Controlled Substance Monitoring Database

2022 Report to the 112th Tennessee General Assembly

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Contents

Prescription Drug Misuse and Abuse

The Tennessee (TN) Controlled Substance Monitoring Database (CSMD) is a Prescription Drug Monitoring Program (PDMP) designed to provide healthcare practitioners with a comprehensive view of a patient's history of controlled substance prescriptions. The CSMD collects prescriptions from pharmacies licensed by the Tennessee Board of Pharmacy, as well as human and veterinary prescribers who dispense controlled substances in Tennessee. The Veterans Health Administration (VHA) pharmacies in Tennessee also report prescriptions to the CSMD. The CSMD collects and maintains dispensing data regarding all controlled substances in Schedules II, III, IV, and V.

The purpose of the CSMD is to increase the quality of patient care by equipping healthcare practitioners with accurate, timely information. Practitioners can use this information to determine when patients acquiring controlled substances may require counseling or intervention for substance abuse. Further, the database is utilized to assist in research, statistical analysis, criminal investigations, enforcement of standards of health professional practice, and state or federal laws involving controlled substances.

The CSMD was established in accordance with the Controlled Substance Monitoring Act of 2002. Data collection began for all dispensers on December 1, 2006. The Prescription Safety Acts (PSA) of 2012 and 2016 enhanced the monitoring capabilities of the database especially with mandatory registration and use starting in 2013. The CSMD became timelier and more meaningful in 2016 when data for human patients had to be submitted at least once every business day for all the controlled substances dispensed, but no later than the close of business on the following business day. Additional changes to the laws affecting the database were made by Tennessee Together legislation, which increased the frequency for mandatory check of the CSMD for prescribing and dispensing of opioids and benzodiazepines from every 12 months to every 6 months. Prescribers and pharmacists can pull prescription information from over half of US states, in addition to the US Department of Defense.

The CSMD rules codified in the Pharmacy Chapter of the Rules and Regulations had not been amended since before the passage of the Tennessee Prescription Safety Act of 2016, which resulted in significant changes to the statutory scheme. Several CSMD rules applied to prescribers rather than pharmacies. In 2021, Tennessee Department of Health (TDH) completed a Rulemaking process to update CSMD related rules. A rule amendment has pulled those rules that deal primarily with prescribers out of Chapter 1140 (Pharmacy) and placed them in a newly created Chapter 1145 (Commissioner's CSMD Rules). As of January 26, 2022, the CSMD rules increase the list of mandatory fields for pharmacy and prescriber dispenser reporting of information to the CSMD. These fields are consistent with the June 2017 version of the Telecommunications Format for prescription drug monitoring programs established by the American Society for Automation in Pharmacy (ASAP). Pharmacies and prescriber dispensers have until July 1, 2022, to become compliant with the increased number of data fields. The new CSMD rules will also require a mandatory CSMD check before initiating a course of Schedule II amphetamines, and a mandatory check at least every 6 months throughout the course of treatment. The Commissioner's rules explicitly allow sharing of patient-level opioid overdose data through the CSMD. TDH is currently developing Enhanced Prescriber Reports (EPRs) which will use data from the CSMD as well as opioid overdose data. EPRs will be provided to practitioners through the CSMD in the near future.

This 2022 CSMD report is designed to provide the General Assembly with an update on activities and outcomes related to the substance abuse crisis as it pertains to the CSMD and the TDH. The CSMD Committee reports annually on the outcome of the program with respect to its effect on distribution and abuse of controlled substances, along with recommendations for improving control, prevention, and minimizing diversion of controlled substances.

Key Findings:

- Morphine Milligram Equivalents (MME) prescribed and dispensed to patients in TN has decreased by 60% (2013-2021)
- Number of potential doctor shoppers has decreased by 93% (2013-2021)
- Number of opioid prescriptions for pain has decreased by 46%. (2013-2021)

Key Highlights for CSMD in 2021:

- Since 2013, the number of controlled substance prescriptions reported to the CSMD has decreased 15%, note that gabapentin was added as a new controlled substance in 2018 and had just over 2 million prescriptions reported in 2021.
- Response time for searches in the CSMD was less than one second if the request did not include data from another state.
- Gateway Electronic Health Record (EHR)/Pharmacy Management System workflow integration has spread across the state to provide controlled substance prescribers and pharmacists the ability to integrate CSMD information into clinical workflow.
- In 2021, the CSMD was successfully connected to the RxCheck Hub, a federally supported PDMP data sharing system that supports interstate data sharing and EHR integration.

