Brief Behavioral Interventions for Drug Use in the Emergency Department

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Overdose deaths are only the “tip of the iceberg”....
Outline

1. Rationale
2. SBIRT in the emergency department
3. SPOS Study – overdose risk behaviors
4. Next directions
Disclosures

• Affiliations:
  – University of Michigan
  – VA Center for Clinical Management Research

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  – VA (HSR&D, QUERI)

• Conflicts of Interest
  – None to report
What are your experiences with the emergency department as a clinical setting?

Why would we try to do anything about drug use there?
Why the Emergency Department?
• 1/3 of patients in the ED get an opioid
• Substance use is common
• Setting of acute treatment for overdoses
• Not engaged in other care
• “Teachable Moment”
What are the barriers to addressing drug use in the emergency department?
What would be the benefit of a behavioral approach in the ED?

What would be the benefit for opioid and overdose interventions specifically?
Rationale

Why a Behavioral Intervention?
• Potentially low cost
• Upstream prevention

Why use this for opioid overdose?
• Not all overdose risk well-suited to naloxone as a prevention approach
• Prevent repeat overdoses after a treated overdose
• Complementary to naloxone distribution
SBIRT in the Emergency Department: Conflicting Evidence
Your Thoughts -

What is your experience with SBIRT?
**Design:** Computer Brief Intervention (BI)/Therapist BI/Control x Booster/Control (6 arm)

**Location:** Flint, MI emergency department

**Sample:** n=780, 18-60 years old (mean=31), 44% male, 88% marijuana use problem

**Outcomes:** 3-, 6-, and 12- month days drug use in the last 90 days, days marijuana use, weighted days drug use from Timeline Follow-Back (TLFB)
Blow et al., 2017 (HealthiER U) Main Results

Note – no benefit of booster session (AMET)

Table 3: Negative binomial models with generalized estimating equations (GEE) among patients with baseline use: 6- and 12-month outcomes.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Primary outcome Drug days</th>
<th>Secondary outcome: weighted drug days</th>
<th>Secondary outcome Marijuana days</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Effect size</td>
<td>95% CI</td>
<td>Effect size</td>
</tr>
<tr>
<td>Group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Therapist BI</td>
<td>-0.24</td>
<td>(-0.41, -0.07)</td>
<td>-0.24</td>
</tr>
<tr>
<td>Computer BI</td>
<td>-0.13</td>
<td>(-0.28, 0.03)</td>
<td>-0.12</td>
</tr>
<tr>
<td>EUC-ED</td>
<td>Ref</td>
<td>–</td>
<td>Ref</td>
</tr>
<tr>
<td>AMET</td>
<td>0.03</td>
<td>(-0.10, 0.17)</td>
<td>0.02</td>
</tr>
<tr>
<td>Male</td>
<td>-0.04</td>
<td>(-0.17, 0.10)</td>
<td>-0.05</td>
</tr>
<tr>
<td>Any drug dependence</td>
<td>0.21</td>
<td>(0.06, 0.37)</td>
<td>0.21</td>
</tr>
<tr>
<td>Baseline levela</td>
<td>0.01</td>
<td>(0.01, 0.02)</td>
<td>0.01</td>
</tr>
<tr>
<td>Time/follow-up</td>
<td>0.02</td>
<td>(-0.06, 0.09)</td>
<td>0.02</td>
</tr>
</tbody>
</table>

AMET = Adapted Motivational Enhancement Therapy; EUC-ED = Enhanced Usual Care-Emergency Department; CI = confidence interval; Ref = reference group.

aBaseline level of the outcome variable examined. *P < 0.05.
Design: Brief intervention with booster vs. Screen and referral to treatment vs. control (3 arm)

Location: 6 U.S. Academic Hospitals

Sample: n=1,285, mean age=36, 70% male, 17% heroin, 5% Rx opioid, 27% cocaine, 44% marijuana

Outcomes: Days drug use in past 30 of primary drug at 3-, 6-, and 12-months

Findings: No effect, also no effect for days any drug use, heavy drinking, hair testing, no effects for sub-group by drug type or moderation by sex, race, and ethnicity

Replicated in Merchant et al. 2015 Acad Emerg Med, Guan et al., 2015 Drug Alcohol Depend
**Design:** Brief negotiated interview vs. motivational interview + booster vs. control (3 arm)

**Location:** Boston, MA primary care

**Sample:** n=528, mean age 41, 70% male, 17% opioid, 19% cocaine, 63% marijuana, 12% injection drug use

**Outcomes:** 30 day drug use overall and by drug at 6 months

**Findings:** No intervention effects

*Replicated in Roy-Byrne et al., 2014 JAMA*
What are reasons that might explain the different findings?
Potential Explanations of Different Findings

Sample characteristics
  Drug type, severity of problems

Intervention content

Outcome measurement

Location
SPOS: A brief behavioral intervention to reduce opioid overdose risk

Setting

Location: University of Michigan Emergency Department (ED)
Protocol

- Research staff approached patients while waiting for care once in private rooms
- Consent and screen via computer tablet (Part 1)
- Those eligible recruited and consented for a baseline survey via computer tablet (Part 2)
- Computer randomized to intervention or enhanced usual care
How do you think that pen-and-paper vs. computer tablet administration compares for assessing opioid use?
Eligibility Criteria

• Past 3 month prescription opioid misuse
  • Positive screen on 8 items of Current Opioid Misuse Measure (COMM)

• Age 18-60

• Able to provide informed consent
Figure 1. Study Participation Flowchart.

