Connecting Public Health and PDMPs

2013 Harold Rogers Prescription Drug Monitoring Program National Meeting
Andrew Holt, PharmD.
Prescription Drug Abuse

- National Epidemic

- State Epidemic
  - Governor’s Public Safety Subcabinet
    - Addresses many areas of public safety, including prescription drug abuse
      - Overdose Deaths
      - Overdoses
      - NAS
Overdose Deaths

Drug overdose deaths in Tennessee are increasing

- The number of drug overdose deaths in Tennessee increased from 422* in 2001 to 1,059* in 2010.
- The number of drug overdose deaths in 2010 represents an increase of 250% over the 10 year time period.

* Includes all drug overdose deaths where the manner of death was listed as one of the following: accidental, undetermined, suicide (intentional), or homicide.

Source: Office of Policy, Planning and Assessment, Tennessee Department of Health – Death Certificates.
Overdose Deaths

Drug Overdose Deaths vs. Motor Vehicle Traffic Deaths

Death Rates per 100,000 population
Tennessee vs. US

Source: Office of Policy, Planning and Assessment, Tennessee Department of Health – Death Certificates
Source: NCHS Data Brief, No. 81, December 2011, “Drug Poisoning Deaths in the United States, 1980 – 2008”, Data table for Figure 1
Overdose Deaths

Drug Overdose Deaths Are Increasing

Tennessee Resident Deaths from Drug Overdoses

Source: Office of Policy, Planning and Assessment, Tennessee Department of Health – Death Certificates
Overdose Deaths

Drug Overdose Death Rates Are Increasing

Death Rates from Drug Overdoses per 100,000 population, Tennessee vs. US

Source: Office of Policy, Planning and Assessment, Tennessee Department of Health – Death Certificates
Source: NCHS Data Brief, No. 81, December 2011, "Drug Poisoning Deaths in the United States, 1980 – 2008", Data table for Figure 1
Prescription drug use is a problem in Tennessee

- The top three most prescribed controlled substances in Tennessee in 2010 are:
  - 275.5 million pills of hydrocodone (e.g., Lortab, Lorcet, Vicodin)
  - 116.6 million pills prescribed for alprazolam (e.g., Xanax: used to treat anxiety)
  - 113.5 million pills prescribed for oxycodone (e.g., OxyContin, Roxicodone)
- Hydrocodone and oxycodone are both prescription opioids used to treat pain.

Source: Report to the 2011 107th General Assembly by the Tennessee Department of Health Controlled Substance Database Advisory Committee, Board of Pharmacy,
Prescription drug use is a problem in Tennessee

- The number of drugs prescribed during 2010 to Tennesseans represents:
  - 51 pills of hydrocodone for EVERY Tennessean above the age of 12
  - 22 pills of alprazolam for EVERY Tennessean above the age of 12
  - 21 pills of oxycodone for EVERY Tennessean above the age of 12

Source: Report to the 2011 107th General Assembly by the Tennessee Department of Health Controlled Substance Database Advisory Committee, Board of Pharmacy,
Prescription drug abuse affects everyone

- Abuse of prescription opioids is the number one drug problem for Tennesseans receiving state-funded treatment services.
- Almost 250,000 Tennesseans older than 12 reported abusing prescription opioids in 2009.

Abuse of prescription opioids in Tennessee is increasing

- The percentage of state-funded treatment admissions nationwide increased from 1% to 7% from 1999 to 2009.
- In Tennessee, the percentage of people identifying prescription opioids as their primary substance of abuse increased from 5% in 1999 to 23% in 2009.
- The ranking of the top three drugs named as a primary substance of abuse also changed dramatically from 1999 to 2009: opioid abuse in Tennessee is greater than abuse of marijuana or crack/cocaine.

Opioid abuse in 2009 was greater than marijuana or crack/cocaine

<table>
<thead>
<tr>
<th>Top 3 Drugs in Tennessee</th>
<th>Tennessee</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1999</td>
<td>2009</td>
</tr>
<tr>
<td>Prescription Opioids</td>
<td>5%</td>
<td>23%</td>
</tr>
<tr>
<td></td>
<td>1%</td>
<td>7%</td>
</tr>
<tr>
<td>Marijuana</td>
<td>14%</td>
<td>18%</td>
</tr>
<tr>
<td></td>
<td>14%</td>
<td>18%</td>
</tr>
<tr>
<td>Cocaine/Crack</td>
<td>28%</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td>14%</td>
<td>14%</td>
</tr>
</tbody>
</table>

Substance Abuse Treatment

Treatment Admissions in Tennessee for prescription Opioids (pain relievers)

The costs of children in custody increased from FY 2008 to FY 2011

Child Welfare
- The percentage of Tennessee children entering state custody with a related substance abuse problem increased from 19% to 33%.
- Estimated costs of caring for these children increased from $29 million to over $52 million.

