The Opioid Crisis

Emergency Physicians as Innovators, Policymakers & Heroes
The Opioid Crisis

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Disclosure Statement

Current grant funding:

- National Institute on Drug Abuse (NIDA)
- National Institute on Alcohol Abuse and Alcoholism (NIAAA)
- Centers for Disease Control and Prevention (CDC)
- Substance Abuse and Mental Health Services Administration (SAMHSA)

Provided funding for filming & production of videos displayed on our interactive web portal.
Every day, more than 115 people in the U.S. die after overdosing on opioids.

CDC, 2016 Data

Sources: https://losttoopioids.nsc.org/index.html
Tommy Sowell 7/3/91 - 2/13/16
Kincheloe, WV
Cause of death heroin overdose.
Avid hunter and fisherman

Beau Allen Patterson 3/3/93 - 2/10/17
Vienna, WV
Home from a 90 day rehab program. Cause of death fentanyl intoxication. Veteran of U.S. Army
Every day, more than 115 people in the U.S. die after overdosing on opioids.

CDC, 2016 Data

Sources: https://losttoopioids.nsc.org/index.html
20.1 million Americans > 12 years of age have a substance use disorder

2.1 million have a opioid use disorder

3.3 million report non-medical use of pain relievers in the past month

NSDUH, 2017
Virtually all corners of the U.S. impacted by drug overdose
States With the Most Opioid Deaths

- West Virginia (52.0 per 100,000)
- Ohio (39.1 per 100,000)
- New Hampshire (39.0 per 100,000)
- Pennsylvania (37.9 per 100,000)
- Kentucky (33.5 per 100,000)

Data Source: WV
Rates are age-adjusted.
The Opiate Crisis Is Costing West Virginia

West Virginia drug overdose deaths
1,000

West Virginia total body transports
5,000

West Virginia body transport expenditures
$1,000,000

Note: 2017 fiscal year ended June 30.
Source: West Virginia Department of Health and Human Resources.
Nearly half of opioid related OD deaths involved fentanyl

Source: CDC National Vital Statistics System
Special Populations
Drug Overdose Death Rates
1999-2016

Source: NCHS National Vital Statistics System, Mortality
Age

Start Young With Prevention
Change in Life Expectancy

Figure. Contributions of Selected Causes of Death to the Change in Life Expectancy in the United States, 2000-2015

12 Leading causes of death (ranked highest to lowest according to No. of deaths in year 2015)
- Diseases of the heart
- Malignant neoplasms
- Chronic lower respiratory diseases
- Unintentional injuries
- Cerebrovascular diseases
- Alzheimer disease
- Diabetes mellitus
- Influenza and pneumonia
- Nephritis, nephrotic syndrome, and nephrosis
- Suicide
- Septicemia
- Chronic liver disease and cirrhosis
- Drug, opioid, and alcohol poisoning deaths

Age adjusted death rate increased from 6.2-16.3/100,000 with (7.4) related to opioid deaths.
Drug-poisoning deaths contributed to a loss of 0.28 years; Opioid deaths to 0.21 years loss of life expectancy.

Dowell et al., JAMA, 2017
The Science of Addiction
Reward Pathway

prefrontal cortex

nucleus accumbens

VTA
Dopamine D2 Receptors are Lower in Addiction

Adapted from Volkow et al., Neurobiology of Learning and Memory 78:610-624, 2002.
It is NOT a moral failing
addiction. 1. The use of a specified person or substance, especially a narcotic or other drug, in amounts sufficient to produce physical or emotional dependency.
Chronic Pain

• Combination of behavioral, environmental and biological factors increase vulnerability

Opioid Use Disorder

• Genetic risk factors account for 50% of the likelihood that an individual will develop addiction
DSM-5 criteria for diagnosis of Opioid Use Disorder

At least 2 criteria must be met within a 12 month period

1. Take more/longer than intended
2. Desire/unsuccessful efforts to quit opioid use
3. A great deal of time taken by activities involved in use
4. Craving, or a strong desire to use opioids.
5. Récurrent opioid use resulting in failure to fulfill major rôle obligations
6. Continued use despite having persistent social problems
7. Important activities are given up because of use.
8. Récurrent opioid use in situations in which it is physically hazardous (e.g. driving)
9. Use despite knowledge of problems
10. Tolérance
11. Withdrawal

Severity

Presence of Symptoms

- **Mild:** 2-3
- **Moderate:** 4-5
- **Severe:** ≥6

What does it feel like to have opioid use disorder?

Anxiety, Irritability, Restlessness, Insomnia, Nausea, Abdominal Cramps, Aching bones, Aching muscles, Sweating

From “Narcotic Blockade” by V.P. Dole, M.E. Nyswander and M.J. Krock, 1966, Archives of Internal Med
Effective Treatments for Opioid Use Disorders

What is NOT considered evidence based treatment?

- Detoxification only
- Abstinence-oriented therapy
- Mutual support programs
- Naloxone (Narcan)

Medication-Assisted Treatment (MAT)

Medication for Addiction Treatment
Médications for Addiction Treatment

An agonist drug has an active site of similar shape to the endogenous ligand, so it binds to the receptor and produces the same effect. An antagonist drug is close enough in shape to bind to the receptor but not close enough to produce an effect. It also takes up receptor space and prevents the endogenous ligand from binding.

Source: NIDA
What does it feel like when taking opioid agonist treatment?

