NASCIO Data, Information and Knowledge Management Initiative

The State of Tennessee

Tennessee Controlled Substance Monitoring Database (CSMD)

Phase I & Phase II
Start September: 1, 2012 – Completion December 1, 2013

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Executive Summary

Prescription monitoring programs are a vital resource in the nation’s response to the prescription drug abuse epidemic. Tennessee’s prescription monitoring program, the Controlled Substance Monitoring Database (CSMD), established in 2002 and became operational in 2006. There was underutilization of the database as a public health tool until large-scale change introduced as part of the Tennessee Prescription Safety Act of 2012, Tenn. Pub. Acts, ch 880, signed into law by Governor Haslam on May 9, 2012. The law emphasized the importance of the CSMD as a public health and safety tool among healthcare providers and law enforcement.

The modifications to the CSMD were an effort to help simplify administration, improve audit capabilities, expand reporting capabilities, provide improved problem tracking capabilities, and provide additional utilization capacity. Educational seminars occurred across the state to inform healthcare providers of the application and to answer questions. The mandate did not begin until January 1, 2013 but many healthcare providers signed up early and gave feedback at the seminars on various topics, including incorporation of the application into their workflow.

The feedback from the healthcare providers along with brainstorming within the Department yielded additional modification suggestions. Collaborating with the vendor, many of these ideas were deemed technologically feasible and development ensued. These ideas brought improved prescriber user interfaces and data-driven alerts (clinical notifications) to healthcare prescribers identifying patients that may be at risk of adverse events or risky behavior. Clinical notifications help the CSMD user quickly identify patients that may be at medical risk and warrant a more in-depth analysis or review by the healthcare provider.

Noteworthy findings from the project include a 56% increase in the number of registrants in 2013, a 142% increase in the number of patient reports requested in 2013, a 0.4% decrease in the number of opioid prescriptions and a 3.6% decrease in the number of benzodiazepine prescriptions dispensed and a 35% reduction in the number of high-utilization patients. A commonly used criterion by the CDC defines a high-utilization patient as an individual who utilizes five prescribers and five pharmacies in a 90-day period. The reduction in prescription numbers are the first decreases observed in Tennessee since the CSMD was established.

The Tennessee Department of Health is dedicated to finding more ways to utilize data that is available in the database in order to reduce inadvertent overdosing to identify patients who need help, to curb prescription drug abuse, and to assist prescribers with information about their patients.

“Protect, promote and improve the health and prosperity of people in Tennessee”
Business Problem and Solution

The Controlled Substance Monitoring Database (CSMD) became operational in 2006, but remained a voluntary-use system by prescribers until the Prescription Safety Act of 2012. Compliance with this new law would increase utilization of the CSMD beyond the capacity of the system. After collaborating with the vendor, a new, more robust hardware configuration was recommended and put into operation. This partnership fostered the creation of a system that performed as expected, supporting a 142% increase in utilization in 2013 vs. 2012, with a downtime of less than 0.1%.

<table>
<thead>
<tr>
<th>Year</th>
<th>Healthcare Providers</th>
<th>Law Enforcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>1,861,485</td>
<td>2,565</td>
</tr>
<tr>
<td>2013</td>
<td>4,497,866</td>
<td>1,938</td>
</tr>
</tbody>
</table>

There were approximately 22,000 registered users at the end of 2012 and by April of 2013, every healthcare provider in eight professions who prescribed or dispensed a controlled substance in Tennessee was required to use the CSMD. The possible ways to accomplish this was to either create a technological solution or add numerous personnel to process the registrations manually. The typical rate of manual approvals for personnel is approximately 75-100 registrations per day and it was unknown at the time when health care professionals would choose to register, so planning for staffing patterns would be difficult. A technological solution would be flexible and the capacity to process registrations would be relatively unlimited. The Department opted to automate registrations and validate the information to register users without human intervention in three user types: practitioners, pharmacists and health care extenders, who are delegates for both practitioners and pharmacists. Any other user type still requires manual approval by personnel.

<table>
<thead>
<tr>
<th>Year</th>
<th>Registrants</th>
<th>Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>22,192</td>
<td>44.8</td>
</tr>
<tr>
<td>2013</td>
<td>34,802</td>
<td>56.8</td>
</tr>
</tbody>
</table>

This automation required the use of web services to connect to the databases or tables that contained the necessary information to validate registration. Development included working in conjunction with the Department of Health, Licensure and Regulation and the Department of Safety’s vendor, NIC, to validate against information found in the driver’s license database. The validation of prescribers is by DEA (Drug Enforcement Agency) number, Professional License, Driver License and last four digits of their Social Security Number. The validation of pharmacists is by the same elements except for the DEA number because they do not carry their own DEA number. Checking these same elements manually by CSMD staff required before this process.