Juvenile Justice
- The percentage of Tennessee adolescents with a substance abuse problem entering state custody through the juvenile justice system increased from 5% to almost 11%.
- Estimated costs of providing treatment and care for these youth in the juvenile justice system increased from $2.6 million to $4.8 million.

Figure 11. Top Ten Prescriptions Reported to CSMD in Tennessee, 2012

- Hydrocodone products: 463,452,000 (36.4%)
- Oxycodone products: 150,767,100 (11.9%)
- Alprazolam: 186,693,800 (14.7%)
- Clonazepam: 729,917,000 (5.7%)
- Zolpidem: 122,775,900 (9.7%)
- Tramadol: 63,773,600 (6.6%)
- Lorazepam: 609,303,000 (4.8%)
- Diazepam: 514,977,000 (4.0%)
- Buprenorphine products: 409,940,000 (3.2%)
- Morphine products: 383,390,000 (3.0%)
Required registration
Required checking of PMP

Exceptions:
(A) Hospice Patient
(B) The committee has determined that a particular specialty’s patients have a low potential for abuse
(C) Post-Surgical patient (from a licensed facility) with a prescription which is non-refillable
(D) Non-refillable prescription for 7 day supply or less

Enabled interstate data sharing
Established delegate accounts-“extenders”
Data submission every 7 days by dispensers
Increased administrative staffing
Automated Registration

- Web service established between vendor and:
  - State professional licensing database
  - State driver’s license database
- Check against DEA database

Non-matches sent to administrator for manual approval
PC 880 Implementation Process

- Added capacity at vendor
  - Personnel
  - Technology
    - Ten servers
    - Two load balancers
  - PMIX Interface
  - Training database
    - Use for demonstration purposes

Jane A.G. Baumblatt MD
Caleb Wiedeman MPH
Tennessee Department of Health
Communicable and Environmental Diseases and Emergency Preparedness
Baumblatt Analysis

- **Tennessee Department of Health**
  - Caleb Wiedeman, MPH
  - John R. Dunn, DVM, PhD
  - Tim F. Jones, MD

- **Vanderbilt University School of Medicine**
  - William Schaffner, MD

- **Centers for Disease Control and Prevention**
  - Leonard J. Paulozzi, MD, MPH
  - Edward C. Weiss, MD, MPH
Opioid Prescription Rates by County, TN 2007

Prescription Rate per 100 Population
- <105
- 105 - 121
- 122 - 140
- 141 - 160
- 161 - 180
- >180
Opioid Prescription Rates by County, TN 2008

Prescription Rate per 100 Population
- <105
- 105 - 121
- 122 - 140
- 141 - 160
- 161 - 180
- 181 - 200
- → 200
Opioid Prescription Rates by County, TN 2009
Opioid Prescription Rates by County, TN 2010
Opioid Prescription Rates by County, TN 2011
Matched Case Control Study

- **Case**
  - Unintentional opioid-related overdose death
  - Tennessee vital records death certificate data, 2009–2010

- **Control**
  - 20 live patients per case
  - ≥ 1 Rx in TNCSMP during study period
## Demographics of Decedents in TN PMP 2009–2010

(N=592)

<table>
<thead>
<tr>
<th>Age, years</th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>43</td>
<td>18–92</td>
</tr>
</tbody>
</table>

<p>| Males, no. (%) | 330 (56) |</p>
<table>
<thead>
<tr>
<th>Race, no. (%)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cauc.</td>
<td>576 (97)</td>
</tr>
<tr>
<td>A.A.</td>
<td>14 (2.7)</td>
</tr>
</tbody>
</table>
Association Of Type of Opioid with Risk of Opioid-Related Overdose Death, 2009–2010
High Risk Patient

- Provider shoppers
  - ≥4 providers in a year

- Pharmacy shoppers
  - ≥4 pharmacies in a year

- High-dosage patients
  - >100 morphine milligram equivalents (MME) per day average for year
## Risk of Unintentional Opioid-related Overdose Death by Patient Risk Factors

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Cases N=592</th>
<th>Controls N=11,840</th>
<th>AORs</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. (%)</td>
<td>No. (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provider shopping</td>
<td>227 (38)</td>
<td>513 (4)</td>
<td>5.1</td>
<td>3.2–8.1</td>
</tr>
<tr>
<td>Pharmacy shopping</td>
<td>145 (24)</td>
<td>196 (2)</td>
<td>4.5</td>
<td>2.5–8.1</td>
</tr>
<tr>
<td>High dosage use</td>
<td>140 (24)</td>
<td>172 (1)</td>
<td>13.2</td>
<td>8.6–20.8</td>
</tr>
</tbody>
</table>
Infant Mortality

