



**GCCC Commission Meeting / ISSUP Conference**  
May 2022 - Abu Dhabi, U.A.E.

A New Solution for the Opioid Epidemic: Novel, Authorised Cannabinoid Medications

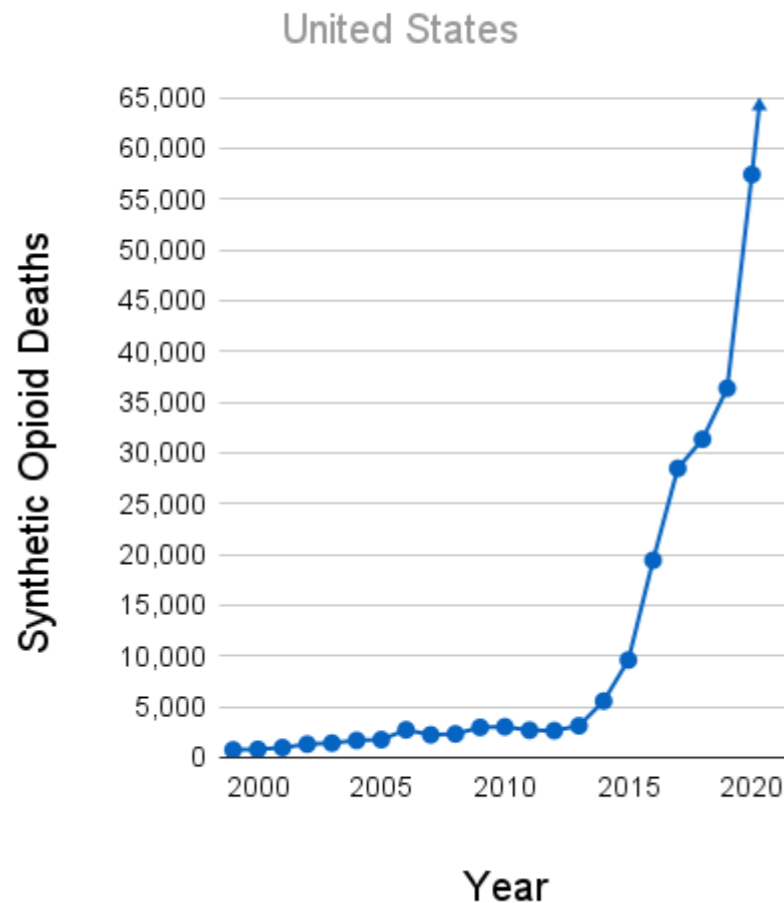
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## Substance Abuse and Harm Reduction Alternatives

A staggering number of Americans are dying from overdoses attributed to prescription opioid medications (POMs). In response, states are creating policies related to POM harm reduction strategies, overdose prevention, and alternative therapies for pain management, such as cannabinoid medication \*

Vas MB, LeBaron VT, Gilson AM. The use of cannabis in response to the opioid crisis: A review of the literature. Nurs Outlook. 2018 Jan-Feb;66(1):56-65. doi: 10.1016/j.outlook.2017.08.012. Epub 2017 Sep 21. PMID: 28993073

### Fentanyl Deaths Per Year



Statistics indicate that there were an estimated 100,306 drug overdose deaths in the United States during 12-month period ending in April 2021, an increase of 28.5%.

In 2020, there were 78,056 deaths during the same period the year before.

The largest concern is addicts moving to black market, often widely cheaper and more addictive, Fentanyl.