It is NOT simply replacing one drug for another

Stabilization of patient in normal function by blockade treatment. A single dose prevents the patient from feeling sick or high

Adapted from "Narcotic Blockade" by V.P. Dole, M.E. Nyswander and M.J. Krock, 1966, Archives of Internal Med
Advantages of Opioid Agonist Treatment

- Reduction in illicit substance use
- Less viral hepatitis, HIV, & IV drug use complications
- Reduction in risk of opioid overdose and death
- Reduction in risky behaviors
- Reduced risk of legal consequences
- More time available to
  - Have sustainable relationships
  - Find gainful employment
  - Deal with other medical problems
Evidence

Overdose deaths during expansion of methadone and buprenorphine in France 1996-2003

Heroin OD deaths during expansion of methadone & buprenorphine in Baltimore 1995-2009

Overdose deaths during expansion of methadone and buprenorphine in France 1996-2003

Emmanueli, Addiction 2005
Heroin OD deaths during expansion of methadone & buprenorphine in Baltimore 1995-2009


Schwartz, AJPH, 2013
Background: Opioid overdose survivors have an increased risk for death. Whether use of medications for opioid use disorder (MOUD) after overdose is associated with mortality is not known.

Objective: To identify MOUD use after opioid overdose and its association with all-cause and opioid-related mortality.

Design: Retrospective cohort study.

Setting: 7 individually linked data sets from Massachusetts government agencies.

Conclusion: Bup & MMT were associated with reduced all-cause and opioid-related mortality.
All cause mortality rates in and out of treatment methadone or buprenorphine and overall pooled all cause mortality rates, 1974-2016

<table>
<thead>
<tr>
<th>Methadone</th>
<th>No of deaths/person years</th>
<th>All cause mortality rate/1000 person years (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In treatment</td>
<td>Out of treatment</td>
</tr>
<tr>
<td>Gearing et al 1974</td>
<td>110/14474</td>
<td>33/1170</td>
</tr>
<tr>
<td>Cushman 1977</td>
<td>25/1655</td>
<td>14/297</td>
</tr>
<tr>
<td>Grönbladh et al 1990</td>
<td>16/1085</td>
<td>32/740</td>
</tr>
<tr>
<td>Caplehorn et al 1994</td>
<td>11/1975</td>
<td>36/2279</td>
</tr>
<tr>
<td>Fugelstad et al 1995</td>
<td>8/242</td>
<td>5/45</td>
</tr>
<tr>
<td>Fugelstad et al 1998</td>
<td>7/177</td>
<td>4/57</td>
</tr>
<tr>
<td>Scherbaum et al 2002</td>
<td>18/1114</td>
<td>14/172</td>
</tr>
<tr>
<td>Fugelstad et al 2007</td>
<td>77/3354</td>
<td>74/1311</td>
</tr>
<tr>
<td>Clausen et al 2008</td>
<td>90/6450</td>
<td>46/1303</td>
</tr>
<tr>
<td>Degenhardt et al 2009</td>
<td>648/111538</td>
<td>1510/105735</td>
</tr>
<tr>
<td>Cornish et al 2010</td>
<td>30/5129</td>
<td>71/4288</td>
</tr>
<tr>
<td>Peles et al 2010</td>
<td>42/3985</td>
<td>52/727</td>
</tr>
<tr>
<td>Evans et al 2015</td>
<td>163/25277</td>
<td>848/48122</td>
</tr>
<tr>
<td>Kimber et al 2015</td>
<td>636/91792</td>
<td>563/45265</td>
</tr>
<tr>
<td>Nosyk et al 2015</td>
<td>89/3979</td>
<td>206/1582</td>
</tr>
<tr>
<td>Cousins et al 2016</td>
<td>115/22648</td>
<td>98/6247</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Buprenorphine</th>
<th>No of deaths/person years</th>
<th>All cause mortality rate/1000 person years (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In treatment</td>
<td>Out of treatment</td>
</tr>
<tr>
<td>Cornish et al 2010</td>
<td>7/740</td>
<td>10/751</td>
</tr>
<tr>
<td>Reesee 2010</td>
<td>3/1119</td>
<td>40/6911</td>
</tr>
<tr>
<td>Kimber et al 2015</td>
<td>87/21936</td>
<td>314/31239</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Luis, Sordo et al., BMJ 2017
Treatment Gap In Substance Abuse Treatment System among OUD Cascade of Care

Williams AR, Nunez E, Olfson M. Health Affairs Blog, 2017
Buprenorphine maintenance versus placebo or methadone maintenance for opioid dependence (Review)

31 trials (5430 participants)

Methadone and Buprenorphine are equally effective (at adequate dosing)

Opioid use

Retention in treatment

Mattick et al., 2014
The Other Medication for OUD

Naltrexone (Vivitrol)

- Pure antagonist
- Requires 7-10 day detoxification
- Injectable or pill form
- No potential for abuse or diversion
- Has a higher cost than buprenorphine or methadone
Comparative effectiveness of extended-release naltrexone versus buprenorphine-naloxone prevention (X-BOT): a multicentre, open-label, randomised controlled trial

Lancet, 2018

Background
Extended-release naltrexone (XR-NTX), an opioid antagonist, and sublingual buprenorphine-naloxone (BUP-NX), a partial opioid agonist, are pharmacologically and conceptually distinct interventions to prevent opioid-related problems.

Methods
We initiated this 24-week, open-label, randomised controlled trial, comparative effectiveness and safety with XR-NTX and BUP-NX. We stratified on mental health diagnosis (5 study subgroups), key inclusion criteria were stipulated for the trial. Participants were randomised at 87 US clinics, and adhered to the clinical trial protocol. XR-NTX was dosed daily, whereas BUP-NX was administered twice daily. Clinical outcomes included opioid-negative urine samples, reduced heroin use, and opioid-related adverse events (staine).

Findings
Between Jan 30, 2014, and May 25, 2016, we randomly assigned 1790 participants to receive XR-NTX (n=865) or BUP-NX (n=925). The last follow-up visit was Jan 31, 2017. As expected, XR-NTX had a substantial reduction in opioid use compared with BUP-NX (270/943, 0.28) or 28% (BUP-NX, n=327). The primary study outcome was relapse; fewer participants successfully initiated XR-NTX (204/283, 0.22) vs BUP-NX (283/283, 0.22) (p<0.0001) and higher sustained abstinence (94% vs 70%) p<0.0001.

