Better methods: Novel methods and analyses to better understand prescription drug misuse

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How to Measure Drug Misuse

• Understanding common approaches to surveillance

• Exploring new methods of analysis

• Developing new methods to capture data
Traditional Surveillance Programs

• Targeted populations
  • Example: individuals entering treatment or part of an ongoing trial
• Voluntary submission
  • Example: individuals calling poison centres and other agencies for advice or assistance
Advantages

• Often provide data from experienced users
  • Specificity
  • Captures rare events

• Obtain qualitative data
  • Reasons
  • Pathways
  • Can lead to new studies
### Buprenorphine
**Used in the past month to get high**
- **Formulation Unknown**
- Buprenorphine, type unknown

### Single Ingredient Tablets
- Subutex<sup>®</sup>
- Single ingredient tablets by Roxane
- Single ingredient tablets by Teva
- Single ingredient tablets by Hi-Tech
- Single ingredient tablets by Actavis
- Single ingredient tablets, not listed above
- Single ingredient tablets, not sure of name

### Combination Tablets
- Suboxone<sup>®</sup> tablets
- Zubsolv<sup>®</sup> tablets
- Combination ingredient tablets, not listed above

### Gabapentin
**Used in the past month to get high**
- e.g., Neurontin<sup>®</sup>, Gralise<sup>®</sup>
- Gabapentin (any form)

### Heroin
**Used in the past month to get high**
- **Formulation Unknown**
- Heroin (any form)

### Tramadol
**Used in the past month to get high**
- Tramadol (any form)

### Fentanyl
**Used in the past month to get high**
- **Formulation Unknown**
- Fentanyl, type unknown
- Patches
  - Duragesic<sup>®</sup>
  - Generic reservoir patch by Sandoz
  - Matrix patch by Mylan
  - Patches, not listed above
  - Patches, not sure of name

### Kratom
**Used in the past month to get high**
- e.g., Thang, Kekuam, Thom, Ketum, Blik
- Kratom (any form)
Traditional Surveillance Analysis

• Descriptive in nature
  • Rates
  • Interrupted time series
  • Linear models (ie Poisson)

• Inability to quantify interventions and policy impact
• Limited in capturing environmental data
Example: Interrupted time series

- Pre post evaluation for an intervention
- What other environmental factors change?
- Does prescribing of products change during this time?
Challenges

• What do the descriptive values mean?
• How can we compare these across cities, states, countries?
• Measuring impact of changes to the environment
  • Policy
  • Product Availability
New Analytic Techniques

• Use more epidemiological driven methods to evaluate causal relationships

• Allow for adjustment of interventions

<table>
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<th>EXPOSURE</th>
<th>Any Units Dispensed</th>
<th>NO Units Dispensed</th>
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</thead>
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<tr>
<td>OUTCOME Any Abuse</td>
<td></td>
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<tr>
<td>Any Abuse</td>
<td></td>
<td></td>
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<tr>
<td>No Abuse</td>
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</tbody>
</table>

Any Units Dispensed

NO Units Dispensed
Trend in Trend

- Odds ratios based on observed cases and exposure over time
- Compare multiple drugs to one another
- Compare misuse by route
- Account for unmeasured time varying confounders
New Techniques in Data Collection
New Methods of Drug Misuse Surveillance

- Web based approaches allow for multiple advantages
  - Timely
  - Flexible
  - Ability to Follow up
  - Reach diverse populations
  - Compare Across Geographies
Web Monitoring Activity

Riff Raff: “PSA: DONT DO COCAiNE ANYMORE, ALOT OF PEOPLE ARE BEiING SOLD FENTANYL (A DEADLY DRUG) MiXED iN WiTH THERE BAGS OF COCAiNE ... SO FOR THAT REASON iM OUT .. YOU SHOULDNT PLAY WiTH YOUR LiFE WE HAVE A BRiGHT FUTURE LETS ENJOY THE FRESH AiR WiTH VERSACE NOSTRiLS
Crowd Sourcing

Did you get a good deal?

* Name of drug:  
* Formulation:  
* Price per unit: (e.g., pill, tab) $  

Please choose a drug to see formulation options.

Continue

Search Results - PART 2 WEEKS

Prices for Any — Denver

- **$8** for Vyvanse, 30mg pill, Fort Collins, Colorado
- **$10** for Flexeril, 5mg pill, Denver, Colorado
- **$20** for Adderall, 20mg pill, Denver, Colorado
- **$5** for Vyvanse, 50mg pill, Denver, Colorado
- **$10** for Adderall, 10mg pill, Denver, Colorado
- **$5** for Adderall, 10mg pill, Denver, Colorado
- **$8** for Adderall XR, 30mg pill, Colorado
- **$10** for Adderall, 20mg pill, Fort Collins, Colorado
- **$15** for morphine ER pill, 15mg pill, Denver, Colorado

About StreetRx

StreetRx is a one-of-a-kind program that identifies and tracks the street value of prescription and illicit drugs. StreetRx gathers user-submitted data to map the street price of a variety of drugs across the country.

StreetRx users can anonymously post, view, and rate submissions, shining new light onto the often muddy waters of the black market. By providing invaluable information about the preferences of users, health communication specialists can adapt the outreach efforts to the local needs of their community.
Online Surveys

- Gather large amounts of data quickly
- Mobile friendly
- Use skip logic and responsive design
- Benchmark against other data
Non Medical Use per 100,000 Population

Germany

Spain