Considerations for 2022:

- Fatal drug overdoses in TN have increased rapidly, exacerbated by the effects of the COVID-19 pandemic. While increases in overdoses continue to be primarily related to illicit substances such as fentanyl and methamphetamine, inappropriate use of prescription drugs still poses a major risk to Tennesseans.
- Opioids typically obtained through a prescription for pain relief were involved in 595 overdose deaths in 2020, a 16% increase from 2019.
- Among all opioid-related overdose deaths in 2020, 22% also involved benzodiazepines, highlighting the critical importance of avoiding concomitant use of opioids and benzodiazepines.
- In 2020, only half of those who died of drug overdose involving opioids (typically obtained through a prescription) or benzodiazepines had any controlled substance dispensed within 60 days of death. Among people who died of an overdose involving pain relievers, only 35% had an opioid prescription. Among those who died of an overdose involving benzodiazepines, only 32% had a benzodiazepine prescription within 60 days of death. This reinforces the need for a three-pronged approach of prevention, treatment, and enforcement in improving the epidemic.

Trends in Drug Overdose Deaths in Tennessee and the Role of the CSMD

TDH uses methodology established by the Center for Disease Control (CDC) to understand and describe drug overdose deaths in our state (CDC, 2016)1. Data from Vital Statistics indicates from 2019 to 2020, drug overdose

[1] Rudd RA, Seth P, David F, Scholl L. Increases in Drug and Opioid-Involved Overdose Deaths — United States, 2010–2015. MMWR Morb Mortal Wkly Rep 2016;65:1445–1452. DOI: http://dx.doi.org/10.15585/mmwr.mm655051e1

deaths in Tennessee rose by 45%, increasing from 2,089 to 3,032.[2] The increase in overdose deaths from 2019 to 2020 is the highest year to year increase, and deaths due to drug overdose in TN are at their highest level observed during the current overdose epidemic. The proportion of drug deaths in 2020 that involved opioids remained high (79%). This percentage includes both opioids typically obtained through a prescription, as well as illicit opioids, such as illicitly manufactured fentanyl and other newly emerging synthetic opioids. The proportion of deaths in TN categorized by the CDC as associated with opioid pain relievers continued to decrease, from 25% to 20% of all overdose deaths; but the absolute number of deaths in this category actually increased for the first time in five years, from 515 to 595.

Deaths associated with benzodiazepines increased as well, from 395 to 571 (a 45% increase). Deaths that included a combination of benzodiazepines and opioids increased from 363 to 517 (a 42% increase). Just under one quarter (22%) of opioid associated deaths also included a benzodiazepine. Notably, TN has seen more overdose deaths involving novel synthetic benzodiazepines that are illicitly manufactured.

Overdose deaths involving illicit opioids increased substantially from 2019 to 2020. The number of overdose deaths in which fentanyl was involved increased 85%, from 1,087 to 2,014; and fentanyl was involved in two-thirds (66%) of all drug overdose deaths. Heroin deaths decreased 13%, from 380 to 331, a marked shift toward stronger illicit opioids. Among drugs typically used for treatment of opioid use disorder, overdose deaths involving methadone stayed level at 53 deaths, and buprenorphine associated deaths increased 32%, from 71 to 94.[3]

Improvements in a number of measures of good prescribing practice, including reductions in the amount of opioids prescribed and dispensed, fewer potential doctor shoppers, and increased utilization of the CSMD suggest that increased awareness among the medical community and statewide interventions have continued to reduce the impact of prescription drugs on overdose mortality Among individuals who died of drug overdose in 2020, just under a third (32%) had any controlled substance dispensed within 60 days of death, a decrease from 36% the year before. Only 35% of people who died of an overdose involving pain relievers had an opioid prescription, and only 32% of people **w**ho died of an overdose involving benzodiazepines had a benzodiazepine prescription within 60 days of death. The downward trend has been consistent, year over year since 2013, and aligns with the increasing shift towards use of illicit fentanyl, heroin, and other substances.

TDH is committed to improving the way CSMD data are used to help stem the epidemic of overdose in TN. The Office of Informatics and Analytics (OIA) maintains the Integrated Data System (IDS) which combines data from the CSMD with other patient health data to identify key markers for increased risk of overdose. Epidemiologists at TDH have conducted a number of studies and are developing several tools using these linked data to better understand patient trajectories as they move from prescription drugs into the illicit market, and to better understand what puts Tennesseans at higher risk for overdose and death. With these data, policy and prevention, and intervention programs, treatment can be targeted more specifically to intervene early, when recovery is easier and more likely to be successful.

