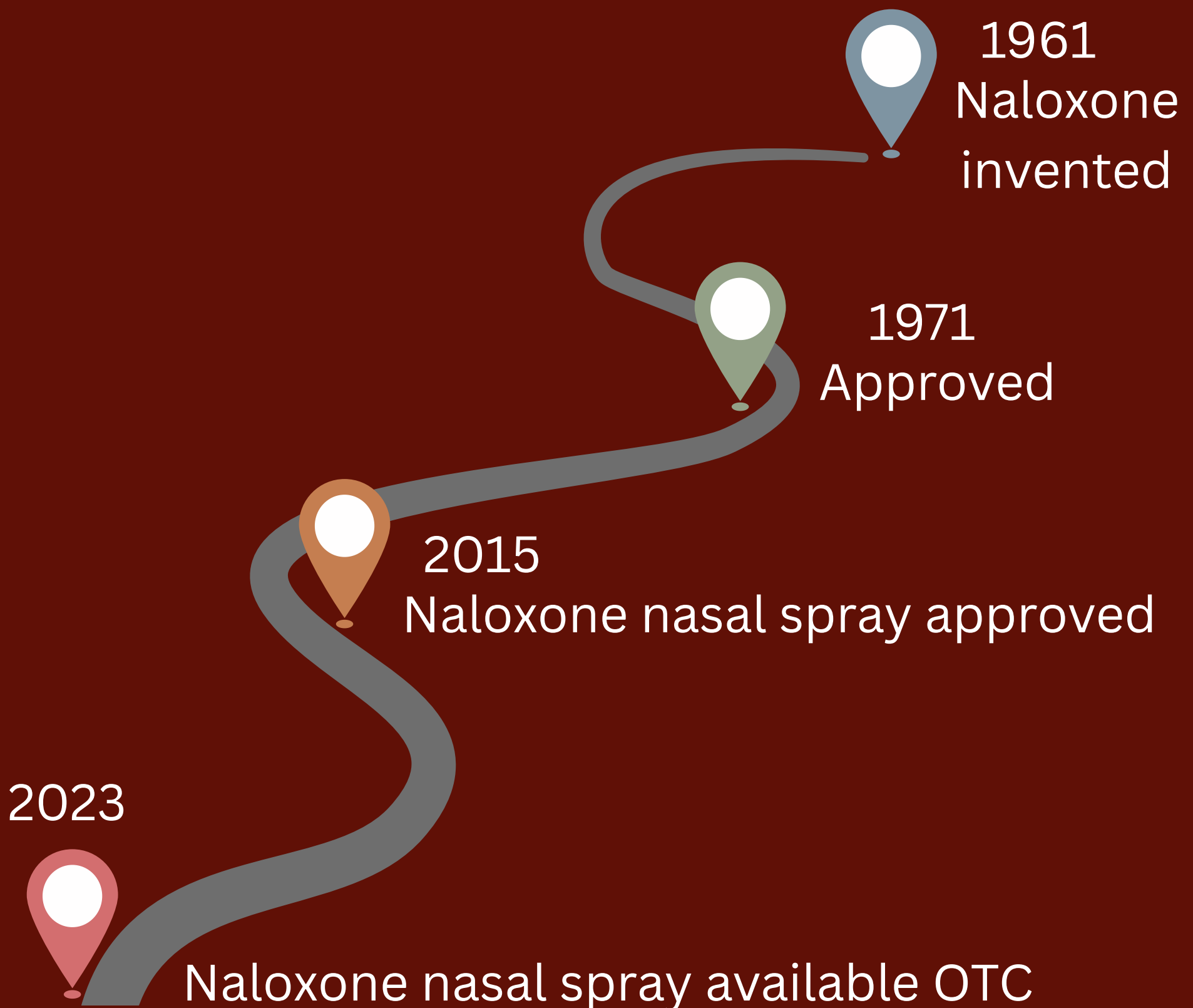


Fentanyl slows breathing until it stops.

What we have now

Naloxone

Kicks opioids off the receptors in your brain and binds to them instead.