Interpretation:
Once initiated both medications were equally safe and effective
only 1 in 5 get treatment

NSDUH, 2017
"These médications ... are the current standards of care for reducing illicit opioid use, relapse risk and overdoses... However, limited access... can create barriers to treatment."
THE SURGEON GENERAL

November 17, 2016

The surgeon general’s call for addiction to be treated “with the same skill and compassion with which we approach heart disease, diabetes, and cancer.”

The White House
Office of National Drug Control Policy
The surgeon general’s call for addiction to be treated “with the same skill and compassion with which we approach heart disease, diabetes, and cancer”

“Buprénorphine… treatment should be available in EDs.”
1/3 of Addiction Treatment Programs Use MAT

Knudsen et al., J Addict Med
MAT and Opioid Use Before and After Overdose in Pennsylvania Medicaid

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Before Overdose (n=2068)</th>
<th>After Overdose</th>
<th>Before Overdose (n=3945)</th>
<th>After Overdose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any prescription opioid use</td>
<td>43.2%</td>
<td>39.7%</td>
<td>66.1%</td>
<td>59.6%</td>
</tr>
<tr>
<td>Prescription opioid duration &gt; 90d</td>
<td>10.5%</td>
<td>9.0%</td>
<td>32.4%</td>
<td>28.3%</td>
</tr>
<tr>
<td>Any medication-assisted treatment</td>
<td>29.4%</td>
<td>33.0%</td>
<td>13.5%</td>
<td>15.1%</td>
</tr>
<tr>
<td>Buprenorphine</td>
<td>19.2%</td>
<td>20.3%</td>
<td>5.4%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Methadone</td>
<td>10.4%</td>
<td>12.6%</td>
<td>8.2%</td>
<td>8.3%</td>
</tr>
<tr>
<td>Naltrexone</td>
<td>2.4%</td>
<td>3.0%</td>
<td>0.4%</td>
<td>0.8%</td>
</tr>
</tbody>
</table>

Opioid prescribing and MAT changes from before to after overdose among medicaid enrollees who have a 3X higher risk of opioid overdose.

Patients continued to have high prescription opioid use, with only slight increases in MAT engagement.

Because that's where the patients are!

July 2016 - September 2017

30% \(\uparrow\) Visits for Opioid Overdose

Offering treatment will NOT increase visits

So Why the ED?
Because that's where the patients are!

Offering treatment will NOT increase visits
What Role can Emergency Physicians Play in this Escalating Epidemic?
Safe Prescribing

Reducing the stigma

Harm Reduction

Advocacy

Access to MAT

Reduce OD Deaths
EM LEADERS ACROSS THE U.S.
Words Matter

Words are powerful... They can contribute to stigma and create barriers to accessing effective treatment.

Use person-first language; focus on the person, not the disorder.

When discussing opioid or other substance use disorders...

<table>
<thead>
<tr>
<th>Avoid These Terms:</th>
<th>Use These Instead:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addict, user, drug abuser, junkie</td>
<td>Person with opioid use disorder or person with opioid addiction, patient</td>
</tr>
<tr>
<td>Addicted baby</td>
<td>Baby born with néonatal abstinence syndrome</td>
</tr>
<tr>
<td>Opioid abuse or opioid dependence</td>
<td>Opioid use disorder</td>
</tr>
<tr>
<td>Problem</td>
<td>Disease</td>
</tr>
<tr>
<td>Habit</td>
<td>Drug addiction</td>
</tr>
<tr>
<td>Clean or dirty urine test</td>
<td>Négative or positive urine drug test</td>
</tr>
<tr>
<td>Opioid substitution or replacement therapy</td>
<td>Opioid agonist treatment</td>
</tr>
<tr>
<td>Relapse</td>
<td>Return to use</td>
</tr>
<tr>
<td>Treatment failure</td>
<td>Treatment attempt</td>
</tr>
<tr>
<td>Being clean</td>
<td>Being in remission or recovery</td>
</tr>
</tbody>
</table>

Adapted from: National Council for Behavioral Health
Characteristics of Initial Prescription Episodes and Likelihood of Long-Term Opioid Use — United States, 2006–2015

FIGURE 1. One- and 3-year probabilities of continued opioid use among opioid-naïve patients, by number of days’ supply* of the first opioid prescription — United States, 2006–2015

* Days’ supply of the first prescription is expressed in days (1–40) in 1-day increments. If a patient had multiple prescriptions on the first day, the prescription with the longest days' supply was considered the first prescription.

Shah A, MMWR, March 17, 2017
Opioid-Prescribing Patterns of Emergency Physicians and Risk of Long-Term Use

Michael L. Barnett, M.D., Andrew R. Olenski, B.S., and Anupam B. Jena, M.D., Ph.D.

ABSTRACT

BACKGROUND
Increasing overuse of opioids in the United States may be driven in part by physician prescribing. However, the extent to which individual physicians vary in opioid prescribing and the implications of that variation for long-term opioid use and adverse outcomes in patients are unknown.

METHODS
We performed a retrospective analysis involving Medicare beneficiaries who had an index emergency department visit in the period from 2008 through 2011 and had not received prescriptions for opioids within 6 months before that visit. After identifying the emergency physicians within a hospital who cared for the patients, we categorized the physicians as being high-intensity or low-intensity opioid prescribers according to relative quartiles of prescribing rates within the same hospital. We compared rates of long-term opioid use, defined as 6 months of days supplied, in the 12 months after a visit to the emergency department among patients treated by high-intensity or low-intensity prescribers, with adjustment for patient characteristics.

RESULTS
Our sample consisted of 215,678 patients who received treatment from low-intensity prescribers and 161,951 patients who received treatment from high-intensity prescribers. Patient characteristics, including diagnoses in the emergency department, were similar in the two treatment groups. Within individual hospitals, rates of opioid prescribing varied widely between low-intensity and high-intensity prescribers (7.3% vs. 24.1%). Long-term opioid use was significantly higher among patients treated by high-intensity prescribers (adjusted odds ratio, 1.3; 95% confidence interval, 1.2 to 1.37; P<0.001); these findings were consistent across multiple sensitivity analyses.