In addition, OIA has developed a data driven method of identifying prescribers who may be engaging in high risk prescribing or who have high risk patient populations. The first high risk prescriber lists were created in 2019, and the method continues to undergo refinement to better identify risky prescribing. Work also continues to identify patients at high risk of overdose, and the department has partnered with researchers at Vanderbilt University Medical Center (VUMC) to apply advanced machine learning techniques to better predict overdose risk among Tennesseans. The initial phase of this work has concluded, and OIA continues work with VUMC to improve and integrate these

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[2] 2020 Tennessee Drug Overdose Death Report.
https://www.tn.gov/content/dam/tn/health/documents/pdo/2020_Tennessee_Drug_Overdose_Deaths.pdf

[3] Counts of overdose deaths involving methadone and buprenorphine are derived from cause of death information on death certificates which do not indicate the source or intended use of these drugs.

advanced models into the IDS. In the next year, TDH also plans to launch EPRs to registered CSMD users that leverage the power of OIA's analytics and data linkage efforts to provide prescribing and overdose information back to these prescribers.

TDH is working closely with a number of other departments, including the TN Department of Mental Health and Substance Abuse Services (TDMHSAS) and the TN Bureau of Investigation (TBI), to respond to the epidemic. Through these partnerships, TDH is providing county-level data to stakeholders in communities across TN. Overdose and controlled substance prescribing data has been invaluable for planning and resource allocation for TDH and TDMHSAS prevention and response projects.

OIA produces several public annual reports that present data on overdoses and prescribing throughout TN that are greatly enhanced by the addition of CSMD data.

- The annual TN Drug Overdose Death Report includes information on fatal overdose and decedent prescription histories using CSMD data and is released when data are finalized in September.
- The annual Drug Overdose Hospital Discharge Report includes information on nonfatal overdoses for patients who were seen at a TN hospital and is released on March 1.
- The TN Annual Overdose Report is an omnibus report that includes additional fatal and nonfatal overdose information, prescription trends, and project updates, and is released annually in early Spring.
- Monthly nonfatal overdose data briefs use data from the TN Drug Overdose Reporting (DOR) system to provide timelier information on opioid overdose trends across the state.

These reports, including associated slides and infographics, can be found at: https://www.tn.gov/health/health-program-areas/pdo/pdo/facts-figures.html. In late 2020, OIA released a special report on buprenorphine to provide an in depth look at prescription and patient trends, as well as buprenorphine involvement in fatal overdoses, and buprenorphine prescribing before and after nonfatal overdoses. A special report on stimulant prescriptions and overdoses is planned to be released in early 2022.

OIA also produces an interactive, online dashboard that includes overdose and prescription information which can be found at this address: https://www.tn.gov/health/health-program-areas/pdo/pdo/data-dashboard.html. The drug overdose data dashboard underwent a significant overhaul to enhance its usefulness and visual appeal and relaunched in late summer 2020. The new version of the dashboard was designed to accommodate more frequent updates to the data and content. A recent update has made the deidentified information underlying the dashboard available to the public in an easy to download format. Additional updates to the dashboard, including more prescribing information from the CSMD, are planned for 2022.

Weekly Hospital and Emergency Medical Services (EMS) Data

For every drug overdose death, nearly a dozen nonfatal overdoses were identified in discharge data from state emergency departments and hospitals in 2019. The proportion of these hospital visits due to opioids has steadily increased, with a particularly substantial increase in heroin related nonfatal overdoses in recent years. OIA estimates at least 18% of overdose decedents in 2019 had a nonfatal overdose in the year before their death.[4]

These overdoses are treated in emergency departments and hospitals, but information about overdoses is not currently available to clinicians outside the hospital or through the CSMD. In 2016, Public Chapter 959 provided the Commissioner with the opportunity to require healthcare facilities to provide TDH with near real-time data on

[4] Tennessee's Annual Overdose Report 2021.
https://www.tn.gov/content/dam/tn/health/documents/pdo/2021%20TN%20Annual%20Overdose%20Report.pdf

nonfatal drug overdoses. Such a data collection system was implemented in 2017, with a pilot project involving 11 hospitals. The DOR system is now in its active stage, with 118 hospitals reporting to TDH from across the state. Opioid drug overdose was included on the TN Reportable Disease List in 2019.[5] From the pilot stage through 2019, hospitals have only been required to report opioid overdoses. The TN Reportable Disease List was expanded in 2020, and hospitals are now asked to report overdoses involving a number of other substances of concern, specifically stimulants, benzodiazepines, and muscle relaxants. This expanded range of reporting provides better insights into the changing nature of TN's overdose epidemic and reveals timely trends in overdoses that equip the state to respond to new and emerging threats.