The Prescription Safety Act established delegate accounts (called health care extenders (HCE)) for the first time to assist both practitioners and pharmacist fulfil their requirements to use the CSMD. CSMD functionality developed to allow the HCE to
identify the supervisor they would be acting on behalf of in the CSMD. Data fields added to registration and user profiles in the CSMD to allow the HCE to enter the supervising physician’s driver license, as this was the only practical non-public information available to identify the supervising prescriber or pharmacist. The system then shows all locations for the chosen supervisor and the HCE picks their own work locations. The system then notifies the supervisor via internal messaging that HCE(s) await approval and upon approval from the supervisor, the HCE then can perform patient lookups on behalf of the supervisor.

Prescription Drug Abuse is not a problem unique to Tennessee. One method that individuals accumulate controlled substances is to visit multiple states to circumvent individual state databases. Tennessee became eligible to share data with other states when Public Chapter 880 signed into law. However, every state has different statues, which determine what types of users can view prescription data. The National Association of Boards of Pharmacy developed a hub with a console that allows each state to select the permitted user types or roles to ensure only authorized individuals can view information to facilitate data sharing. Tennessee began sharing data with Michigan, Virginia and South Carolina and continues to test and add additional states, which over time will expose those patients who participate in interstate prescription diversion.

Tenn Public Acts ch 396, established a requirement for CSMD staff to annually identify the top 50 prescribers in the state and send a registered letter to them and their supervising physician if they are an advanced practice nurse (APN) or physician assistant (PA). The basis of identification is on the number of milligram morphine equivalents (MME) they have prescribed during the selected timeframe. One problem encountered during this activity was the identification of the supervising physician for an APN or PA. The chosen solution was to establish data fields in the CSMD that allowed the APN or PA to identify their supervising physicians in the system in similar fashion to the way a HCE identifies their supervisor. One important variation was a validation put in place to ensure that only a Medical Doctor or Osteopathic Physician can be the identified supervisor to comply with state supervisory requirements.

Another frequent issue encountered by CSMD users is trouble signing into their accounts. User names are assigned automatically by the system and over time it was determined that many of the calls to CSMD staff were to retrieve usernames. The solution was to develop a method to verify a user’s identity and allow them to retrieve their name without a call to CSMD staff. This is a notable improvement, especially for those practitioners who work outside of normal business hours.

One limitation to typical CSMD reports is the time required for health care providers to review all of the lines of prescription data for a patient and quickly evaluate if the patient is at risk of adverse events. An enhancement to the CSMD patient report’s to include the patient’s current MME. The MME is an industry-recognized standard, which converts quantities of different opioids into an equivalent dose of morphine. This standardization affords the practitioner an opportunity to consider all opioids when formulating a treatment plan, as risk of overdose increases as total MME per day.
increases. This feature of the patient report is an assimilation of MME for all opioid prescriptions, which are “active”, based on the prescription fill date and how long the prescription is supposed to last. This standardization of opioid dose aids in determining opioid exposure and shaping the clinical decision-making process and is on every patient report generated.

In some practice sites, provider workflow may be slowed by the mandate of looking up patients in the CSMD. Functionality developed to speed the process for busy clinics that facilitates a single user looking up multiple patients in one queue as a timesaving feature, which was a frequent request by CSMD users. The CSMD user either uploads a spreadsheet of patients or manually enters multiple patients.

Prescription drug abuse during pregnancy may lead to neonatal abstinence syndrome (NAS), which is a newborn addicted to the drugs taken by the mother during pregnancy. To increase awareness among health care providers, on every report generated of a female who is of childbearing age (15-45 years old) a pink message appears on the report.

Timely data is important for practitioners to make clinical decisions. Before the Prescription Safety Act, dispensers were submitting prescription data twice monthly. The new law requires data be submitted at least every 7 days. Additionally, in 2013 a pilot study occurred to allow pharmacies to submit data every 5 minutes to the CSMD. The pilot began with one pharmacy and later expanded to approximately 30 other pharmacies. In 2014, six additional software vendors will roll out the functionality to their pharmacy clients.

**Significance of the Project to the Improvement of the Operation of Government**

The history of the CSMD is important in understanding the progress of the application and the importance to the residents of Tennessee. The initial legislation passed in 2002 as the “Controlled Substance Monitoring Act of 2002” and data collection began in 2006. The database became searchable in 2007, but until the Prescription Safety Act of 2012, very few database or web application changes occurred.

The Prescription Safety Act mandates that health care providers prescribing certain controlled substances utilize the CSMD and authorized nurses and office staff known as health care extenders to access the CSMD on behalf of their supervising practitioners. This removes a major obstacle identified by stakeholder groups during the legislative process and ultimately increases use of the database, which aids the identification of patients at risk of adverse events or diversion.

The intent of the Prescription Safety Act is to reduce fraud, drug diversion and substance abuse. Simplifying administration has allowed staff to spend more time educating healthcare providers about CSMD use and develop methods to identify risk factors for substance abuse and diversion. This simplification of administration began by moving the system from manual registration to automated registration since every healthcare provider with a DEA was required to register prior to January 1, 2013.
were certain situations that still require the registration to go to the CSMD staff for manual review and approval.