CONCLUSIONS
Wide variation in rates of opioid prescribing existed among physicians practicing within the same emergency department, and rates of long-term opioid use were increased among patients who had not previously received opioids and received treatment from high-intensity opioid prescribers. (Funded by the National Institutes of Health.)
Annals of Internal Medicine

Prescription Drug Monitoring Programs: Promising Practices in Need of Refinement

Although recent data indicate that overdose deaths involving illicit opioids (including heroin and, especially, synthetic opioids, such as fentanyl and related compounds) have escalated in the past 3 years, widespread overprescription, diversion, and misuse of opioid analgesics started the crisis (1). Prescription opioids remain a major contributor to overdose deaths and serve as an entry point for many persons to become addicted to opioids, even if they switch to illicit opioids later because of lower cost and progression of their opioid use disorder (2–4).

The authors also report that 3 studies found an increase in heroin overdose deaths after PDMP implementation, suggesting that heroin substitution may have increased after PDMP-inspired restrictions on opioid prescribing. The increases in heroin overdose deaths associated with PDMP implementation in those studies raise the possibility of unintended consequences. Prescription drug monitoring programs are among several initiatives to curb excess opioid prescribing and to limit the quantity of pills available for diversion, especially to high-risk patients who may be...
This Drug Could Save Thousands Of Lives A Year, So Why Aren't We Using It?

Réduction OEND

NARCAN® NASAL SPRAY

Overdose Education & Naloxone Distribution

Joan Papp MD
Metro Health - Cleveland, Ohio
Founder and Medical Director of Project DAWN (Deaths Avoided With Naloxone)

Krista Brucker MD
Eskenazi Health - Indianapolis, Indiana
Project POINT (Planned Outreach, Intervention, Naloxone & Treatment)
Options for ED Providers

Initiation of buprenorphine (FDA 2002 Specially trained MDS/Exemptions)

Access to MAT

Referral
Buprenorphine

Formulations

Braeburn Pharmaceuticals And Camurus Announce Positive Top-Line Phase 3 Results For Long-Acting Buprenorphine For Treatment Of Opioid Addiction

FDA News Release

FDA approves first once-monthly buprenorphine injection, a medication-assisted treatment option for opioid use disorder

Agency encourages safe adoption and more widespread use of FDA-approved treatments to help combat opioid addiction
72-hour rule
Title 21, Code of Federal Regulations, Part 1306.07(b)

Allows to administer (but not prescribe) narcotic drugs for the purpose of relieving acute withdrawal symptoms while arranging for the patient's referral for treatment

- Not more than 1-day's medication may be administered or given to a patient at one time
- Patient must return to ED each day for no more than 72 hours
- This 72-hour period cannot be renewed or extended.
Research

Original Investigation

Emergency Department-Initiated Buprenorphine/Naloxone Treatment for Opioid Dependence
A Randomized Clinical Trial

Gail D’Onofrio, MD, MS; Patrick G. O’Connor, MD, MPH; Michael V. Pantalon, PhD; Marek C. Chawarski, PhD; Susan H. Busch, PhD; Patricia H. Owens, MS; Steven L. Bernstein, MD; David A. Fiellin, MD

IMPORTANCE Opioid-dependent patients often use the emergency department (ED) for medical care.

OBJECTIVE To test the efficacy of 3 interventions for opioid dependence: (1) screening and referral to treatment (referral); (2) screening, brief intervention, and facilitated referral to community-based treatment services (brief intervention); and (3) screening, brief intervention, ED-initiated treatment with buprenorphine/naloxone, and referral to primary care for 10-week follow-up (buprenorphine).

DESIGN, SETTING, AND PARTICIPANTS A randomized clinical trial involving 329 opioid-dependent patients who were treated at an urban teaching hospital ED from April 7, 2009, through June 25, 2013.

INTERVENTIONS After screening, 104 patients were randomized to the referral group, 111 to brief intervention, and 114 to buprenorphine.
Objective

To compare the efficacy of 3 interventions for opioid dependent ED patients

- Referral to Treatment
- Brief Intervention & Facilitated Referral
- Brief Intervention with ED-initiated Buprénorphine
  Primary Care follow-up for 10 weeks treatment

329 Patients were enrolled from April 2009 - June 2013
# Interventions

<table>
<thead>
<tr>
<th>Referral</th>
<th>Handout of all drug treatment providers/services in the area relevant to insurance status and access to a phone</th>
</tr>
</thead>
</table>
| Brief Intervention | The BNI, discussion of treatment options, and *facilitated* referral to treatment  
[BNI, mean time 10.6 (SD) 4.3] |
| Buprénorphine | The BNI + ED-initiated buprénorphine and referral to Primary Care in 24-72 hours for ongoing buprénorphine medical management (10 weeks), followed by transfer or détoxification |
## Outcome Measures
### 30 days

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion enrolled in formal addiction treatment on day 30</td>
<td></td>
</tr>
<tr>
<td>Self-reported non-prescribed opioid use. HIV risk and rates of</td>
<td>negative urine testing for opioids</td>
</tr>
<tr>
<td>Use of addiction treatment serves as measured by number of</td>
<td>outpatient and inpatient treatment services and ED visits since</td>
</tr>
<tr>
<td></td>
<td>randomization</td>
</tr>
</tbody>
</table>

Formal opioid addiction treatment is defined as:

Clinical settings including office-based providers of BUP or inpatient, detoxification, therapeutic community, naltrexone, methadone or buprenorphine maintenance. Participation in a self-help program such as N.A. alone will not be considered as engagement in a formal treatment program.
Inclusion/Exclusion Criteria

**Inclusion:** Patients presenting to the Yale-New Haven Hospital ED
- >18 years of age
- Opioid dependent: MINI
- Positive urine toxicology for opioids