- **Approached**: 2741 (61.4%)
  - Refused Consent: 445 (16.2%)
  - Incomplete Screen: 46 (1.7%)
  - Not Eligible: 2005 (89.1%)
  - Completed Screen: 2250 (82.1%)
    - Eligible: 245 (10.9%)
    - Refused: 32 (13.1%)
    - Excluded: 7 (2.9%)
Sample Demographics

- N=204 final sample
  - 177 (87%) followed at 6 months
- 64% female
- Age: mean 37 (SD=11)
- Race: 20% Black, 75% White, 5% Other
Chronic pain and problem opioid use both common

- 75% had an overdose/serious drug event history
- 56% had a chronic pain diagnosis
- 69% had been prescribed opioids in the prior 6 months
- 48% had moderate or high risk prescription opioid involvement, per ASSIST
• Brief Motivational Enhancement (ME) Interventions
  – Non-judgmental, empathetic
  – Focused on increasing self-efficacy, setting goals, overcoming barriers to change
Intervention Content Outline

- EXPLORE
  - Introduction and Agenda Setting
  - Personal Strengths and Values
  - Goals
  - Review Behavioral History
  - Review Overdose History
  - Review Witnessed Overdoses

- GUIDE
  - Benefits to Changing

- CHOOSE
  - Strategies to Handle Risky Situations
  - Selecting Change Goals
  - Tools
  - Strategic Summary
Behavioral targets of the intervention

1. Reducing risky overdose-related behaviors and opioid misuse
2. Improve response when witnessing an overdose
3. Outreach to at-risk friends
Intervention Delivery

- Master’s level trained therapists
- Computer aid to enhance fidelity and provide prompts as needed
- Enhanced Usual Care: pamphlets
Follow-up and Outcomes

Completed Baseline
206* (84.1%)

NMPOU
51 (25%)

- Intervention
  25 (49.0%)
  6-Month Follow-up completed
  23 (92.0%)

- EUC only
  26 (51.0%)
  6-Month Follow-up completed
  24 (92.3%)

NMPOU + OD
153 (75%)

- Intervention
  77 (50.3%)
  6-Month Follow-up completed
  73 (94.8%)

- EUC only
  76 (49.7%)
  6-Month Follow-up completed
  58 (76.3%)

* One participant declined further participation after completing the baseline survey and was not randomized. One participant died of causes unrelated to the study prior to becoming due for the follow-up assessment. Thus, final trial n=204.

NMPOU: Non-medical prescription opioid use, OD: a history of overdose (see section 2.6.3 for definition), EUC: enhanced usual care.
Primary Outcomes

Greater decreases in main outcomes between baseline and 6 months for the intervention compared to control.

![Bar graph showing percent reduction in overdose risk and opioid misuse between intervention and control groups.]
Regression results

Poisson regression

<table>
<thead>
<tr>
<th>Model 1: Overdose Risk Behaviors, n=172</th>
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<tbody>
<tr>
<td>IRR</td>
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<tr>
<td>Intervention Group vs. usual care</td>
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<tr>
<td>Baseline Level of Overdose Risk Behaviors</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Model 5: Non-Medical Opioid Use, n=163</th>
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<tr>
<td>IRR</td>
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<td>-----</td>
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<tr>
<td>Intervention Group vs. usual care</td>
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<tr>
<td>Baseline Level of Non-Medical Opioid Use</td>
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</table>
No effect on other outcomes

No consistent impact on hypothesized mediators/mechanisms of:

• Behavioral Intention: Use as Prescribed
• Overdose Symptom Knowledge

Intervention participants reported greater intentions to reduce or avoid using substances at 6 mo. follow-up compared to EUC.
Conclusions

- BI is feasible and highly acceptable to patients who are at risk for overdose.
- Positive findings for behavioral outcomes.
Next Directions: Addressing barriers to delivering behavioral interventions

R01 DA039159
## Barriers and Solutions

<table>
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<th>Barrier/Problem</th>
<th>Solution</th>
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<tbody>
<tr>
<td>Unable to address opioids given that day in the ED</td>
<td>Deliver the intervention after the visit</td>
</tr>
<tr>
<td>Limited staff time and relevant training</td>
<td>Deliver motivational messages as much by automatation/mHealth as possible</td>
</tr>
<tr>
<td>Automated/mHealth can feel “robotic” and impersonal, limited ability to adapt over time</td>
<td>Artificial intelligence (reinforcement learning [RL]) features of mHealth</td>
</tr>
<tr>
<td>Variation between patients in how much contact needed to be effective</td>
<td>RL system learns best intensity of contact for each patient</td>
</tr>
</tbody>
</table>
PowerED study

Recruit during an ED visit:
- Recent non-medical opioid use
- Getting an opioid that day

First Post-ED Contact, Randomize

Assess Opioid Use

RL System Decision:
- Brief Motivational Message
- Extended Motivational Message
- Therapist Call Back

Enhanced Usual Care

Repeat for 3 months, optimizing opioid use response ("reward")

Follow at 1-, 3- and 6-months

Outcomes:
- Level of non-medical opioid use
- Secondary opioid risk behavior
- ED visits

RL system informed by recent opioid use and baseline data
Solving the opioid crisis requires:

- Safer Prescribing
- Help to those with mild opioid use problems
- MAT access for those with Opioid Disorders

Scalable, “light touch” behavioral interventions