Preliminary estimates show that overdoses seen in a hospital are reported, on average, just over a week after the patient is discharged, making DOR one of the fastest sources of overdose information available to TDH. This speed makes DOR data one of the department's most important tools for planning and resource allocation for overdose response. Overdoses reported to DOR are used in several regular data briefs that are shared with regional epidemiologists, including information on those overdoses associated with active CSMD prescriptions. As of Fall 2019, record-level DOR data have been made available to regional and metro health departments to guide local response efforts. In Fall 2020, TDH began to make monthly reports on statewide DOR data available to the public.[6] Additionally, TDH convenes a biweekly multi-agency workgroup made up of several divisions across TDH, the TDMHSAS, the TBI, and others to discuss current temporal and geographic trends in the overdose data. These meetings play a vital role in state agency situational awareness and offer a valuable opportunity for state overdose stakeholders to share challenges, successes, and support.

Unfortunately, TDH does not currently have a reliable estimate of the number of overdoses which are managed in the field where the patient refuses transport to the hospital. TDH expects that this represents an even larger number of nonfatal overdoses that are not currently being systematically tracked. In order to overcome this gap, TDH is working to obtain statewide emergency medical service data on overdoses seen in the field. Once these data are available, TDH anticipates creating a number of reports and public health surveillance products that will better inform stakeholders about the prevalence and trends in nonfatal overdose throughout the state.

TDH continues to explore ways to provide patient overdose information from these sources back to providers so that they might have additional patient history data to make better informed decisions about opioid prescribing. In 2022, TDH plans to launch Enhanced Prescriber Reports to registered users of the CSMD. These reports are expected to include information on patients of the prescribers who have overdoses that have been reported to TDH through DOR.

Neonatal Abstinence Syndrome Surveillance Update

TN hospitals have been required to report cases of infants with Neonatal Abstinence Syndrome (NAS) to TDH since 2013. Since then, TN had seen annual increases in the number of cases of NAS until 2018, which marked the first decrease in the number of cases. However, the convergence of the opioid epidemic and COVID-19 global pandemic in 2020 created new health challenges resulting, in an uptick in the number of opioid overdoses in addition to stalling the improvement seen in NAS in recent years. The number of cases of NAS increased slightly from 810 in 2019 to 824 in 2020.[7] A majority of the NAS cases involved exposure to prescribed buprenorphine or methadone for Medication-Assisted Treatment (MAT).

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[5] Tennessee Reportable Disease List. https://www.tn.gov/health/cedep/reportable-diseases.html

[6] Drug Overdose Facts & Figures. https://www.tn.gov/health/health-program-areas/pdo/pdo/facts-figures.html

[7] Neonatal Abstinence Syndrome Surveillance Annual Report 2020.
https://www.tn.gov/content/dam/tn/health/documents/nas/NAS-Annual-Report-2020.pdf

Number of Registrants in TN CSMD

The PSA of 2012 facilitated a substantial increase in CSMD utilization, and the PSA of 2016 and other legislation further expanded the requirement for a mandatory CSMD check by healthcare practitioners. Year after year, the CSMD continues to have significant increases in the number of registrants. By the end of 2020, the number of registrants had grown to 61,390.