**Exclusion:**
- Inability to read or understand English
- Currently enrolled in a formal substance abuse program
- Currently suicidal or psychotic
- Presenting with a life-threatening or unstable illness or injury
- Requiring hospital admission
- Requiring opioid agonist medication for a pain-related diagnosis (contraindication to buprénorphine)
**Screening: Health Quiz**

1. **In the PAST 30 days have you used any of the following pain relievers?**

<table>
<thead>
<tr>
<th></th>
<th>0...No</th>
<th>1...Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Codeine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Fentanyl (Duragesic, Actiq, Sublimaze)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Hydrocodone (Vicodin, Lorcet, Lortab, Hycodan, Norco, Vicoprofen)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Hydromorphone (Dilaudid, Palladone)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) Meperidine (Demerol)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f) Methadone (Dolophine, Methadose)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g) Buprénorphine (Subutex, Suboxone)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h) Morphine (MS Contin, Kadian, Duramorph)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) Oxycodone (Percocet, Percodan, Roxicet, Oxycontin, Roxicodone, Endocet, Tylox)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>j) Oxymorphone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>k) Pentzocine (Talwin)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>l) Propoxyphene (Darvocet, Darvon, Wygesic)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>m) Other (specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. **Were these drugs prescribed for you?**

<table>
<thead>
<tr>
<th>0...No</th>
<th>1...Yes</th>
</tr>
</thead>
</table>

3. **Have you ever taken the drug(s) for the experience or feeling it caused?**

<table>
<thead>
<tr>
<th>0...No</th>
<th>1...Yes</th>
</tr>
</thead>
</table>

4. **In the PAST 30 days have you used heroin?**

<table>
<thead>
<tr>
<th>0...No</th>
<th>1...Yes</th>
</tr>
</thead>
</table>

5. **How often do you use heroin or insert name of drug(s)**

   |          |          |
   | Days     | Weeks    |

For Additional Probing:

Have you requested refills earlier than prescribed? How do you usually take your medication?
Consort Diagram

94677 Patients potentially available for screening

71742 Screened

1201 Opioid Users

346 Eligible

329 Randomized

22935 Not Screened
1036 Refused
21899 Not approached

855 Excluded
684 Not eligible
171 Declined to participate

17 Left ED prior to enrollment

Referral (n=104)

Brief Intervention (n=111)

Buprenorphine (n=114)
# Characteristics of Patients

<table>
<thead>
<tr>
<th></th>
<th>Overall (n=329)</th>
<th>Referral (n=104)</th>
<th>Brief Intervention (n=111)</th>
<th>Buprénorphine (n=114)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male sex</strong></td>
<td>76.3</td>
<td>77.9</td>
<td>75.7</td>
<td>75.4</td>
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<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>White</td>
<td>75.4</td>
<td>75.0</td>
<td>73.9</td>
<td>77.2</td>
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<tr>
<td>Black</td>
<td>7.0</td>
<td>6.7</td>
<td>7.2</td>
<td>7.0</td>
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<td>Hispanic</td>
<td>16.4</td>
<td>15.4</td>
<td>18.9</td>
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<td>Other</td>
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<td>2.9</td>
<td>0</td>
<td>0.9</td>
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<td><strong>Age, mean (SD), years</strong></td>
<td>31.4 (10.6)</td>
<td>31.4 (10.6)</td>
<td>31.9 (9.7)</td>
<td>31 (9.8)</td>
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<tr>
<td><strong>Education</strong></td>
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<td></td>
<td></td>
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<td>High school graduate or equivalent</td>
<td>41.3</td>
<td>38.5</td>
<td>45.9</td>
<td>39.5</td>
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<tr>
<td>Some college</td>
<td>34.4</td>
<td>31.7</td>
<td>31.5</td>
<td>39.5</td>
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<tr>
<td>College degree or more</td>
<td>6.1</td>
<td>8.7</td>
<td>7.2</td>
<td>2.6</td>
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<td><strong>Usual employment, past 3 years</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Full</td>
<td>52.3</td>
<td>56.7</td>
<td>51.4</td>
<td>49.11</td>
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<td>Part time</td>
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<td>25.0</td>
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<td>26.3</td>
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<td><strong>Married</strong></td>
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<td>11.5</td>
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<td>No stable living arrangement past 30 days</td>
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<td>10.5</td>
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<td>Health insurance</td>
<td>Overall (n=329)</td>
<td>Referral (n=104)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------</td>
<td>------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private/Commercial</td>
<td>31.6</td>
<td>31.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicare</td>
<td>1.8</td>
<td>1.0</td>
<td></td>
<td></td>
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<tr>
<td>Medicaid</td>
<td>43.2</td>
<td>46.2</td>
<td></td>
<td></td>
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<tr>
<td>None</td>
<td>21.6</td>
<td>20.2</td>
<td></td>
<td></td>
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<tr>
<td>Primary Care Physician</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Usual source of care</td>
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<td></td>
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<td>Private physician’s office</td>
<td>27.9</td>
<td>28.8</td>
<td></td>
<td></td>
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<tr>
<td>Clinic</td>
<td>26.7</td>
<td>25.0</td>
<td></td>
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<tr>
<td>Emergency Department or none</td>
<td>45.3</td>
<td>46.2</td>
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<tr>
<td>Clinical Characteristics (%)</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>ED Identification of Participants</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Seeking Treatment for opioid dependence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identified via screening</td>
<td>34.0</td>
<td>30.8</td>
<td></td>
<td></td>
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<tr>
<td>- Overdose</td>
<td>66.0</td>
<td>69.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Intravenous Use</td>
<td>8.8</td>
<td>6.7</td>
<td></td>
<td></td>
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<tr>
<td>Primary type of opioid drug used and route of administration</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Prescription</td>
<td>24.9</td>
<td>29.8</td>
<td></td>
<td></td>
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<tr>
<td>Heroin</td>
<td>75.11</td>
<td>70.2</td>
<td></td>
<td></td>
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<tr>
<td>- Intravenous Use</td>
<td>52.9</td>
<td>44.2</td>
<td></td>
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## Characteristics of Patients