## A HARM REDUCTION STRATEGY

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**Emergency department visits for opioid overdoses rose 30% in all parts of the US from July 2016 through September 2017.**

**Two out of three drug overdose deaths in 2018 involved an opioid.**

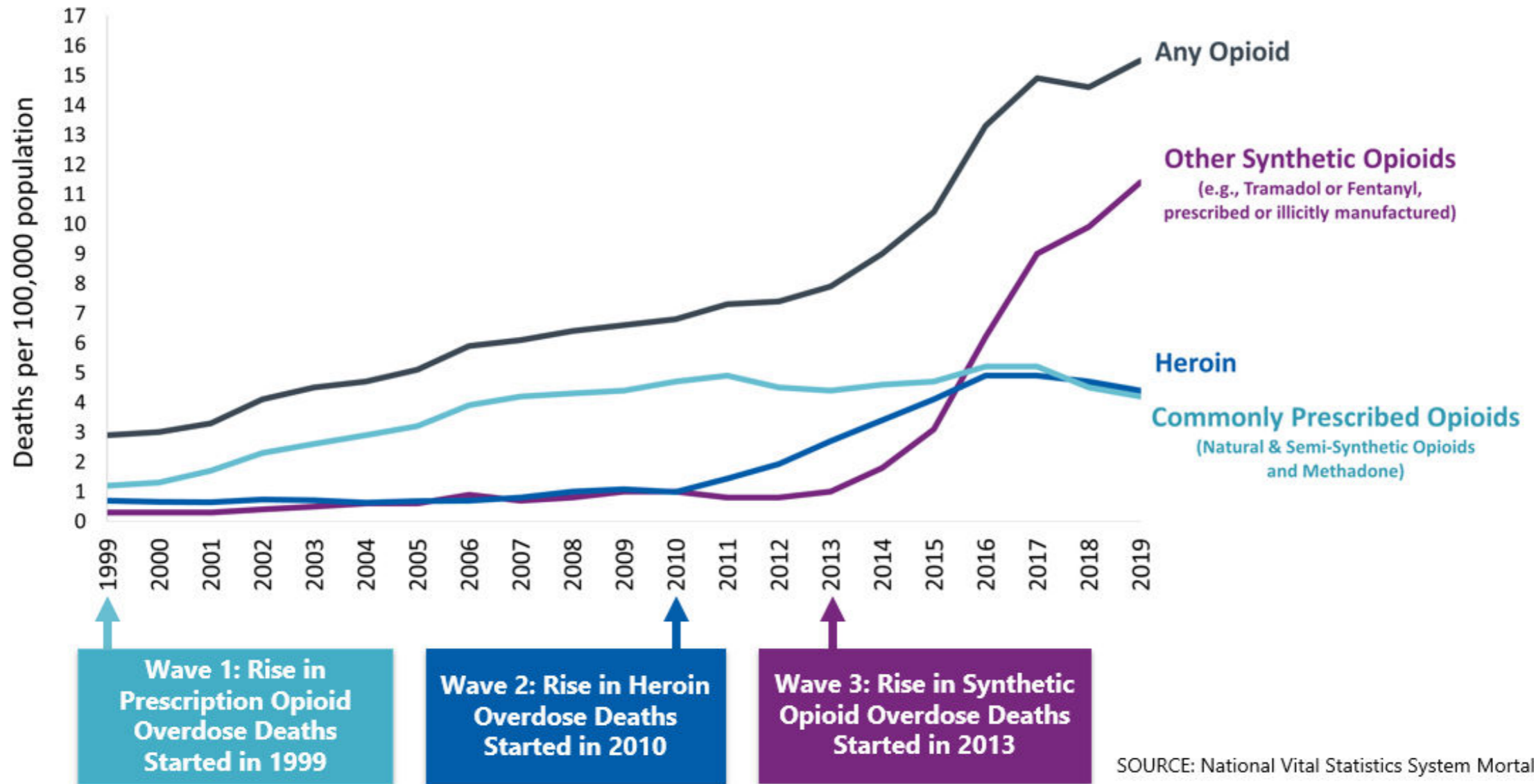
**Emergency department visits for opioid overdoses rose 30% in all parts of the US from July 2016 through September 2017.**

<https://www.hhs.gov/opioids/about-the-epidemic/opioid-crisis-statistics/index.html>