Number of Registrants of TN CSMD, 2013-2021

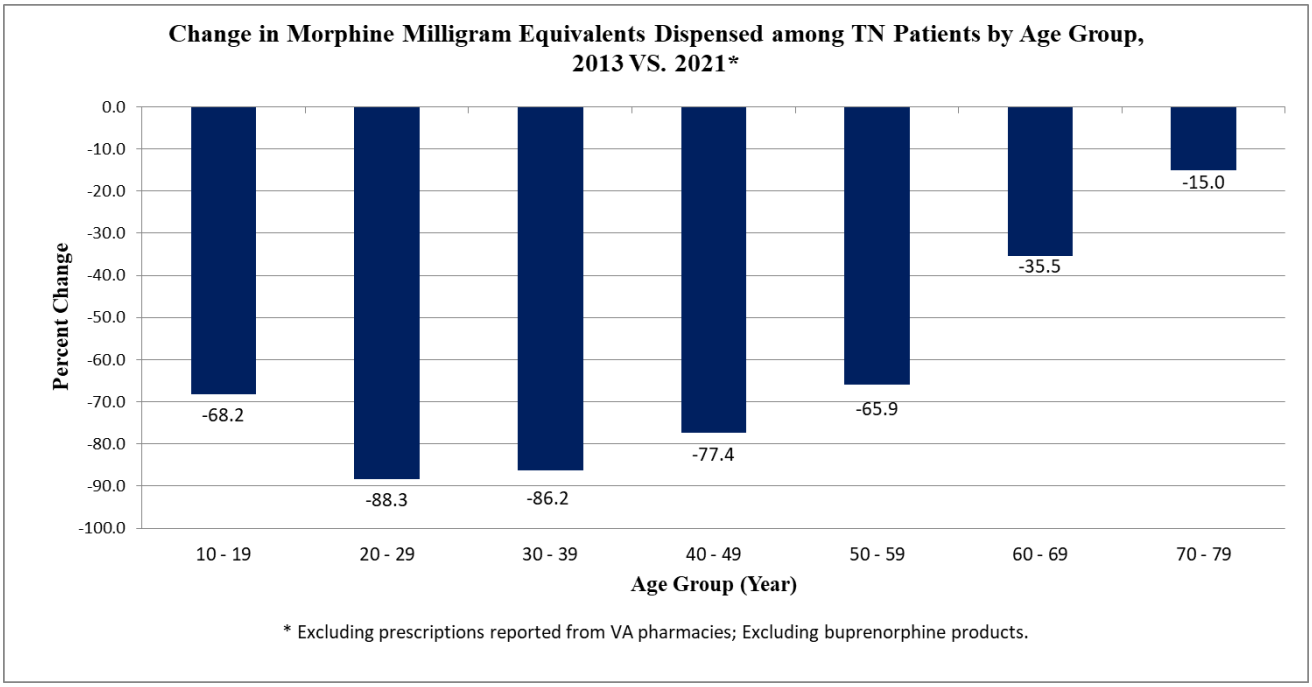
Number of Registrants of TN CSMD, 2013 - 2021		
Year	Registrants	Change (%)
2013	34,802	-
2014	38,871	11.7
2015	42,835	10.2
2016	46,576	8.7
2017	47,294	1.5
2018	50,991	7.8
2019	54,642	7.2
2020	58,379	6.8
2021	61,390	5.2

Law enforcement requests to the CSMD continue to be a critical use of the CSMD as TDH works together to address questionable controlled substance use in TN. During 2021, there were 1,282 law enforcement related requests to the CSMD.

MME Improvements and Concerns by Age Group

The OIA provides an analysis of the MME for TN patients by age groups. Encouragingly, there was a decline in MME dispensed for patients in the various age groups below comparing 2013 to 2021. Improvements in these age groups are an indicator that TDH's efforts are successfully preventing individuals from being overexposed to opioids by the healthcare system.