<table>
<thead>
<tr>
<th>Health insurance</th>
<th>Overall (n=329)</th>
<th>Referral (n=104)</th>
<th>Brief Intervention (n=111)</th>
<th>Buprénorphine (n=114)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private/Commercial</td>
<td>31.6</td>
<td>31.7</td>
<td>29.7</td>
<td>33.3</td>
</tr>
<tr>
<td>Medicare</td>
<td>1.8</td>
<td>1.0</td>
<td>2.7</td>
<td>1.8</td>
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<tr>
<td>Medicaid</td>
<td>43.2</td>
<td>46.2</td>
<td>41.4</td>
<td>42.0</td>
</tr>
<tr>
<td>None</td>
<td>21.6</td>
<td>20.2</td>
<td>23.4</td>
<td>21.1</td>
</tr>
</tbody>
</table>

| Primary Care Physician    | 41.9            | 40.4              | 41.4                       | 43.9                  |

| Usual source of care      | 27.9            | 28.8              | 23.4                       | 31.6                  |
| Private physician’s office| 26.7            | 25.0              | 31.5                       | 23.7                  |
| Clinic                    | 45.3            | 46.2              | 45.0                       | 44.7                  |

## Clinical Characteristics (%)

<table>
<thead>
<tr>
<th>ED Identification of Participants</th>
<th>Overall (n=329)</th>
<th>Referral (n=104)</th>
<th>Brief Intervention (n=111)</th>
<th>Buprénorphine (n=114)</th>
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</thead>
<tbody>
<tr>
<td>Seeking Treatment for opioid dependence</td>
<td>34.0</td>
<td>30.8</td>
<td>30.6</td>
<td>40.4</td>
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<tr>
<td>Identified via screening</td>
<td>66.0</td>
<td>69.2</td>
<td>69.4</td>
<td>59.6</td>
</tr>
<tr>
<td>- Overdose</td>
<td>8.8</td>
<td>6.7</td>
<td>9.0</td>
<td>10.5</td>
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</table>

<table>
<thead>
<tr>
<th>Primary type of opioid drug used and route of administration</th>
<th>Overall (n=329)</th>
<th>Referral (n=104)</th>
<th>Brief Intervention (n=111)</th>
<th>Buprénorphine (n=114)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescription</td>
<td>24.9</td>
<td>29.8</td>
<td>21.6</td>
<td>23.7</td>
</tr>
<tr>
<td>Heroin</td>
<td>75.11</td>
<td>70.2</td>
<td>78.4</td>
<td>76.3</td>
</tr>
<tr>
<td>- Intravenous Use</td>
<td>52.9</td>
<td>44.2</td>
<td>59.5</td>
<td>54.4</td>
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</table>
### Characteristics of Patients

**Non-opioid substance use, past month**

<table>
<thead>
<tr>
<th>Substance</th>
<th>Overall (n=329)</th>
<th>Referral (n=104)</th>
<th>Brief Intervention (n=111)</th>
<th>Buprénorphine (n=114)</th>
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<tbody>
<tr>
<td>Alcohol to intoxication</td>
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<td>30.8</td>
<td>42.3</td>
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<tr>
<td>Sédative use</td>
<td>47.4</td>
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<td>45.0</td>
<td>43.9</td>
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<tr>
<td>Cannabis use</td>
<td>52.9</td>
<td>58.7</td>
<td>48.6</td>
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<tr>
<td>Cocaïne use</td>
<td>55.3</td>
<td>54.8</td>
<td>59.5</td>
<td>51.8</td>
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<tr>
<td>Cigarette use</td>
<td>88.1</td>
<td>87.5</td>
<td>87.4</td>
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</table>

**Mental Health History**

<table>
<thead>
<tr>
<th>Category</th>
<th>Overall (n=329)</th>
<th>Referral (n=104)</th>
<th>Brief Intervention (n=111)</th>
<th>Buprénorphine (n=114)</th>
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</thead>
<tbody>
<tr>
<td>Lifetime psychiatrié treatment</td>
<td>51.1</td>
<td>51.9</td>
<td>53.2</td>
<td>48.2</td>
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<tr>
<td>Inpatient</td>
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<td>26.9</td>
<td>26.1</td>
<td>25.4</td>
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<tr>
<td>Outpatient</td>
<td>41.9</td>
<td>47.1</td>
<td>40.5</td>
<td>38.6</td>
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<tr>
<td>Any psychiatrié symptom past 30 days-ASI</td>
<td>88.1</td>
<td>89.4</td>
<td>86.5</td>
<td>88.6</td>
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<tr>
<td>Received treatment for dépréssion past 30 days</td>
<td>12.2</td>
<td>8.7</td>
<td>15.3</td>
<td>12.3</td>
</tr>
<tr>
<td>Acute psychiatry évaluation in ED</td>
<td>23.4</td>
<td>22.1</td>
<td>27.0</td>
<td>21.1</td>
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</table>

**Lifetime treatment for addiction**

<table>
<thead>
<tr>
<th>Subcategory</th>
<th>Overall (n=329)</th>
<th>Referral (n=104)</th>
<th>Brief Intervention (n=111)</th>
<th>Buprénorphine (n=114)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>14.0</td>
<td>16.3</td>
<td>18.0</td>
<td>7.9</td>
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<tr>
<td>Drugs</td>
<td>72.9</td>
<td>70.2</td>
<td>79.3</td>
<td>69.3</td>
</tr>
</tbody>
</table>
Engaged in Treatment 30-Days