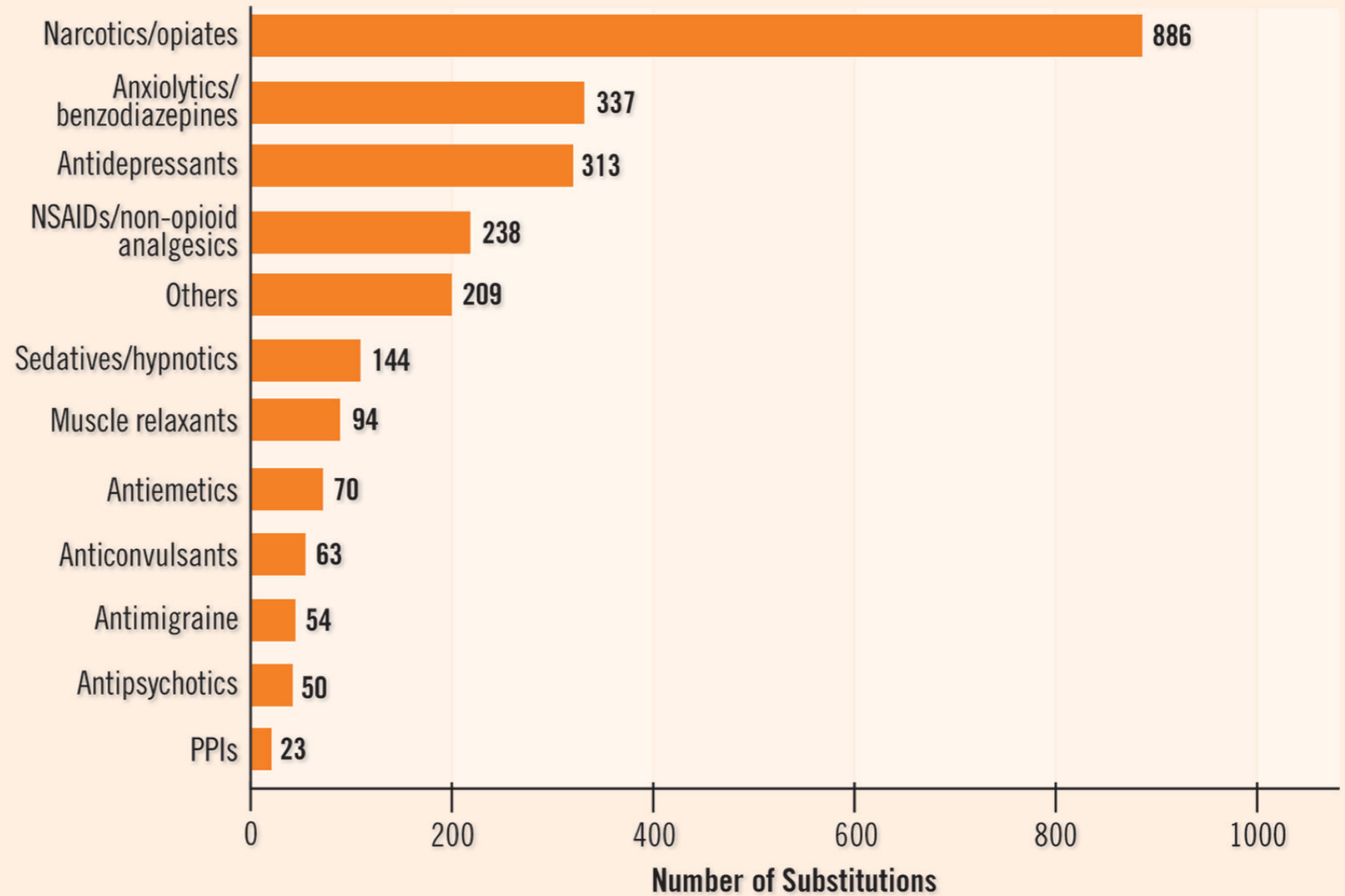
# One of the Biggest Issues Facing Public Health

