Harnessing National Data Sets to Measure Safety of Opioid Treatment: National Survey on Drug Use and Health (NSDUH) and VA Data

William C. Becker, MD
Assistant Professor, General Internal Medicine
VA Connecticut Healthcare System
Yale University School of Medicine
I have no conflicts of interest related to the content of this presentation.
Outline

• Broader conception of harm/benefit tradeoffs

• National Survey on Drug Use and Health

• VA Data:
  – VACS
  – Quality of Opioid Prescribing dataset
  – Musculoskeletal cohort
Old paradigm

Pain relief vs. Addiction
New paradigm

Taking opioids safely (i.e. without side effects or adverse events)

Achieving functional goals

Taking as prescribed

VS.

Safety problems →
side effects, adverse events
- and/or -
Low efficacy →
not achieving functional goals
- and/or -
Misuse → not using as prescribed
Important toxicities

• Constipation
• Itching
• Nausea/vomiting
• Hypogonadism; impaired libido
• Opioid-induced hyperalgesia
• Sedation
• Impaired cognition
• Fractures/osteoporosis
• Motor vehicle accidents/falls
• Blunted respiratory drive
• *Non-fatal and fatal overdose*
Observational data

• **Strengths:**
  – Power, especially in rare outcomes
  – OR can be used to approximate RR

• **Weaknesses:**
  – Causal inference is more difficult
  – Confounding by indication
NSDUH

- Funded by SAMHSA

- Purpose: measure the prevalence and correlates of illicit drug use in the United States
Methodology

• Cross-sectional self-report survey using combination of computer-assisted personal interviewing (CAPI) conducted by an interviewer and audio computer-assisted self-interviewing (ACASI)

• Civilian, non-institutionalized population

• Multi-stage area probability sampling → allows for national estimates; youths over-sampled

• Multiple validations over past 30 years

• Respondents paid $30
Opioid-related items

• Non-medical use: “Have you ever, even once, used [e.g.] Percocet, Percodan, or Tylox that was not prescribed for you or that you took only for the experience or feeling it caused?”
  – Age of onset
  – Last use
  – Number of days in past year
  – Source

• DSM-IV criteria for opioid use disorder (i.e. abuse, dependence)
Results

- Response rate ~ 77%
- Overall, low proportion missing values
- Typical findings:

![Figure 2.3 Past Month Nonmedical Use of Types of Psychotherapeutic Drugs among Persons Aged 12 or Older: 2002-2011](chart.png)

SAMHSA, 2012.
Relevant strengths/weaknesses (to this meeting)

- **Strengths:** high validity, population-level incidence and prevalence of non-medical opioid use; prescription opioid use disorder (i.e. abuse/dependence) as well as demographic and clinical correlates of these

- **Weaknesses:**
  - (1) No method for linking non-medical use with prescriptions → left with population-level inferences
  - (2) Lack of specificity of “non-medical use” question
Veterans Aging Cohort Study

- Prospective, observational cohort study of HIV(+) and demographically matched HIV(-) veterans in the US

- Examines role of comorbid disease in determining clinical outcomes in HIV infection

- Harnesses robust VA electronic health record: laboratory, pharmacy, administrative diagnostic data over 14 years, ~85,000 patients on opioids
# Opioid analgesics

<table>
<thead>
<tr>
<th>INCLUDED</th>
<th>EXCLUDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Outpatient Prescriptions</td>
<td>• Inpatient Prescriptions</td>
</tr>
<tr>
<td>• Oral</td>
<td>• Infrequently Used Preparations</td>
</tr>
<tr>
<td>• Oral</td>
<td>• Rectal suppositories</td>
</tr>
<tr>
<td>• Transdermal</td>
<td>• Crystals</td>
</tr>
<tr>
<td></td>
<td>• Powders</td>
</tr>
<tr>
<td></td>
<td>• Films</td>
</tr>
<tr>
<td></td>
<td>• Injection</td>
</tr>
<tr>
<td>• Codeine; fentanyl; hydrocodone; hydromorphone; oxycodone (SA); methadone; morphine (SA); Low-potency opioids (e.g. tramadol, pentazocine, propoxyphene)</td>
<td>• Opioid Agonist Treatment</td>
</tr>
<tr>
<td></td>
<td>• Buprenorphine</td>
</tr>
<tr>
<td></td>
<td>• Methadone for MMT</td>
</tr>
</tbody>
</table>

• Average daily morphine equivalent dose
Opioids workgroup analyses

- Demographic and clinical correlates of any, high dose, long term opioid receipt (Edelman et al, JGIM 2012)

- 12-year trends analysis – completed/submitted

- Next steps:
  - Association between opioid dose and important adverse effects:
    - Falls, fractures
    - Sleep-disordered breathing
    - Non fatal, fatal overdose
VACS limitations

• Sample’s generalizability

• As with all administrative data, wide range in validity of outcomes (mortality: high validity; opioid use disorder: low validity)
Quality of Opioid Prescribing dataset

• Aimed at measuring adherence to opioid clinical practice guidelines → “best practices”

• Stepwise process:
  – Identified practices in key domains that could be identified in VA administrative data
  – Developed measures of practices or outcomes in these domains
  – Measures validated with a team of experts including clinical practice guideline authors
Some of the metrics

- Appropriate provision of bowel regimen
- Avoidance of BZD co-prescribing
- Regular urine toxicology
- Appropriate follow-up
- Provision of non-opioid treatment modalities
Sample

- Approximately 1.1 million veterans from FY 2009-2013 who received one or more opioid prescriptions
- Extensive additional data: ICD-diagnoses, health care utilization, and pharmacy data
- Hierarchical subgroups based generally on perceived risk of various opioid types:
  1) Long-acting opioids (e.g. methadone, fentanyl, oxycodone CR, morphine SA)
  2) Long-term short-acting opioids
  3) Acute short-acting opioids
  4) Tramadol only
Use of the data

• QI → Data report (updated quarterly) has been created to allow facilities to track their performance over time & allow comparison to other facilities/national norms

• Research → Relationship between guideline adherent prescribing and outcomes: non-fatal and fatal overdose is step 1.
Limitations

• Dose calculations have not been performed (relatively easily fixable)

• Standard limitations of administrative data
Musculoskeletal pain cohort

- VA-funded prospective cohort

- All the robust administrative, laboratory, pharmacy data PLUS survey-based pain severity, interference, function

- Limitations: recruiting just started