Proportion in Treatment at 30 Days

Referral
Brief Intervention
Buprenorphine

P<0.001
Past 7 Day illicit Opioid Use

Treatment Effect: $P<0.001$
Time effect: $P<0.001$
Interaction Effect: $P=0.02$

Days

Baseline 30 Day FU

Referral
Brief Intervention
Buprenorphine
Reduces Inpatient Addiction Treatment

Referral: 36.9%

Brief Intervention: 35.2%

30-Day Follow-Up

Buprenorphine: 11.0%
Conclusion

ED-initiated buprenorphine treatment with follow-up medical management in primary care is superior compared with Referral and Brief Intervention at 30 days in:

- Engaging patients in treatment
- Reducing days of illicit opioid use
- Reducing inpatient addiction treatment
Long-term Outcomes

Emergency Department-Initiated Buprenorphine for Opioid Dependence with Continuation in Primary Care: Outcomes During and After Intervention

Gail D’Onofrio, MD, MS¹, Marek C. Chawarski, PhD¹,², Patrick G. O’Connor, MD, MPH³, Michael V. Pantalon, PhD¹, Susan H. Busch, PhD⁴, Patricia H. Owens, MS¹, Kathryn Hawk, MD, MHS¹, Steven L. Bernstein, MD¹, and David A. Fiellin, MD³,⁴

¹Department of Emergency Medicine, Yale School of Medicine, New Haven, CT, USA; ²Department of Psychiatry, Yale School of Medicine, New Haven, CT, USA; ³Department of General Medicine, Yale School of Medicine, New Haven, CT, USA; ⁴Yale School of Public Health, New Haven, CT, USA.

BACKGROUND: Emergency department (ED)-initiated buprenorphine use for opioid dependence with continuation in primary care was associated with decreased 7-day illicit opioid use at 6 and 12 months when buprenorphine was continued in primary care. Outcomes at 2 and 12 months were comparable across the treatment groups.

Engagement in Formal Addiction Treatment

<table>
<thead>
<tr>
<th></th>
<th>2 Month</th>
<th>6 Month</th>
<th>12 Month</th>
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<tbody>
<tr>
<td>Referral</td>
<td>53%</td>
<td>60%</td>
<td>63%</td>
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<tr>
<td>Brief Intervention</td>
<td>47%</td>
<td>51%</td>
<td>49%</td>
</tr>
<tr>
<td>Buprenorphine</td>
<td>74%</td>
<td>53%</td>
<td>49%</td>
</tr>
</tbody>
</table>

7-Day Illicit Opioid Use

- BI
- BUP
- Referral

*The rates of illicit opioid-negative urine toxicology and HIV risk behaviors were not significantly different.
Cost-effective acceptability curve: base case analysis.
(a) Willingness-to-pay for a 1 percentage point increase in the probability a patient is engaged in treatment 30-days post-enrollment.
(b) Willingness-to-pay for 1 additional opioid-free day in the past 7-days
The latest research shows that we really should do something with all this research.
Research Into Practice

Project ASSERT
Health Promotion Advocates
NIDA Clinical Trials Network: Opioid Use Disorder in the ED

Project ED Health

Design: Hybrid Type 3 Effectiveness-Implementation Study

Lauren Whiteside MD, MS
University of Washington

Ethan Cowan MD
Mt Sinai- Beth Isreal

Lynn Richardson MD
Mt Sinai

Michael Lyons MD
University of Cincinnati

Richard Rothman MD, PhD
Johns Hopkins
Clinical Trials Network: Initiating Extended Release Buprenorphine for OUD in Low Resourced, High Intensity EDs

Randy Knig / Investigator

UT Ryan McCormack, MD . Lead Investigator

Kate Hawk MD, MHS Investigator

Randy Knight MD Investigator
Effective treatment for opioid use disorder is associated with a much lower risk of overdose, infection, and criminal behavior, as well as a substantially greater chance of employment and life success. Given the magnitude of the opioid crisis, with more than 28,000 deaths each year and rising in the United States, the Yale study should have caused an earthquake in clinical medicine. Instead, it registered barely a tremor. Few emergency departments in the United States routinely offer access to this treatment.

On November 17, 2016, the surgeon general released a landmark report entitled “Facing Addiction in America.” Citing the Yale study, the report states, “Buprenorphine...treatment for opioid misuse should... be available in emergency departments.” The surgeon general’s report also provides insight into why so little progress toward this goal has been made:

Until recently, substance misuse problems and other misuse disorders were viewed as social problems, best managed at the individual and family levels, and sometimes through the existing social infrastructure (such as the criminal justice system).... Despite a compelling...
Effective treatment for opioid use disorder is associated with a much lower risk of overdose, infection, and criminal behavior, as well as a substantially greater chance of employment and life success. Given the magnitude of the opioid crisis, with more than 28,000 deaths each year and rising in the United States, the Yale study should have caused an earthquake in clinical medicine. Instead, it registered barely a tremor. Few emergency departments in the United States routinely offer access to this treatment.
SUPER HEROES ARE HERE
RACHEL HAROZ MD
COOPER UNIVERSITY HEALTH CARE
What is the future?
Lawmakers so far have fallen far short of such a vigorous effort when it comes to opioid addiction. Congress has taken what can be considered only baby steps by appropriating a total of a few billion dollars of discretionary opioid funding in recent years. This funding amounts to a pittance compared to what is needed: substantial long-term funding for prevention, addiction treatment and research. Andrew Kolodny, co-director of opioid policy research at Brandeis University, says at least $6 billion a year is needed for 10 years to set up a nationwide network of clinics and doctors to provide treatment with medicines like buprenorphine and methadone. Those drugs have a proven track record of reducing overdoses and giving people struggling with addiction a shot at a stable life. Today, large parts of the country have few or no doctors who provide addiction treatment.