Naloxone Limitations

- Highly reactive and causes intense physiological responses
- Short reactive window; therefore, needs to be given immediately
- Effects last shorter than drugs leading to rebound effects

Other drugs

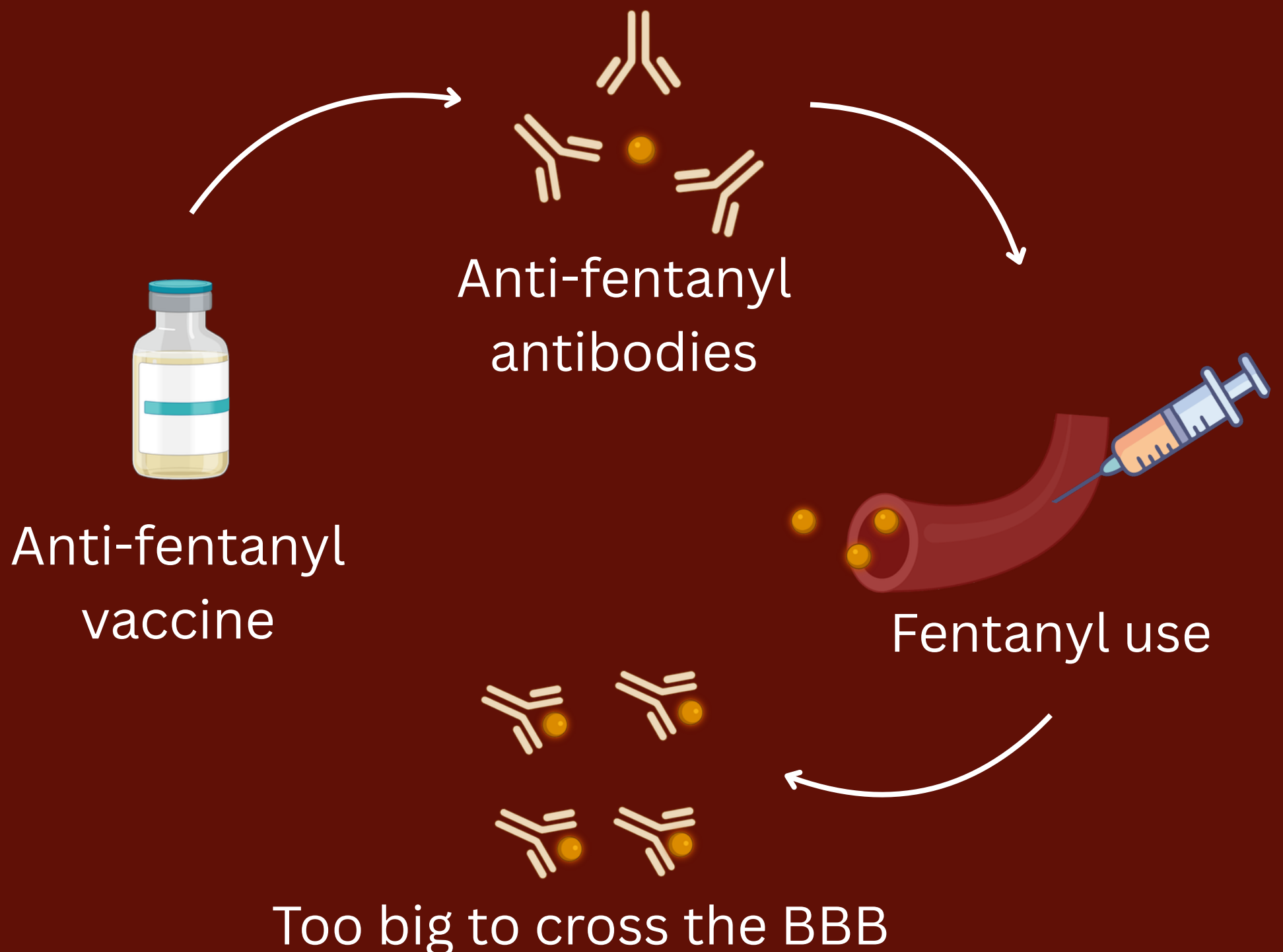
Methadone, buprenorphine
-manage cravings and withdrawal

All of these act after fentanyl has already reached the brain.

What's new?

Fentanyl Vaccine!

STOPS FENTANYL BEFORE IT
REACHES THE BRAIN



2021

First mouse results for this vaccine (FEN-CRM197)

2022

Fentanyl vaccine studied in rats

ARMR Sciences obtains license

Jan, 2026

Phase 1/2 clinical trials began in Netherlands

Late 2026
Data expected

Takeaways

- Results of the first human clinical trials for anti-fentanyl vaccines are expected by the end of the year
- Progress towards controlling overdose-associated deaths includes scientific research, policy changes, raising awareness, and limiting supply chains.