Today, in just minutes, hundreds of registrations are processed and user names and passwords emailed out to the user all through the use of technology and data via the web services. From December 2012 until April 1, 2013, registrations increased from 22,000 registered users to over 29,000 registered users with only two CSMD resources. Registrations due to data mismatching sent to the pending box for processing done by only two CSMD resources. Processing this many registrations manually in a timely manner with only two resources would have been impossible. The registered users grew during 2013 to 34,802 by the end of the year with no additional resources needed.

The prescription data collected in the CSMD undergoes analysis by an epidemiologist to determine the top prescribers in the state so that a notification occurs as required in Public Chapter 396. The prescribers then have to submit appropriate supporting documentation to justify their prescribing. Initiation of numerous complaints against prescribers occurred from this procedure, with some already adjudicated. Preliminary findings indicate that this may in fact lead to a change in prescribing patterns. The next identification process will occur in July 2014 and at that time; we can quantify the first year’s results.

Expectation is increased use of the CSMD will decrease the rate of prescribing of controlled substances in Tennessee. The following table shows a positive trend in the rate of increase in MME dispensed since 2010.

<table>
<thead>
<tr>
<th>Year</th>
<th>MME</th>
<th>Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>8,782,383,683</td>
<td>-</td>
</tr>
<tr>
<td>2011</td>
<td>9,618,319,622</td>
<td>9.5</td>
</tr>
<tr>
<td>2012</td>
<td>9,883,615,759</td>
<td>2.8</td>
</tr>
<tr>
<td>2013</td>
<td>9,898,069,236</td>
<td>0.1</td>
</tr>
</tbody>
</table>

In summary, we now have more timely data in the hands of our users so they can tailor patient treatment plans relative to a patient’s controlled substance history. The data has also facilitated communication between health care providers who may be treating or have treated the same patient with the ultimate goal of decreasing adverse events. The data also provides the State of Tennessee the ability to analyze and understand prescribing patterns, patient utilization patterns and pharmacy dispensing patterns, which will facilitate further database and web application improvements.

**Benefits of the Project**

If all required data entered appropriately and all data elements meet security validation processes then new registrants of the CSMD can expect immediate access. The number of new registrations per week can range from 100 to 800 users as new licensees and new graduates register in the CSMD. Because of the automated solution, this can occur with no increase in staffing, saving resources.
From a population health standpoint, there has been a noticeable decrease in the number of high-utilization patients in 2013. A commonly used criterion by the CDC defines a high-utilization patient as an individual who utilizes five prescribers and five pharmacies in a 90-day period. Analysis of data in the CSMD utilizing the CDC criteria is included in the following table:

<table>
<thead>
<tr>
<th>Year</th>
<th>1st Quarter</th>
<th>2nd Quarter</th>
<th>3rd Quarter</th>
<th>4th Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>1,668</td>
<td>1,971</td>
<td>2,096</td>
<td>1,811</td>
</tr>
<tr>
<td>2011</td>
<td>1,922</td>
<td>2,373</td>
<td>2,465</td>
<td>2,322</td>
</tr>
<tr>
<td>2012</td>
<td>2,224</td>
<td>2,185</td>
<td>2,229</td>
<td>1,908</td>
</tr>
<tr>
<td>2013</td>
<td>1,776</td>
<td>1,540</td>
<td>1,518</td>
<td>1,228</td>
</tr>
</tbody>
</table>

*Patients filled prescriptions from five or more prescribers at five or more dispensers within 90 days.

The Prescription Safety Act of 2012 has facilitated a substantial increase in utilization of the CSMD by healthcare practitioners. Numerous studies have shown the benefits of increased utilization of prescription monitoring programs. When compared against 2012 data, the 2013 data from the CSMD shows:

- The number of registrants increased by 56% in 2013 to 34,802
- A 142% increase in the number of patient reports requested in 2013 to 4.49 million
- A 0.4% decrease in the number of opioid prescriptions and a 3.6% decrease in the number of benzodiazepine prescriptions dispensed; and
- A 35% reduction in the number of high-utilization patients

Mandated use of prescription monitoring programs is a relatively new policy stance. In May of 2013, a survey of prescribers took place to measure satisfaction with improvements to the CSMD, and over 900 responses received, with the following notable findings:

- 71% of responders changed a treatment plan after viewing a CSMD report
- 73% of responders are more likely to discuss substance abuse issues or concerns with a patient
- 57% of responders are more likely to refer a patient for substance abuse treatment; and
- 79% of respondents feel that the CSMD is useful for decreasing doctor shopping

Two separate groups of enhancements implemented in 2013 to improve the user experience, administrative and analytical functions of the database. While making these changes to the database, the system experienced only a 0.1% downtime in 2013 and, in our survey of prescribers, 72% indicated that the system typically provides a patient report less than 10 seconds after submitting a query.