Next, lawmakers need to remove regulations restricting access to buprenorphine, an opioid that can be used to get people off stronger drugs like heroin; its use is unlikely to end in an overdose. Doctors who want to prescribe the drug have to go through eight hours of training, and the government limits the number of patients they can treat. These limits have made the drug harder to obtain and created a situation in which it is easier to get the kinds of opioids that caused this crisis.
State Initiatives

Connecticut Opioid Response (CORE)

We all have a role to play in ending Rhode Island’s overdose crisis. What’s yours?
Quality Improvement Measures

Opioid Initiative for dissemination through a national quality network of EDs

Opioid-focused interventions, best-practice toolkit

EMBED 
Pragmatic trial to develop and test a user-centered clinical decision support to implement EMergency department-initiated Buprenorphine for opioid use Disorder
Addiction Medicine
The Birth of a New Discipline

Patrick G. O'Connor

Substance use is highly prevalent, a substantial cause of morbidity and mortality and accounts for over $500 billion in economic costs annually in the United States. The impact of substance use and the phenomenon of addiction that often follows is enormous. Similarly, the global impact on disability and mortality of substance use and the phenomenon of addiction that often follows is enormous.2

Individuals with specific substance use disorders and addiction interact frequently with the health care system, offering opportunities to intervene. The evidence base of research supporting the effectiveness of prevention and treatment of addiction is growing. For example, randomized clinical trials have demonstrated the effectiveness of Screening, Brief Intervention, and Give confidence to primary care physicians that they can access expert consultation and follow up, when needed, such as with complex withdrawal or repeated relapse. In addition, specialists can help to decrease practice variation and ensure evidence-based care. The availability of addiction specialists who are broadly integrated into the medical community can also provide a bridge to substance abuse treatment programs, which many physicians are either unfamiliar with or reluctant to use. Once assessed by an addiction specialist, program re-

Bring Addiction Medicine into EM
I'd like to ask you more questions about your use of [name opioid(s)], you ended up taking more than you intended to?

1. Have you often found that when you started using [name opioid(s)], you ended up taking more than you intended to?
2. Have you wanted to stop or cut down using or control your use of XX?
3. Have you missed a lot of time getting XX or using XX?
4. Have you had a strong desire or urge to use XX?
5. Have you been finding that you had to use much more drug to get the same effect that you did when you first started taking it?
6. Have you found that you needed to use much less time working, enjoying hobbies, or being with others because of your drug use?
7. Have you ever gotten high before doing something that requires coordination or concentration like driving, boating, climbing a ladder, or operating heavy machinery that requires coordination or concentration like driving, boating, climbing a ladder, or operating heavy machinery such as with family members, friends or people at work?
8. Have you had to give up or spend less time working, enjoying hobbies, or being with others because of your drug use?
9. Have you continued to use even though you knew that this drug caused you problems like making you depressed, anxious, agitated or irritable?
10. Have you found you needed to use much more drug to get the same effect that you did when you first started taking it?
11. When you reduced or stopped using, did you have withdrawal symptoms or felt sick when you cut down or stopped using? (aches, shaking, fever, weakness, diarrhea: nausea, sweating, heart pounding, difficulty sleeping, or feel agitated, anxious, irritable, or depressed?)

### Clinical Opiate Withdrawal Scale

For each item, circle the number that best describes the patient's signs or symptoms. Rate on just the apparent relationship to opiate withdrawal. For example, if heart rate is increased because the patient was jogging just prior to assessment, the increase pulse rate would not add to the score...

**Date: ____________________  Time (military): ____________________**

### Resting Pulse Rate:
- Measured after patient is sitting or lying for 1 minute
- C0...pulse rate 80 or below
- C1...pulse rate 81-100
- C2...pulse rate 101-120
- C3...pulse rate greater than 120

### GI Upset:
- Over last 6 hours
- C0...no GI symptoms
- C1...stomach cramps
- C2...nausea or loose stools
- C3...vomiting or diarrhea
- C4...multiple episodes of diarrhea or vomiting

### Sweating:
- Over past 6 hours not accounted for by room temperature or patient activity
- C0...no report of chills or flushing
- C1...subjective report of chills or flushing
- C2...flushed or observable moistness on face
- C3...heads of sweat on brow or face
- C4...sweat streaming off face

### Restlessness:
- Observation during assessment
- C0...able to sit still
- C1...reports difficulty sitting still, but is able to do so
- C2...frequent shifting or extraneous movements of legs/arms
- C3...Unable to sit still for more than a few seconds

### Pupil size:
- Observation during assessment
- C0...pupils normal or normal size for room light
- C1...pupils possibly larger than normal for room light
- C2...pupils moderately dilated
- C3...pupils so dilated that only the rim of the iris is visible

### Anxiety or Irritability:
- Observation during assessment
- C0...none
- C1...patient reports increasing irritability or anxieties
- C2...patient obviously irritable anxious
- C3...patient so irritable or anxious that participation in the assessment is difficult

### Bone or Joint aches:
- If patient was having pain previously, only the additional component attributed to opiates withdrawal is scored
- C0...not present
- C1...mild diffuse discomfort
- C2...patient reports severe diffuse aching of joints/muscles
- C3...patient is rubbing joints or muscles and is unable to sit still because of discomfort

### Gooseflesh skin:
- Observation of outstretched arms
- C0...no gooseflesh skin
- C1...skin can be felt or hairs standing up on arms
- C2...slight gooseflesh skin
- C3...prominent gooseflesh skin

### Runny nose or tearing:
- Not accounted for by cold symptoms or allergies
- C0...not present
- C1...nasal stuffiness or unusually moist eyes
- C2...nose running or tearing
- C3...nose constantly running or tears streaming down

### The total score is the sum of all 11 items.

**Total Score: ____________**

---

**Resources**

website: yale.edu/edbup/
Engage emergency physicians
Change the trajectory of the opioid epidemic

Embrace science based treatments
And Let's Change

The way we THINK about addiction

The way we TALK about addiction

The way we TREAT addiction

CORE, 2016
QUESTIONS
Resources:


Yale SBIRT website: https://medicine.yale.edu/sbirt

Yale DAHRS website: https://medicine.yale.edu/dahrs
More Beds or More Chairs? Using a Science-Based Approach to Address the Opioid Epidemic

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