Opioid Prescribing among HIV-Infected and Uninfected Veterans

VACS-COMpAAAS Scientific Meeting
October 13th, 2011

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Increase in Opioid Prescriptions

Fig. 10. The increase in therapeutic opioid use in the United States (grams/100,000 population) from 1997 to 2006.

Source: Based on data from US Drug Enforcement Administration. Automation of Reports and Consolidated Orders System (ARCOS); www.deadiversion.usdoj.gov/arco/retail_drug_summary/index.html

Opioids in HIV-Infected Patients

• May interfere with antiretrovirals

• High burden of comorbid diseases
  – Chronic pain, multi-substance use, mental illness
  – Risk of misuse, abuse and dependence

• Other side effects and toxicities
  – Endocrine System
  – Immune Function
  – Liver Function
Our Aims

• To describe patterns of opioid analgesic prescribing and compare HIV-infected and uninfected Veterans.

• To determine factors associated with any opioid prescribing; high dose opioids; and prolonged opioids.

• To examine the association between opioid analgesics and clinical outcomes.
Methods

• VACS-Virtual Cohort - FY2006

• Definitions
  – Any opioid therapy: > one prescription in FY2006
  – High dose opioid therapy: average daily dose > 120 mg morphine equivalents
  – Prolonged opioid therapy: > 90 days supplied in FY2006

• Diagnoses
  – ICD-9
Analytic Sample

• Full sample: 121,782
  – Excluded:
    • Ambiguous HIV status n=37
    • Cancer diagnosis n=4,014
    • No inpatient or outpatient visit in FY2006 n=38,979
    • Unclear opioid pharmacy data n=4

• Final sample: 78,748
  – 30% (23,651) HIV-infected
  – 29% (22,542) received at least one opioid prescription
## Patient Characteristics
### Among those Prescribed Opioids

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Uninfected n=67% (15,234)</th>
<th>HIV-Infected n=32% (7,308)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>97%</td>
<td>97%</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>45%</td>
<td>42%</td>
</tr>
<tr>
<td>Black</td>
<td>44%</td>
<td>48%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>8%</td>
<td>7%</td>
</tr>
<tr>
<td>Other</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Age, mean (SD)</strong></td>
<td>46 (9)</td>
<td>45 (9)</td>
</tr>
<tr>
<td><strong>Urbanicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>79%</td>
<td>89%</td>
</tr>
<tr>
<td>Large Rural</td>
<td>9%</td>
<td>5%</td>
</tr>
<tr>
<td>Small Rural</td>
<td>5%</td>
<td>3%</td>
</tr>
<tr>
<td>Isolated Rural</td>
<td>4%</td>
<td>2%</td>
</tr>
</tbody>
</table>
## Opioid and Acetaminophen Prescribing, n=22,542

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Uninfected (n=15,234)</th>
<th>HIV-Infected (n=7,308)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average Daily MED</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mean (SD)</td>
<td>37 (66)</td>
<td>41 (76)</td>
</tr>
<tr>
<td>median (IQR)</td>
<td>21 (15, 37)</td>
<td>20 (13, 36)</td>
</tr>
<tr>
<td><strong>High Dose ≥120 mg MED</strong></td>
<td>5%</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Days Prescribed, median (IQR)</strong></td>
<td>60 (17, 212)</td>
<td>44 (14, 189)</td>
</tr>
<tr>
<td><strong>Prolonged Therapy ≥ 90 days</strong></td>
<td>42%</td>
<td>38%</td>
</tr>
<tr>
<td><strong>Non-schedule II Short-Acting</strong></td>
<td>83%</td>
<td>79%</td>
</tr>
<tr>
<td><strong>Schedule II Long-Acting</strong></td>
<td>13%</td>
<td>14%</td>
</tr>
<tr>
<td><strong>Schedule II Short-Acting</strong></td>
<td>24%</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Acetaminophen</strong></td>
<td>76%</td>
<td>77%</td>
</tr>
</tbody>
</table>