Infant Mortality Rate, Tennessee, 1920-2011

Deaths per 1,000 Live Births

Year


Deaths per 1,000 Live Births

Neonatal Abstinence Syndrome (NAS)

Number of Opiate-Addicted Newborns Triples

May 1, 2012 6:00 AM CDT

Born ADDICTED

Drugs pass to baby from the placenta

After birth, baby suffers from withdrawal
NAS-Medicaid Population

Rate of NAS per 1,000 Live Births

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate of NAS per 1,000 Live Births</th>
</tr>
</thead>
<tbody>
<tr>
<td>CY 2008</td>
<td></td>
</tr>
<tr>
<td>CY 2009</td>
<td></td>
</tr>
<tr>
<td>CY 2010</td>
<td></td>
</tr>
<tr>
<td>CY 2011</td>
<td></td>
</tr>
</tbody>
</table>
## TennCare Status of Mothers of NAS Infants at Time of Birth

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Newborns Treated for NAS During Year</th>
<th>Mothers on TennCare at birth</th>
<th>Percent of NAS infants</th>
<th>Mothers not on TennCare at birth</th>
<th>Percent of NAS infants</th>
</tr>
</thead>
<tbody>
<tr>
<td>CY 2008</td>
<td>264</td>
<td>229</td>
<td>87%</td>
<td>35</td>
<td>13%</td>
</tr>
<tr>
<td>CY 2009</td>
<td>444</td>
<td>335</td>
<td>75%</td>
<td>109</td>
<td>25%</td>
</tr>
<tr>
<td>CY 2010</td>
<td>512</td>
<td>424</td>
<td>83%</td>
<td>88</td>
<td>17%</td>
</tr>
<tr>
<td>CY 2011</td>
<td>506</td>
<td>413</td>
<td>82%</td>
<td>93</td>
<td>18%</td>
</tr>
</tbody>
</table>
Incidence of NAS among TennCare recipients, CY 2010
**NAS Impact**

Percentage of newborns in DCS custody within one year of birth, CY 2010

<table>
<thead>
<tr>
<th></th>
<th>Infants born in CY 2010</th>
<th>NAS infants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total # of Infants</td>
<td>56,498</td>
<td>512</td>
</tr>
<tr>
<td>Total # infants in DCS</td>
<td>754</td>
<td>95</td>
</tr>
<tr>
<td>% in DCS</td>
<td>1.3%</td>
<td>18.6%</td>
</tr>
</tbody>
</table>
NAS Impact

512 NAS Babies, $40,931/Baby

Inpatient Hospitalizations with Any Diagnosis of Neonatal Abstinence Syndrome

All Patients Regardless of TennCare Status, Tennessee 2010

Statewide Rate: 6.6/1,000

Rate per 1,000 Live Births

- 25.0 - 60.2
- 12.9 - 24.9
- 7.0 - 12.8
- 2.3 - 6.9
- 0.0 - 2.2

Data sources: Tennessee Department of Health; Office of Health Statistics; Hospital Discharge Data System (HDDS); and Birth Statistical System (BSS).

Numerator is number of inpatient hospitalizations with age less than one and any diagnosis of neonatal abstinence syndrome (ICD-9-CM T78.5). HDDS records may contain up to 19 diagnoses. Infants were included in the numerator if any of these 19 fields were coded as neonatal abstinence syndrome. Note that these are discharge-level data and not unique patient data. For HDDS data, county is patient’s county of residence.

Denominator is number of live births. For BSS data, county is mother’s county of residence.
### Table 2: Impact of NAS on infant health care expenditures, CY 2010

<table>
<thead>
<tr>
<th>Metric</th>
<th>TennCare Paid Live Births</th>
<th>TennCare non-LBWT Births</th>
<th>TennCare Live LBWT Births</th>
<th>NAS Infants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of births</td>
<td>40,083</td>
<td>35,853</td>
<td>4,230</td>
<td>512</td>
</tr>
<tr>
<td>Average cost per child</td>
<td>$7,285</td>
<td>$4,347</td>
<td>$32,194</td>
<td>$40,931</td>
</tr>
</tbody>
</table>
Drug Dependent Newborns (Neonatal Abstinence Syndrome)
Surveillance Summary For the Week of August 25-31, 2013
(Week 35)¹

Reporting Summary (Year-to-date)
Cases Reported: 564
- Male: 323
- Female: 238
- Unknown at time of report: 3
- Unique Hospitals Reporting: 47