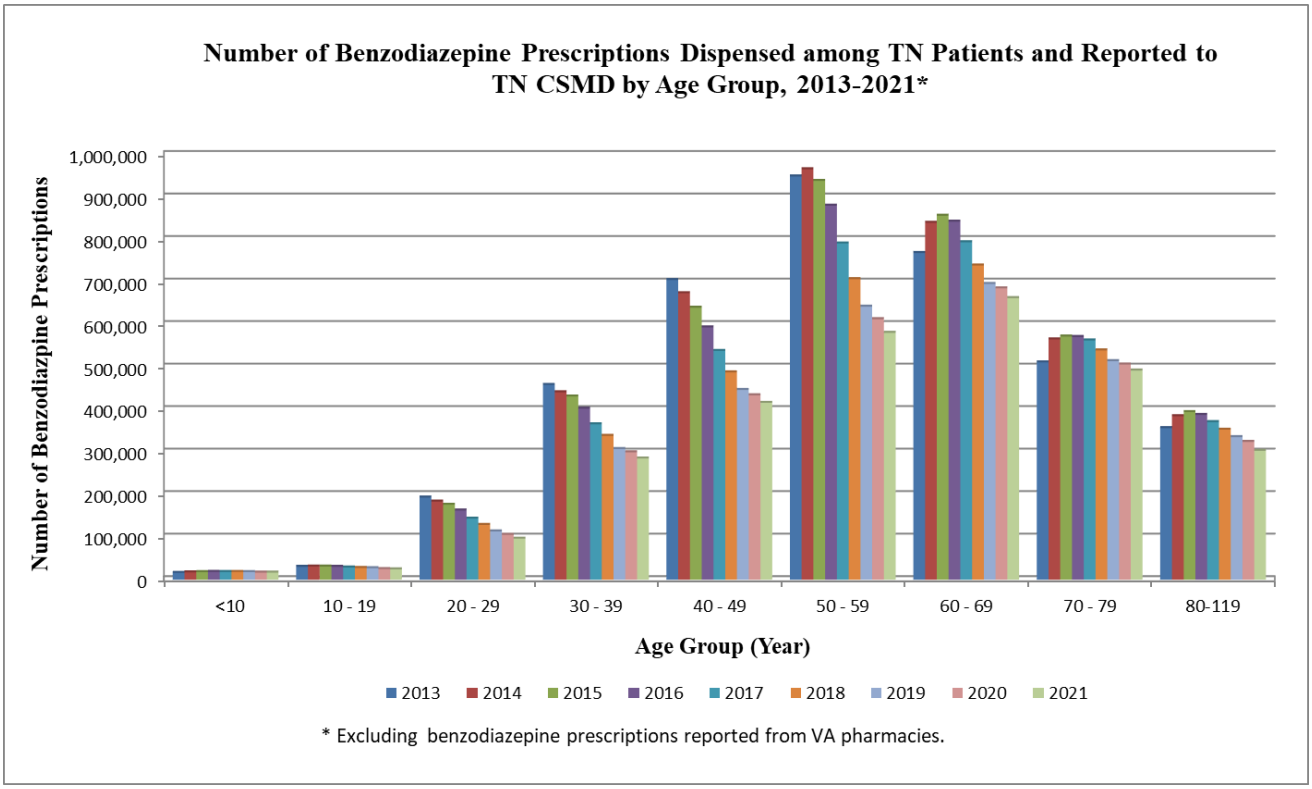
Change in MME Dispensed Among TN Patients, 2013 vs. 2021



Trends Related to Utilization of Benzodiazepines and Stimulants

Benzodiazepines, such as alprazolam and diazepam, demonstrated a 28% decrease in prescriptions from 2013 to 2021. For 2021, this class has seen a decline in prescribing and dispensing for people of all age groups.

Number of Benzodiazepine Prescriptions Dispensed Among TN Patients by Age Group and Reported to the CSMD, 2013-2021

