Using Science and Technology to Enhance SUD Care

Jack. B. Stein, MSW, Ph.D.
Chief of Staff
National Institute on Drug Abuse
THE CRISIS: NATIONAL OVERDOSE DEATH RATES
IN 2017, THERE WERE 70,237 OVERDOSE DEATHS (9.6% HIGHER THAN 2016)


Phases of the Opioid Crisis: Overdose Fatalities

- Prescription Opioids
- Heroin
- Synthetic Opioids Other than Methadone (Mainly Fentanyl)
HHS 5-Point Strategy to Combat the Opioid Crisis

1. **Better** addiction prevention, treatment, and recovery services
2. **Better** data
3. **Better** pain management
4. **Better** targeting of overdose reversing drugs
5. **Better** research
NIH • Helping to End Addiction Long-term
NIH HEAL (Helping to End Addiction Long-term) Initiative

Enhancing Pain Management

- Pre-Clinical Research in Pain Management
- Clinical Research in Pain Management

Improving Treatments for Misuse and Addiction

- Enhance Treatments for Affected Newborns
- Optimize Effective Treatments
- Develop New/Improved Prevention & Treatment Strategies
- Expand Therapeutic Options

Clinical Research in Pain Management
Opioid Use Disorder Cascade of Care

- 2,400,000 OUD Severe
- 1,600,000 OUD Diagnosed
- 640,000 Engaged in Care
- 380,000 Receive MAT
- 190,000 Retained/Abstinent

Williams AR, Nunes E, Olfson M. Health Affairs Blog, 2017
Key Components of SUD Care Delivery

Science and technology are paving the way to faster and more efficient solutions

- Prevention & Overdose Reversal
- Screening & Referral
- Treatment
- Relapse Prevention & Recovery
Overdose Reversal

Prevention & Overdose Reversal

IMS Monthly Prescriptions

- Narcan Nasal Spray
- All other naloxone products

Graph showing the number of monthly prescriptions from 02/16 to 02/17 for Narcan Nasal Spray and all other naloxone products.
Overdose Reversal

**Problem**

- Fewer than 6% of overdose victims receive naloxone

**Solution**

- Software that runs on smartphones to monitor a subject’s breathing and reliably detect respiratory failure.
Virtual Reality for Pain

Problem

- Large number of individuals with pain
- Medical device with opioid-sparing indications around acute and chronic pain treatment (FDA approval pending)

Solution

Prevention & Overdose Reversal

AppliedVR

VR Pharmacy

Hospitals  Clinics  Home
Objectively Measuring Chronic Pain

**Problem**

- Pain currently measured using subjective ratings
- An artificial intelligence device that uses EEG to objectively measure a patient’s pain

**Solution**

An artificial intelligence device that uses EEG to objectively measure chronic pain.
Screening and Assessment Tools

Screening & Referral

Problem

• Limited SUD screening conducted in healthcare settings

Solution

• Validated screening and brief assessment tool for commonly used substances
• Self-administered or interview format
• Free online access on NIDA website (drugabuse.gov)
Extended Release Formulations to Improve Medication Adherence

Problem
• Low adherence to medications for opioid use disorder

Solution
• New formulations for existing FDA-approved medications

VIVITROL (Naltrexone ER)
Once-Month Injectable

SUBLOCADE™
(Buprenorphine ER)
Once-Month Injectable

PROBUPHINE®
6 Month Implant

CAM2038:
Subcutaneous ER
Buprenorphine
Weekly and monthly injection

Naltrexone
Buprenorphine
Medication Adherence

**Problem**

- Lack of adherence to OUD medications
- Smartphone application that allows buprenorphine patients to stay connected and supported throughout their treatment
- Smart pill dispensers for remote patient support

**Solution**

**Treatment**

- [Emocha](https://www.emocha.com/)
- [MedicaSafe](https://www.medica-safe.com/)
- [Pillsy](https://www.pillsy.com/)
Digital Therapeutics for Withdrawal and Treating OUD

- Insufficient treatments for OUD
- Digital therapeutic devices for withdrawal and OUD treatment

NSS-2 Bridge (Innovative Health Solutions, Inc)
Opioid withdrawal (November 2017)

DrugRelief® (DyAnsys, Inc)
Opioid withdrawal (June 2018)

Re-SET-O (Pear Therapeutics)
SUD treatment (September 2017)
Neonatal Abstinence Syndrome/Neonatal Opioid Withdrawal Syndrome

Problem

• No treatment or non-evidenced based treatment for NAS is standard of care

• Mattress pad inserted into hospital bassinet or baby box to nurture rhythmic breathing and heart rates during opioid withdrawal

Solution

SVS hospital bassinet pad  
SVS baby box
Treatment Support Services

**Problem**
- Timely access to treatment services
- A provider-facing IT platform to facilitate the referral of patients in need of drug addiction treatment
- Real-time evidence-based drug treatment facility availability,
Access to Care, Medication Adherence

Problem

- Lack of access to affordable care
- Medication-based treatment delivered through a state of the art tele-medicine mobile & web platform
Access to Support Network

Problem
• Lack of social support to help prevent relapse

Solution
Sober Grid
• App connects individuals in/seeking recovery with peer or professional support based on contingency management

Woebot
• The first commercially available, empirically-supported automated conversational agent utilizing cognitive behavioral therapy
Technology is paving the way to faster and more efficient solutions

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- Screening & Referral
- Treatment
- Relapse Prevention & Recovery
Where Can I Find Out More?