*MED = morphine equivalent dose
Type of Prescribed Opioid by HIV Status
n=22,542

*Indicates statistical significance at p<0.05 level. “Other” opioids include: dihydrocodeine, levorphanol, meperidine, pentazocine, propoxyphene, tapentadol, tramadol. SA = sustained action.
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All Patients, UOR (95% CI)</th>
<th>All Patients, AOR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV-Infected</td>
<td><strong>1.17 (1.13, 1.21)</strong></td>
<td><strong>1.40 (1.35, 1.46)</strong></td>
</tr>
<tr>
<td>Male Sex</td>
<td></td>
<td><strong>1.08 (0.98, 1.20)</strong></td>
</tr>
<tr>
<td>Age (10 year increments)</td>
<td></td>
<td><strong>0.86 (0.85, 0.88)</strong></td>
</tr>
<tr>
<td>Race (ref: white)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td></td>
<td><strong>0.75 (0.72, 0.77)</strong></td>
</tr>
<tr>
<td>Hispanic</td>
<td></td>
<td><strong>0.83 (0.77, 0.90)</strong></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td><strong>0.54 (0.50, 0.59)</strong></td>
</tr>
<tr>
<td>Urbanicity (ref: urban)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large Rural</td>
<td></td>
<td><strong>1.14 (1.07, 1.22)</strong></td>
</tr>
<tr>
<td>Small Rural</td>
<td></td>
<td><strong>1.23 (1.13, 1.34)</strong></td>
</tr>
<tr>
<td>Isolated Rural</td>
<td></td>
<td><strong>1.11 (1.00, 1.24)</strong></td>
</tr>
<tr>
<td>HCV</td>
<td></td>
<td><strong>1.50 (1.43, 1.56)</strong></td>
</tr>
<tr>
<td>Pain (ref: no pain)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Pain</td>
<td></td>
<td><strong>3.10 (2.87, 3.34)</strong></td>
</tr>
<tr>
<td>Chronic Pain</td>
<td></td>
<td><strong>5.81 (5.61, 6.04)</strong></td>
</tr>
<tr>
<td>Serious Mental Illness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTSD</td>
<td></td>
<td><strong>1.28 (1.21, 1.35)</strong></td>
</tr>
<tr>
<td>Depression</td>
<td></td>
<td><strong>1.28 (1.19, 1.37)</strong></td>
</tr>
<tr>
<td>Alcohol Abuse</td>
<td></td>
<td><strong>0.87 (0.82, 0.93)</strong></td>
</tr>
<tr>
<td>Drug Abuse</td>
<td></td>
<td><strong>0.97 (0.91, 1.04)</strong></td>
</tr>
</tbody>
</table>
Prescribed Opioid Analgesics by Age and HIV Status, n=78,748
Comorbid Disease Among Patients Prescribed Opioids, n=22,542

*Indicates statistical significance at p<0.05 level.
Alcohol Consumption and Opioid Analgesic Prescribing, n=3,208

Pattern of Alcohol Consumption

- HIV- Non-Hazardous Drinking
- HIV- Hazardous Drinking
- HIV- Alcohol Abuse/Dependence
- HIV+ Non-Hazardous Drinking
- HIV+ Hazardous Drinking
- HIV+ Alcohol Abuse/Dependence

Proportion (%)

*Data based on VACS-VC and VACS-CP
## Risk of Acetaminophen in Mono and Co-Infected Patients with Liver Disease, n=14,885

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>Mono-infected</th>
<th>HIV/HCV-Co-infected</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Simple Logistic (FIB4 &gt; 3.25)</strong></td>
<td>OR (95% CI)</td>
<td>OR (95% CI)</td>
<td>OR (95% CI)</td>
</tr>
<tr>
<td>Neither</td>
<td>Reference</td>
<td>Reference</td>
<td>Reference</td>
</tr>
<tr>
<td>Acetaminophen &amp; Opioids</td>
<td>1.307 (1.143, 1.494)</td>
<td>1.191 (0.909, 1.561)</td>
<td>1.071 (0.911, 1.258)</td>
</tr>
<tr>
<td>Opioids</td>
<td>1.899 (1.564, 2.306)</td>
<td>1.158 (0.723, 1.855)</td>
<td>1.650 (1.314, 2.071)</td>
</tr>
<tr>
<td>Acetaminophen</td>
<td>1.718 (1.411, 2.092)</td>
<td><strong>2.118 (1.464, 3.064)</strong></td>
<td>1.159 (0.912, 1.474)</td>
</tr>
</tbody>
</table>
Summary

• Approximately one third of Veterans were prescribed at least one opioid in FY2006:
  – 5% of whom received high dose;
  – 40% of whom received at least 90 days.

• Patients prescribed opioids have a higher burden of comorbid disease, including HCV, substance abuse and mental illness.

• HIV-Infected patients are more likely to be prescribed opioids and prolonged opioids, but not high dose.

• Acetaminophen prescribing with and without opioids may be associated with liver injury in HIV+/HCV-.
Acknowledgements

VACS-COMpAAAS OPIOIDS WORKGROUP

– William C. Becker, MD
– David A. Fiellin, MD
– Julie Gaither, RN, MPH, PhD candidate
– Kirsha Gordon, MS, PhD candidate
– Joseph Goulet, PhD, MS
– Amy C. Justice, MD, PhD
– Robert D. Kerns, PhD
– Melissa Skanderson, MSW
– Jennifer Braden, MD,
– Adam Gordon, MD

FUNDING

– SGIM Lawrence Linn Award
– Robert Wood Johnson Foundation Clinical Scholars Program