Use of PDMP Data for Public Health Surveillance within the Context of Multisource Drug Overdose Surveillance

Svetla Slavova, PhD
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Sarah Hargrove, MS

Kentucky Injury Prevention and Research Center, a bona fide agent for the Kentucky Department for Public Health
Examples of Using Ky PDMP Data for Public Health Surveillance and Practice
KASPER enhancements to prevent harmful prescribing practices and curb prescription drug diversion

<table>
<thead>
<tr>
<th>Patient Name</th>
<th>DOB</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOE, JOHN</td>
<td>5/23/1955</td>
<td>540 HWY 141, KY</td>
</tr>
<tr>
<td>DOE, JONATHON</td>
<td>5/23/1955</td>
<td>540 HWY 141, HUSTONVILLE, KY</td>
</tr>
<tr>
<td>DOE, THOMAS</td>
<td>5/23/1955</td>
<td>540 HWY 141, KY</td>
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</table>

**Active Cumulative Morphine Equivalent**: 280

An ACME >= 100 MME may warrant increased clinical vigilance and a risk for naloxone. See final page of report for ACME and naloxone information.

<table>
<thead>
<tr>
<th>Date Filled</th>
<th>Drug Name</th>
<th>Patient DOB</th>
<th>Qty</th>
<th>Days</th>
<th>Prescriber DEA City</th>
<th>Pharmacy Name</th>
<th>Pharmacy City</th>
<th>Rpt To</th>
<th>Daily MED*</th>
<th>Pat ID</th>
</tr>
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<tbody>
<tr>
<td>10/01/2013</td>
<td>AmphetamineOxymorphone 3.75MG/5, 3.75MG/10, 3.75MG/20, 75</td>
<td>05/23/1965</td>
<td>90</td>
<td>30</td>
<td></td>
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<td>Danville</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10/01/2013</td>
<td>Suboxone 5MG/2MG</td>
<td>05/23/1965</td>
<td>2</td>
<td>1</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>10/01/2013</td>
<td>Suboxone 5MG/2MG</td>
<td>05/23/1965</td>
<td>4</td>
<td>2</td>
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<tr>
<td>10/03/2013</td>
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<td>05/23/1965</td>
<td>8</td>
<td>5</td>
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<tr>
<td>10/07/2013</td>
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<tr>
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<tr>
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<td></td>
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<td>Danville</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>10/23/2013</td>
<td>Suboxone 5MG/2MG</td>
<td>05/23/1965</td>
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<td></td>
<td>Good Neighbor Pharmacy</td>
<td>Danville</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
KASPER Tips: Morphine Equivalent Dose and Naloxone Information on KASPER Reports

David P. Hopkins and JiE E. Lee, R.Ph.
Office of Inspector General
Kentucky Cabinet for Health and Family Services

In an effort to provide practitioners and pharmacists with additional information to help reduce the risk of controlled substance abuse and unintended overdose deaths, KASPER patient reports have been enhanced to provide Morphine Equivalent Dose (MED) information. The new change took effect December 3. The MED information is used to assist practitioners and pharmacists with their opioid prescribing or dispensing decision, and is not intended to limit opioid prescribing or dispensing, or to replace practitioners’ and pharmacists’ professional judgment on how to treat their patient.

The daily Morphine Equivalent Dose is shown for each opioid prescription record and indicates the morphine-milligram equivalent value assigned to the daily opioid dose. The daily MED is calculated using a conversion formula from the U.S. Centers for Disease Control and Prevention (CDC), and is a measure that equates different opioid potencies (based on route and dose) to a standard morphine dosage equivalent. This information makes it easier for healthcare providers to determine whether the amount of opioid medications the patient is receiving could place the patient at a greater risk of a drug overdose.

If the KASPER report contains opioid prescription records, at the top of the KASPER patient report users will now see an Active Cumulative Morphine Equivalent (ACME) number. This information will not be included on reports showing “No records found”. The ACME number represents the daily MED level for active opioid prescriptions in effect for the patient on the last day of the date range selected for the report request (the “To Date”). Underneath the ACME number will be a chart showing the MED for each day included in the report date range overlaid upon a 100 MED baseline. All prescription records (opioid and non-opioid) that are active as of the “To Date” of the report are now highlighted in bold text. It is important to note that the ACME is calculated based on prescription data recored to KASPER only and does not include prescription data from other states that may be included on the KASPER report as a result of the user requesting data from other states.