## Three Waves of the Rise in Opioid Overdose Deaths

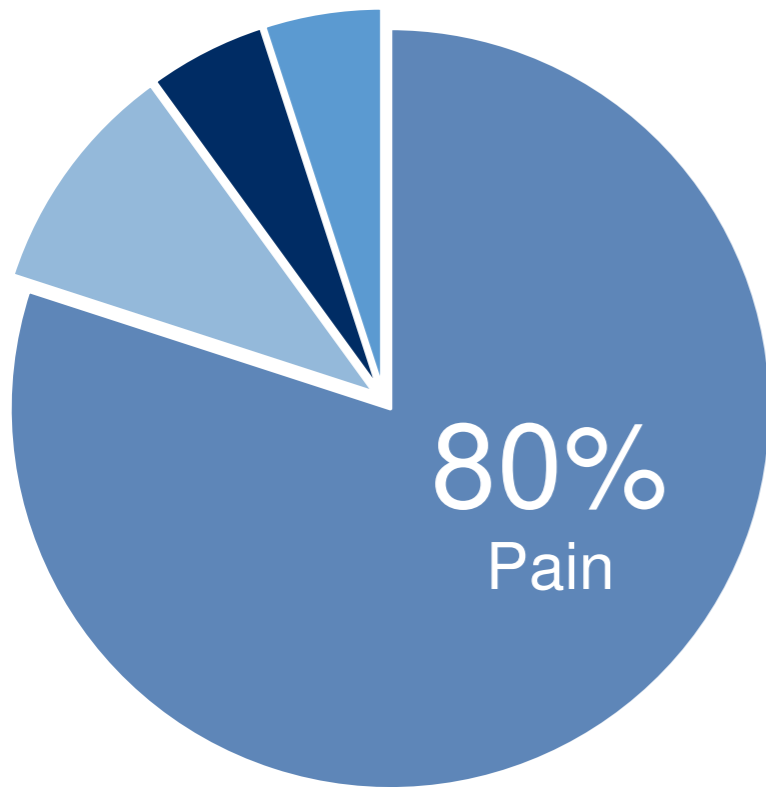


# Patients Need Solutions - the Displacement Story

**Figure** Reported Prescription Drug Substitutions by Drug Category

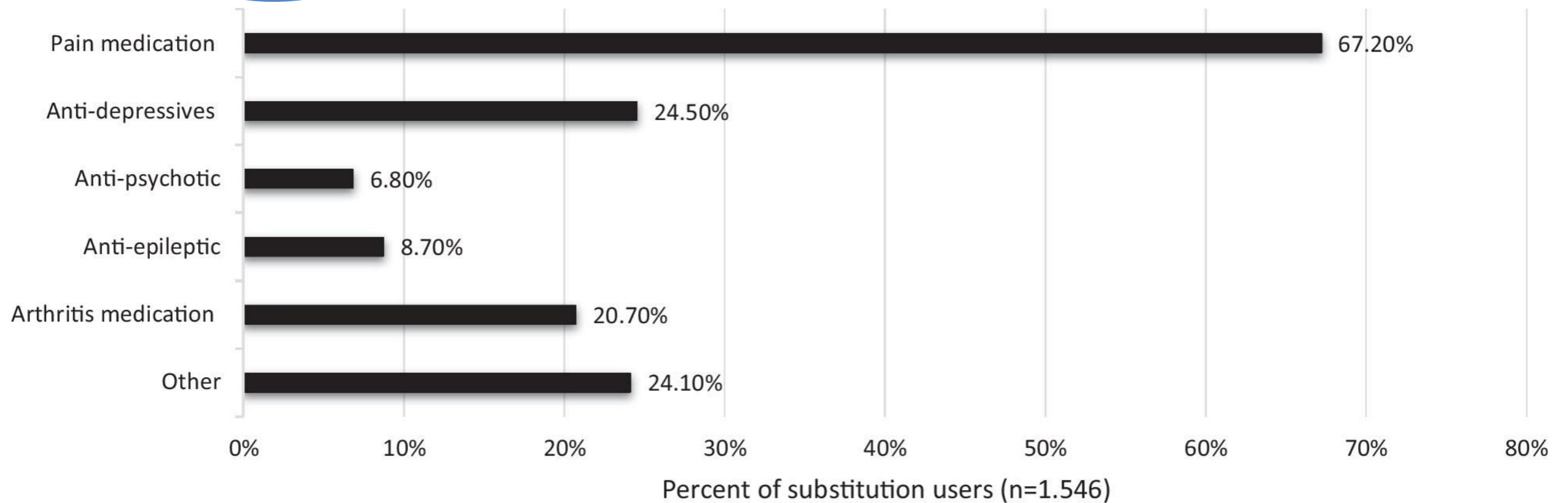


# Pain Management - The Patient Led Disruption



- 1 in 2 people over 50 suffer from Pain Management Issues
- 3.6 Million Patients a year in the USA now using Cannabinoid Medication as a replacement to opioids
- a \$105 Billion dollar market

\*Data from Bloomberg, Reuters and Prohibition Partners



# Our Story - Jointly Driving Novel Botanical Therapeutic Innovation

UNIVERSITY OF THE  
WITWATERSRAND,  
JOHANNESBURG



# Our Consortium's 3 Tier Solution

## Alternative

### Cannabinoid Medication

1. **Patients & Regulators need an effective product solution**
2. **Opioid tolerance leads to dependence and added consequences**
3. **Solution in Advanced Delivery system**
4. **Safe Effective Products**

## Clinical Trials

### FDA / EMA

1. **Multi-centred Gold Standard Clinical Trials to be conducted**
2. **Authorised & Regulated Medications**
3. **Targeted Phyto-Cannabinoid API with proven mechanisms of action**