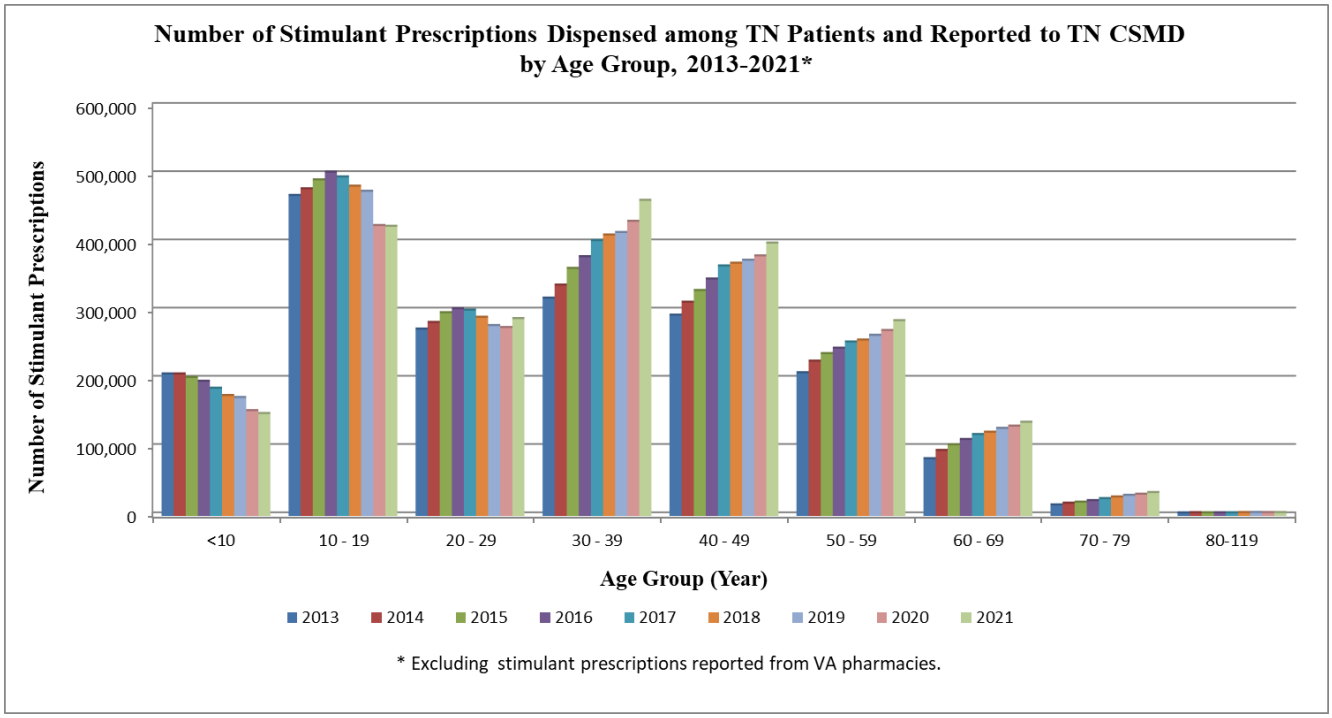


Number of Benzodiazepine Prescriptions Dispensed among TN Patients and Reported to TN CSMD by Age Group, 2013-2021*									
Age Group (Year)	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
<10	15,946	17,297	17,730	18,243	18,105	18,184	17,755	16,582	16,741
10 - 19	30,260	30,988	30,771	30,187	28,653	27,457	27,040	24,972	24,192
20 - 29	193,223	183,644	176,271	162,793	143,629	128,706	113,578	105,467	96,553
30 - 39	458,193	440,789	430,966	402,308	365,494	338,377	307,362	299,562	285,103
40 - 49	704,923	673,928	639,708	593,605	538,119	487,763	446,390	433,729	416,006
50 - 59	948,623	965,493	938,135	879,784	790,961	707,004	642,281	612,804	580,754
60 - 69	768,479	839,500	856,117	842,153	793,882	739,024	695,678	685,385	662,455
70 - 79	511,221	565,176	572,069	570,954	562,851	539,461	513,982	506,117	492,050
80-119	356,531	384,640	394,187	387,483	370,670	352,884	335,352	324,143	303,033
Unknown	2	2	7		6	1	9	24	18
*** Excluding benzodiazepine prescriptions reported from VA pharmacies.**									

Trends Related to Utilization of Stimulants

The number of prescriptions for stimulants has continued to increase, growing by almost 17% for patients in TN from 2013 to 2021.

Number of Stimulant Prescriptions Dispensed Among TN Patients by Age Group and Reported to the CSMD, 2013-2021