If the report contains opioid prescription records, the last page of the report will provide information regarding the MED and ACME calculations. A table of opioid morphine equivalent conversion factors is available on the KASPER public web site: www.nhrs.ky.gov/KASPER

If the ACME is 100 or greater, a warning symbol will appear along with a note that increased clinical vigilance may be appropriate. This warning threshold was established by consensus of the KASPER Advisory Council members based on a recommendation from the Kentucky Injury Prevention and Research Center. According to the CDC, a patient with a daily MED level of 100 or greater has an overdose risk nine times higher than a patient with a level of 20 or less. For patients with an ACME of 100 or greater, the last page of the report will also include information and links to additional resources about naloxone prescribing and dispensing to help in situations where a provider believes the patient may be at risk of an overdose. The Kentucky Board of Medical Licensure advises that when a patient’s MED level reaches the 100 threshold, prescribers are expected to increase safeguards (such as increased monitoring and the use of naloxone) and that ongoing treatment be supported by increased documentation of clinical reasoning.

Naloxone is an opioid antagonist medication that can be used to counter the effects of an opioid overdose if administered in time. Kentucky statutes allow licensed health care providers to prescribe or dispense naloxone to an individual or to a third party capable of administering the drug for an emergency opioid overdose. For additional information regarding naloxone prescribing and dispensing refer to Kentucky statute KRS 317.181M (http://www.ky.gov/Statutes/statutes.aspx?title=402). The American Medical Association encourages physicians to co-prescribe naloxone to a patient or prescribe naloxone to a family member or close friend when it is clinically appropriate and provides guidance at http://www.ama-assn.org/ama/pub/advocacytopics/preventing-opioid-abuse/increase-naloxone-access.page.

Questions for practitioners to consider before co-prescribing or prescribing naloxone:

- Is my patient on a high opioid dose?
- Is my patient also on a concomitant benzodiazepine prescription?
- Does my patient have a history of substance use disorder?
- Does my patient have an underlying mental health condition that might make him or her more susceptible to overdose?
- Does my patient have a medical condition, such as a respiratory disease or other comorbidities, which might make him or her susceptible to opioid toxicity, respiratory distress or overdose?
- Might my patient be in a position to aid someone who is at risk of opioid overdose?

The Drug Enforcement and Professional Practices Branch staff is available to help with any questions regarding the Morphine Equivalent Dose information. For support please contact DEPPB at (502) 564-986.
KASPER Integration into EHRs

Infrastructure enhancements completed:

- Upgraded to current standard from American Society for Automation in Pharmacy (ASAP 4.2)
- Participated in development of interoperability standard for data exchange with EHRs
- Developed a testing methodology for integration into EHRs
- Developed Memorandums of Understanding and an Institutional Account Agreement for Integration

We are currently working toward integration with several vendors including a major pharmacy chain, two software vendors whose products are utilized by small independent pharmacies, an eprescribing software vendor, and the Department of Defense.
Multi-source Drug Overdose Fatality Surveillance

**DC Decedent Overview**

- **Death Year:** 2014
- **Death Date:** 01012014
- **Case Number:** KY2014-0001
- **SSN:** 1234567890
- **First Name:** JOHN
- **Middle Name:** DOE
- **Last Name:**
- **DOB:** 06191957
- **Birth Year:** 1957
- **Age:** 56
- **Date of Death:** 01012014
- **Gender:** M
- **Birth City:** Newtown
- **Birth State:** KENTUCKY
- **Birth Country:** UNITED STATES
- **Marital Status Code:** 4
- **Marital Status Description:** DIVORCED
- **Decedent's Usual Occupation:** TRUCK DRIVER
- **Kind of Business/Industry:** SEMI
- **Ever in Armed Forces?:** No
- **Education Code:** 3
- **Race Code:** 1
- **Race Description:** WHITE
- **Hispanic Code:** 0
- **Hispanic Origin Description:** NON HISPANIC

**DC Volume Year:** 2014
**DC Number:** 2323
**DC Volume Number:** 14
**Death Registration Date:** 01042014
**EDRS Number:** XYZ01231
Ky Drug Overdose Fatality Surveillance (EpiInfo)
Ky Drug Overdose Fatality Surveillance (EpilInfo)

### Toxicology

<table>
<thead>
<tr>
<th>AIT Report #</th>
<th>DOA Panel: Comp Panel:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1111111</td>
<td></td>
</tr>
</tbody>
</table>