<table>
<thead>
<tr>
<th>Maternal County of Residence</th>
<th>Cases</th>
<th>% Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davidson</td>
<td>29</td>
<td>5.1%</td>
</tr>
<tr>
<td>East</td>
<td>150</td>
<td>26.8%</td>
</tr>
<tr>
<td>Hamilton</td>
<td>9</td>
<td>1.6%</td>
</tr>
<tr>
<td>Jackson/Madison</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td>Knox</td>
<td>64</td>
<td>11.3%</td>
</tr>
<tr>
<td>Mid-Cumberland</td>
<td>38</td>
<td>6.7%</td>
</tr>
<tr>
<td>North East</td>
<td>87</td>
<td>15.4%</td>
</tr>
<tr>
<td>Shelby</td>
<td>11</td>
<td>2.0%</td>
</tr>
<tr>
<td>South Central</td>
<td>20</td>
<td>3.5%</td>
</tr>
<tr>
<td>South East</td>
<td>8</td>
<td>1.4%</td>
</tr>
<tr>
<td>Sullivan</td>
<td>58</td>
<td>10.3%</td>
</tr>
<tr>
<td>Upper Cumberland</td>
<td>71</td>
<td>12.6%</td>
</tr>
<tr>
<td>West</td>
<td>18</td>
<td>3.2%</td>
</tr>
<tr>
<td>Total</td>
<td>564</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source of Maternal Substance (if known)²

<table>
<thead>
<tr>
<th>Source of Substance</th>
<th>Cases²</th>
<th>% Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervised replacement therapy</td>
<td>249</td>
<td>44.1%</td>
</tr>
<tr>
<td>Supervised pain therapy</td>
<td>117</td>
<td>20.7%</td>
</tr>
<tr>
<td>Therapy for psychiatric or neurological condition</td>
<td>45</td>
<td>8.0%</td>
</tr>
<tr>
<td>Prescription substance obtained WITHOUT a prescription</td>
<td>220</td>
<td>39.0%</td>
</tr>
<tr>
<td>Non-prescription substance</td>
<td>158</td>
<td>28.0%</td>
</tr>
<tr>
<td>No known exposure but clinical signs consistent with NAS</td>
<td>11</td>
<td>2.0%</td>
</tr>
<tr>
<td>No response</td>
<td>14</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

¹. Summary reports are archived weekly at: [http://health.tn.gov/MCH/NAS/NAS_Summary_Archive.shtml](http://health.tn.gov/MCH/NAS/NAS_Summary_Archive.shtml)
². Multiple maternal substances may be reported; therefore the total number of cases in this table may not match the total number of cases reported.
Public Chapter 430

- Chronic Pain Guidelines written by January 1, 2014
- All prescribers with a DEA must have 2 hours controlled substance prescribing CME every 2 years
- Caps dispensing of opioids and benzodiazepines at 30 days
Q3 After viewing information found in the CSMD, have you changed a proposed treatment plan for a given patient?

Answered: 766   Skipped: 40

- Yes: 70.37%
- No: 29.63%
Q4 Since the CSMD was established, are you now more likely to DISCUSS substance abuse issues/ concerns with your patients?

Answered: 768  Skipped: 38

- Yes: 71.74%
- No: 28.26%
Q5 Since the CSMD was established, are you now more likely to REFER patients for substance abuse treatment?

Answered: 765  Skipped: 41

- Yes: 55.16%
- No: 44.84%
Q6 In your opinion, is the CSMD useful for decreasing the incidence of doctor shopping?

Answered: 769  Skipped: 37

- Yes: 79.32%
- No: 6.24%
- Don't know/Not sure: 14.43%
Two Main Phases
- Round 1 at end of September
- Round 2 by end of December

Major Features
- Automated username retrieval
- Admin search feature via email
- Multiple practice locations per user
- Enhanced linking of extenders to supervisors
- Supervisor can run report on extenders
- Extender runs report on supervisor behalf
CSMD Enhancements

- Clinical Notifications
  - Push (unsolicited)
  - Solicited
  - MME Calculator on report

- Enhanced Reports
  - Some visible to user
    - Comparison vs. peers
  - Some for admin use only
Integration into EMR’s
More pharmacies submitting in near-real time
  - Demonstrated through MITRE pilot in 2013
Possible NAS warning for women of childbearing age
Data Analysis

- Risk Models
  - Prescriber
    - Mid-level
      - Including physician supervision
    - Physician-level
  - Pharmacy
  - Patient
Andrew Holt, PharmD
Director
Tennessee Controlled Substance Monitoring Database
227 French Landing
Suite 300
Nashville, TN 37243
615-253-1300
Andrew.holt@tn.gov