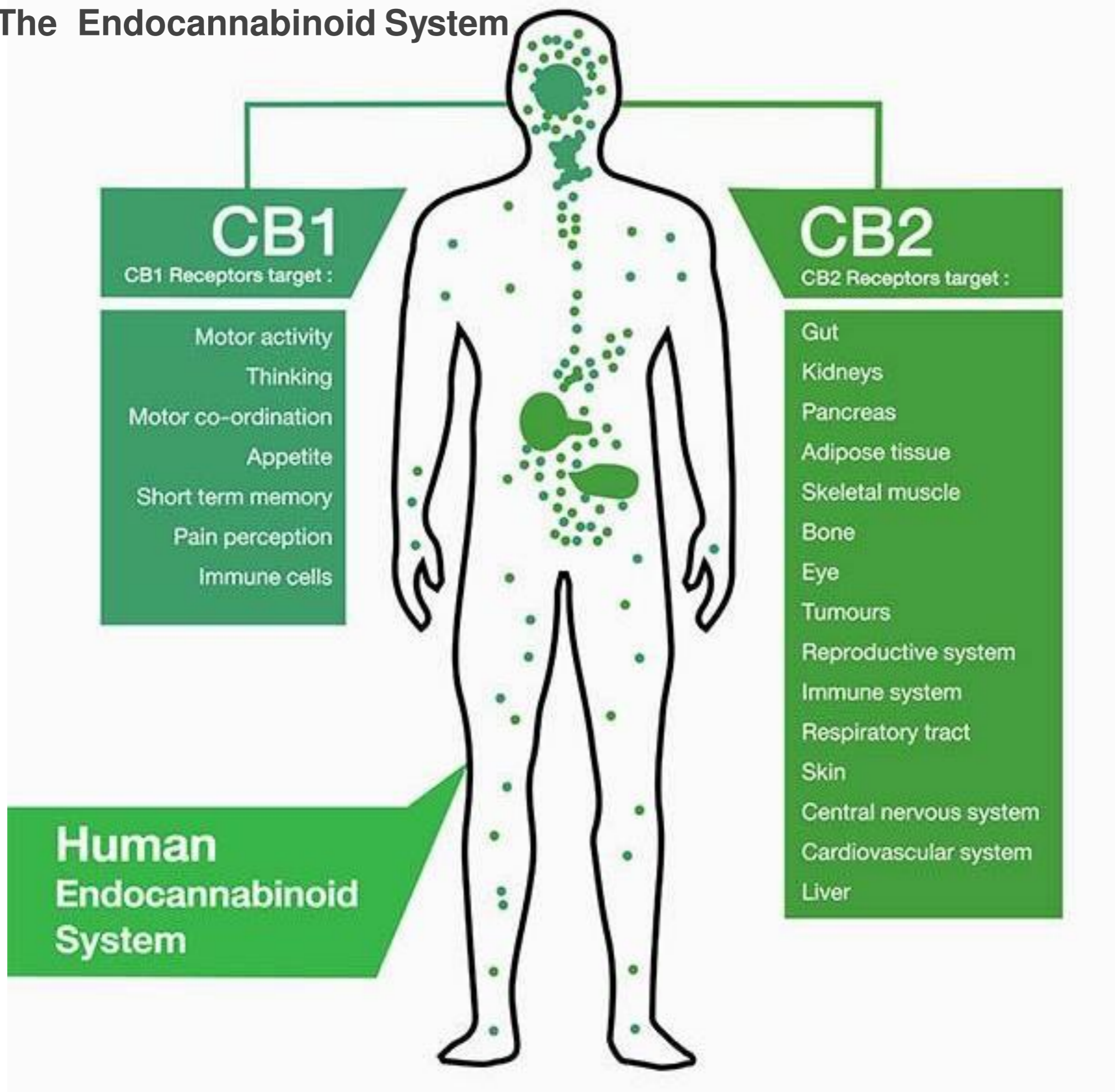
## Monitoring

### Authorised



1. **Prescription Medication Control**
2. **Practitioner Education conducted**
3. **Diversion Monitoring System available**



# The Endocannabinoid System



# WaferMat - Solves the Bioavailability Challenge

Products & Characteristics	WaferMat	Oils	Gel Caps	Gummies / edibles	Sativex / Epidiolex RX
Fast Acting					
Onset Time	?	1-3 hours	1-3 hours	30 min - 3 hours	5 min