**Date Sample(s) Collected:** 12/2/2014  
**Date AIT Received:** 12/2/2014  
**Date AIT Reported:** 12/22/2014

**Blood Toxicology - Blood source:** peripheral

<table>
<thead>
<tr>
<th>Drug</th>
<th>Concentration</th>
<th>Unit</th>
<th>Therapeutic Range</th>
<th>Pharm Class</th>
<th>DEA Schedule</th>
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</thead>
<tbody>
<tr>
<td>alprazolam</td>
<td>11.5</td>
<td>n...</td>
<td>10-40</td>
<td>Benzdiazepines</td>
<td>Sched...</td>
</tr>
<tr>
<td>morphine</td>
<td>157</td>
<td>n...</td>
<td>10-80</td>
<td>Prescription Opi...</td>
<td>Sched...</td>
</tr>
<tr>
<td>codeine</td>
<td>6.5</td>
<td>n...</td>
<td>30-120</td>
<td>Prescription Opi...</td>
<td>Sched...</td>
</tr>
<tr>
<td>oxycodone</td>
<td>336</td>
<td>n...</td>
<td>10-200</td>
<td>Prescription Opi...</td>
<td>Sched...</td>
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<tr>
<td>oxymorphone</td>
<td>6.1</td>
<td>n...</td>
<td>1-5</td>
<td>Prescription Opi...</td>
<td>Sched...</td>
</tr>
</tbody>
</table>

**Urine Toxicology**

[Image of a computer interface displaying toxicology results with various drug concentrations and classifications.]
Percentage of deaths with a specific drug present at the time of the death (toxicology report) that had an active prescription for this drug as of the day of the death (KASPER data), 2013-2014

*drug or metabolite
Ky Drug Overdose Fatality Surveillance

Percentage of overdose deaths with toxicology reports that listed the drug(s) on death certificates

*drugs or metabolites
Concordance of specific drugs contributing to overdose deaths between 1) causes of death suggested by medical examiners 2) causes of death listed on death certificates

- 1,004 autopsied overdose deaths with cause of death sections suggested by medical examiners; 61 of 1,004 listed only non-specific description of contributing drugs: “polypharmacy” (31); “substance” (15); “opiate” (10); “narcotic” (5)

- 57 (6%) of remaining 943 death certificates with suggested contributing drugs didn’t list any specific drugs; 28 (3%) listed only “substance”; 49 (5%) listed only “polypharmacy”
KASPER data for epidemiological analysis

Kentucky Drug Overdose Prevention Program

Reports:
- Kentucky County Drug Overdose Death Rates
- Kentucky Drug Overdose County Profiles
- Drug Overdose ED Visits in Kentucky, 2008-2014
- Drug Overdose ED Visits by Treatment Facility, January 1, 2010 - September 30, 2015
- Drug Overdose Deaths by County of Residence, January 1, 2011 - June 30, 2015
- Drug Overdose Inpatient Hospitalizations in Kentucky, 2000-2014

Quarterly Threshold Reports
- 2015 1Q KASPER Quarterly Threshold Report
- 2015 2Q KASPER Quarterly Threshold Report
- 2015 3Q KASPER Quarterly Threshold Report
- 2015 4Q KASPER Quarterly Threshold Report

Figure 1: Rate of Schedule II-V Controlled Substance Prescriptions Dispensed by Age and Gender, 4th Quarter 2015

Females in all age groups (except 0-18 years) are dispensed controlled substances at higher rates than males in the same age groups. Females over 45 years of age were dispensed controlled substances at rates which exceed the rate of one prescription per person over the quarter.
KASPER data for epidemiological analysis - examples

Percentage of overdose deaths with positive toxicology for alprazolam that had an active prescription for alprazolam at the time of the death.

Number of alprazolam prescriptions per 1,000 residents.
# KASPER data for policy evaluation

Pre- and post- HB1 dispensing

## Kentucky Drug Overdose Prevention Program

According to CDC WONDER data, Kentucky had the 2nd highest age-adjusted 2013 drug overdose mortality rate in the nation. The state has been a leader in prescription drug monitoring program (KASPER) development and implementation to support proactive reporting and data analysis. Kentucky’s General Assembly passed similar prescription drug overdose prevention laws in 2012, 2013, and 2015 to reduce inappropriate drug prescribing and resulting deaths, and to increase substance abuse treatment.

The goals of the Kentucky Drug Overdose Prevention Program are:

1. **Enhance and Maximize KASPER’s Use and Effectiveness** by: a) integrating KASPER with electronic health records; b) developing and delivering prescriber continuing education training; c) implementing a 100 Medicare Part D beneficiary KASPER report; d) establishing a multi-source drug overdose fatality (DOF) surveillance system; and e) conducting nonfatal PDo surveillance.

2. **Inform Community Interventions** by: a) providing technical assistance to high-dose opioid overdose burden counties; b) creating a multiphase data-focused Drug Overdose Prevention Group (DoOPG); c) establishing the KIPRC Drug Overdose Technical Assistance Center (DOTAC); d) enhancing local health department usage of drug overdose and abuse data results; and e) improving prevention education on drug overdose risk, appropriate prescribing, and naloxone use for prescribers and law enforcement in high-drug overdose burden counties.

3. **Conduct Policy Evaluation** by: a) evaluating and performing cost-benefit analysis of regulations that require KASPER queries and set profession-specific prescribing guidelines for schedule II controlled substances, and b) evaluating and performing cost-benefit analysis of the law that requires deceased controlled substance testing when no other cause of death has been established.

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### Controlled Substance Dispensing Comparison

<table>
<thead>
<tr>
<th>Drug</th>
<th>July 2011 through June 2012</th>
<th>July 2014 through June 2015</th>
<th>Percent Change</th>
</tr>
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<tbody>
<tr>
<td>Hydrocodone</td>
<td>3,303,453</td>
<td>2,603,642</td>
<td>-21.2%</td>
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<tr>
<td>Oxycodone</td>
<td>977,256</td>
<td>937,530</td>
<td>-4.1%</td>
</tr>
<tr>
<td>Oxymorphone</td>
<td>24,485</td>
<td>18,459</td>
<td>-24.6%</td>
</tr>
<tr>
<td>Tramadol</td>
<td>431,455</td>
<td>542,930</td>
<td>+25.8%</td>
</tr>
<tr>
<td>Alprazolam</td>
<td>947,672</td>
<td>769,814</td>
<td>-18.8%</td>
</tr>
<tr>
<td>Diazepam</td>
<td>413,983</td>
<td>350,685</td>
<td>-15.3%</td>
</tr>
<tr>
<td>Buprenorphine/ Naloxone</td>
<td>269,488</td>
<td>491,130</td>
<td>+82.2%</td>
</tr>
<tr>
<td>All Controlled Substances</td>
<td>10,417,237</td>
<td>9,927,621</td>
<td>-4.7%</td>
</tr>
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</table>

Figures represent number of prescriptions dispensed as reported to KASPER.

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### Kentucky

<table>
<thead>
<tr>
<th>Quarter</th>
<th>1st quarter pre-mandate</th>
<th>2nd quarter pre-mandate</th>
<th>3rd quarter pre-mandate</th>
<th>4th quarter pre-mandate</th>
<th>1st quarter post-mandate</th>
<th>2nd quarter post-mandate</th>
<th>3rd quarter post-mandate</th>
<th>4th quarter post-mandate</th>
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</thead>
<tbody>
<tr>
<td>Jan-Mar</td>
<td>154,38</td>
<td>150,16</td>
<td>157,39</td>
<td>155,12</td>
<td>159,22</td>
<td>164,42</td>
<td>163,05</td>
<td>167,12</td>
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<tr>
<td>Apr-Jun</td>
<td>153,42</td>
<td>154,12</td>
<td>159,42</td>
<td>161,16</td>
<td>164,36</td>
<td>164,42</td>
<td>168,05</td>
<td>169,12</td>
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<tr>
<td>Jul-Sep</td>
<td>159,42</td>
<td>161,16</td>
<td>164,42</td>
<td>163,05</td>
<td>167,12</td>
<td>168,05</td>
<td>169,12</td>
<td>169,12</td>
</tr>
<tr>
<td>Oct-Dec</td>
<td>152,22</td>
<td>153,45</td>
<td>159,42</td>
<td>161,16</td>
<td>164,36</td>
<td>164,42</td>
<td>168,05</td>
<td>169,12</td>
</tr>
</tbody>
</table>