Avoid First phase Bypass					
Pharma quality THC/CBD Consistency					
High Bioavailability					
Latest Formulation Science					

# WaferMat - U D WAF

Delivery Science Explained – Ultra-Rapid Dissolving Wafer

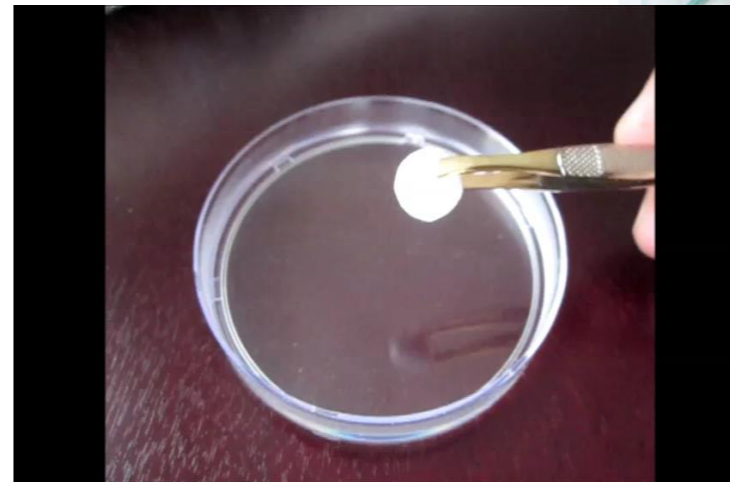
WaferMat is GreenTech / Wits University's patented, advanced formulation, ultra rapid dissolving, sublingual cannabinoid loaded sublingual Wafer

Strong “bio-adhesive” profile

Superior bioavailability profile.