**Count of all active KY prescribers as of last date in quarter:**

- 1st quarter pre-mandate: 154,38
- 2nd quarter pre-mandate: 150,16
- 3rd quarter pre-mandate: 157,39
- 4th quarter pre-mandate: 155,12
- 1st quarter post-mandate: 159,22
- 2nd quarter post-mandate: 164,42
- 3rd quarter post-mandate: 163,05
- 4th quarter post-mandate: 167,12

**Count of active KY prescribers enrolled in KASPER and having accessed KASPER as of last date in quarter:**

- 1st quarter pre-mandate: 2417
- 2nd quarter pre-mandate: 2312
- 3rd quarter pre-mandate: 2280
- 4th quarter pre-mandate: 2408
- 1st quarter post-mandate: 3152
- 2nd quarter post-mandate: 2950
- 3rd quarter post-mandate: 3110
- 4th quarter post-mandate: 7944

**Count of reports generated by KY prescribers:**

- 1st quarter pre-mandate: 14,955
- 2nd quarter pre-mandate: 14,368
- 3rd quarter pre-mandate: 15,625
- 4th quarter pre-mandate: 15,985
- 1st quarter post-mandate: 18,259
- 2nd quarter post-mandate: 2478
- 3rd quarter post-mandate: 9,440
- 4th quarter post-mandate: 9,669

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**Program Contact:** Tony Dunn
Multi-Source Drug Overdose Surveillance Data Used for Education and Public Health Awareness

The Ky ODCP report includes tables, graphs, and maps produced by the Kentucky Drug Overdose Prevention Program funded by CDC PFS.

http://odcp.ky.gov/Pages/default.aspx

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Kentucky Board of Medical Licensure Newsletter

Winter 2016

Michael S. Rodman, Executive Director
Prescot P. Naumann, M.D., President

Prescriber Peer Review Report Now Available on eKASPER

The Board is pleased to announce that KASPER Prescriber Master Account Holders can now request a Peer Review Report. This report provides a comparison of the Master Account Holder’s prescribing practices to those of other prescribers in the same specialty and prescribes in the same area of work (specialty area). In the Administration screen (below the Prescribing Report Request section), the Peer Review Report can be requested by clicking on the View Peer Review Report button. The Area of work default to the physician’s specialty found in the Area of Work box on the Account Maintenance screen. Prescribers may request the report for comparison with a different specialty by clicking on the drop-down arrow and selecting from the list provided. Note: some areas of work have been combined into a single specialty e.g. Primary Care specialty includes the Family Practice, General Practice and Internal Medicine areas of work. All specialties for APN/PA users are included in the Nurse Practitioner Area of work.

To view the report, click the View Peer Review Report button. The report will provide prescribing comparison data for benzodiazepine, opioid, sedative and stimulant drug classes. The report is a compilation of the last 60 days from the current data. The user will not be able to specify a different date range for the Peer Review Report. Changing the date range in the Prescribing Report Request (reverse KASPER) section will not change the date range of the Peer Review Report Request. The selected specialty is displayed at the top of the report, and the comparison data is included in tabular and chart formats for both the number of prescriptions written and number of doses prescribed.

The Board appreciates the work of the Cabinet for Health and Family Services for adding this option to eKASPER and encourages physicians to take advantage of this enhancement.

KASPER Quarterly Threshold Analytic Report Q3 2015

Several months ago, the Kentucky Injury Prevention and Research Center (KIPRC), in cooperation with Kentucky All Schedule Prescription Electronic Reporting System (KASPER) and with funding from a Centers for Disease Control and Prevention (CDC) grant, began producing Quarterly Threshold Analysis Reports for KASPER data. These reports provide information on the rates of controlled substances dispensed in Kentucky by age, gender and for a variety of controlled substances.

The third Quarterly Threshold Analysis Report is now available and provides information on rates of controlled substances dispensed per 1,000 Kentucky residents by age group and gender based on KASPER-controlled substance dispensing data. The analysis includes rates of 1) total Schedule II through V controlled substances; 2) benzodiazepines; 3) buprenorphine/naloxone; 4) hydrocodone; 5) methadone; 6) propoxyphene; and 7) total Schedule II stimulants. It can be found along with the first two reports at http://www.epi.ky.gov/index.php/meds-drug-abuse/kaspereports
Contact Information

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Kentucky Injury Prevention and Research Center
ssslav2@email.uky.edu
859-323-7873
http://www.mc.uky.edu/KIPRC/