Well suited for Pain management, Chemotherapy Induced Nausea and Vomiting (CINV) & Sleep Disorders

A new paradigm in Cannabinoid Based Medications



# Novel Botanical Therapeutic Candidate - Pain “Opioid Alternative”

## Breakthrough Pain & CINV

**THC**  
(Pain response & CINV)

**CBD**  
(anti-inflammation)

**BCP**  
“entourage”, pain, anti-  
inflammation

## Mechanism of Action

- **CB1 and CB2 Agonist**
- **Via CB1 inhibits neurotransmitter release and pain transmission via GABA release**
- **Via CB2 reduces neural sensation affecting pain**

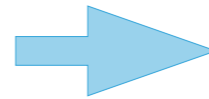
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- **Via CB1 reduces inflammation**

- 
- **Inhibits pro-inflammatory cytokines (Nrf2/HO-1 and NF-kB/Nrf2) signalling pathways reducing inflammation**
  - **BCP attenuated neuropathic pain by binding to the CB2 receptor via activation of Gai/o protein**

# Efficacy - Novel Botanical Therapeutics

## Significant Disease Area of Unmet Need

- Latest Delivery Technology
- Improved Cannabinoid Formulation (API)
- Complete Wound Closure VS SoC
- Significant reduction in amputation / surgery for DFU/VLU & Burns



Wound Closure in >90% of  
Chronic Wounds  
3rd Party Phase I Study Data \*  
(Toronto University)  
**40 Day Average**



# Novel Botanical Therapeutic Candidate - Polymer Wound Gel

“Chronic Wounds” VLU / DFU - Reducing Surgery & Amputation / Opioids

## VLU / DFU

THCa  
(Pain / Anti Inflammation)  
PPAR $\gamma$

—  
CBD  
(anti-inflammation)

—  
BCP  
“entourage”, pain, anti-inflammation

—  
CBG Anti-microbial Activity

## Mechanism of Action

- THCa is a CB1 and CB2 agonist
- THCa is a PPAR $\gamma$  agonist which represses the expression and function of pro-inflammatory factors ( 20x more PPAR $\gamma$  activity than decarboxylated THC); PPAR exerts anti-inflammatory effects by repressing the expression and function of pro-inflammatory factors (NF-kB and Nrf2/CREB )
- THCa is non psychoactive (carboxylated) therefore without “mind altering effects”.
- CBD - Via CB1 reduces neuronal hyperexcitability and inflammation through modulation of intracellular calcium via GPR55 and TRPV1 channels and modulation of adenosine-mediated signalling.
- BCP - Inhibits pro-inflammatory cytokines reducing inflammation
- BCP attenuates neuropathic pain by binding to the CB2 receptor
- CBG is a CB1 and CB2 agonist strengthens anandimide’s effect.
- Prevents the ability of bacteria to form biofilms, targeting the cell membranes (antibiotic resistant bacteria; MRSA)

# Support Medical Practitioner Education

Educate Doctors & Regulators

Approved Cannabinoid Education  
University Accredited Course (Wits)

Points Based for Doctors

University and Regulatory Lead

Understanding the Alternative

# Support Scheduled Medication Monitoring

University - Partnership Med-Tech Solution

Tracking of Prescriptions

Manufacturer to Patient

Significant Harm Reduction

Monitor Opioid & Cannabinoids



# An International Clinical Collaboration of Excellence



**MINISTRY OF FOREIGN AFFAIRS  
OF DENMARK**  
*Invest in Denmark*



Cape Advanced WoundCare Centre  
**CAWCC**





**PRESENTER:**

**DAVID BAYEVER**

**THANK YOU**

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