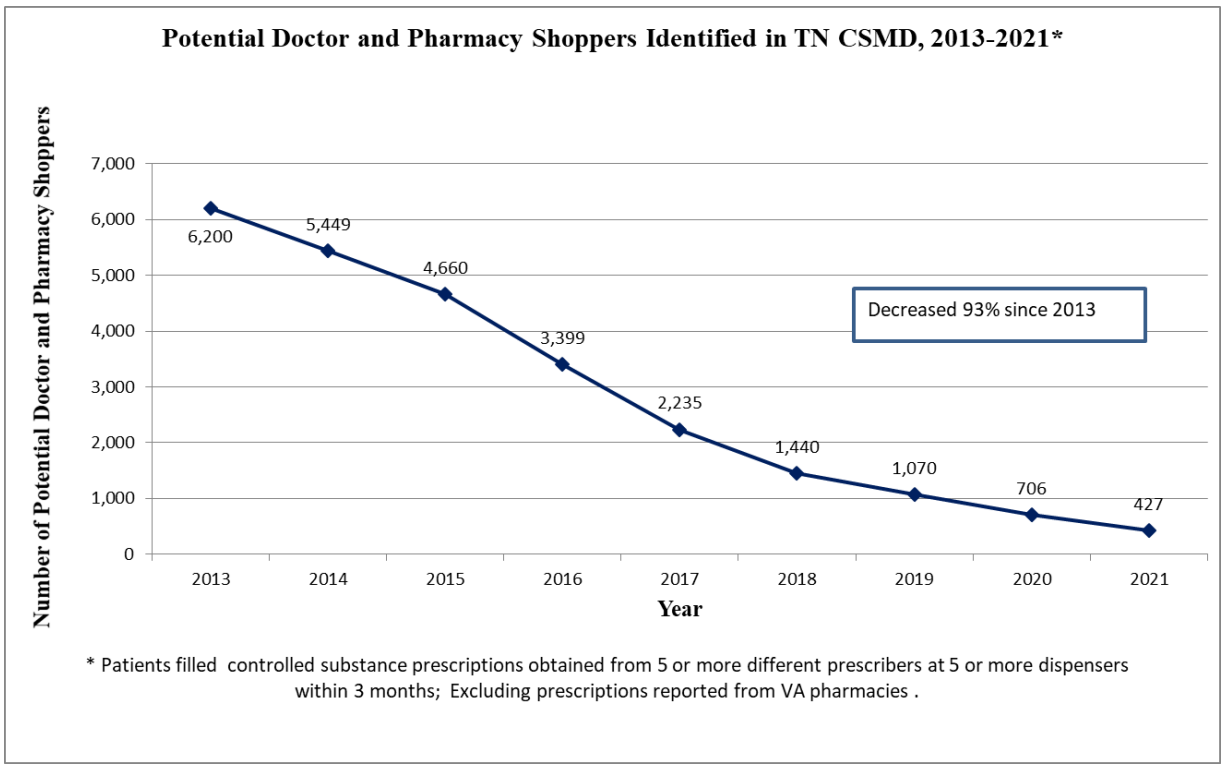


Number of Stimulant Prescriptions Dispensed among TN Patients and Reported to TN CSMD by Age Group, 2013-2021*									
Age Group (Year)	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
<10	207,367	207,387	202,371	196,612	186,474	175,806	172,811	153,553	149,340
10 - 19	468,980	478,690	491,850	503,289	496,240	482,718	475,198	424,896	423,766
20 - 29	273,175	282,848	297,190	303,049	300,928	290,496	278,360	275,478	288,547
30 - 39	318,464	337,712	362,049	379,320	402,849	411,080	414,830	431,092	461,916
40 - 49	293,584	312,528	329,742	346,621	365,723	369,679	374,150	380,334	399,193
50 - 59	209,080	226,173	237,150	245,093	254,161	257,182	263,994	271,022	285,399
60 - 69	83,125	95,223	103,553	111,240	118,587	122,020	127,578	130,952	136,576
70 - 79	15,425	17,884	19,389	21,679	24,540	26,986	29,502	31,099	33,573
80-119	3,703	3,983	3,928	3,838	3,917	4,208	4,399	4,214	4,153
Unknown	9	8	4	0	2	3	4	7	4
*** Excluding stimulant prescriptions reported from VA pharmacies.**									

Decline in Potential Doctor-Pharmacy Shopping

TDH has defined a potential doctor and pharmacy shopper as an individual visiting five or more prescribers and five or more dispensers in a 3-month period, referred to as 5-5-3 criteria. Within TN, there has been a 93% decrease of potential doctor and pharmacy shopping patients from 2013 to 2021.

Potential Doctor and Pharmacy Shoppers Identified in the CSMD, 2013-2021



Gateway Electronic Health Record (EHR)/Pharmacy Management System Clinical Workflow Integration

During 2021, CSMD has expanded the spread of the Gateway EHR/Pharmacy Management System integration project that started in 2020. The Gateway integration service allows healthcare providers the ability to view their patient's history of controlled substance prescriptions within their clinical application (EHR/Pharmacy Management System). This project integrates CSMD searches and Clinical Risk Indicators (CRI) into EHRs and pharmacy management systems clinical workflow. Prior to 2020, the prescribing boards for human patients and the Board of Pharmacy agreed to allow TDH to authorize funding for a two year CSMD workflow integration pilot project across the state. TDH received a Department of Justice's (DOJ) Bureau of Justice Assistance (BJA) grant to provide funding for a third year on this project that started in January 2022.

Independent of the TN statewide Gateway integration project, VHA clinical facilities continue to mature their implementation of Gateway in TN and across the United States. TN is proud to support the VHA's efforts to slow the spread of Substance Use Disorder (SUD) among veterans.

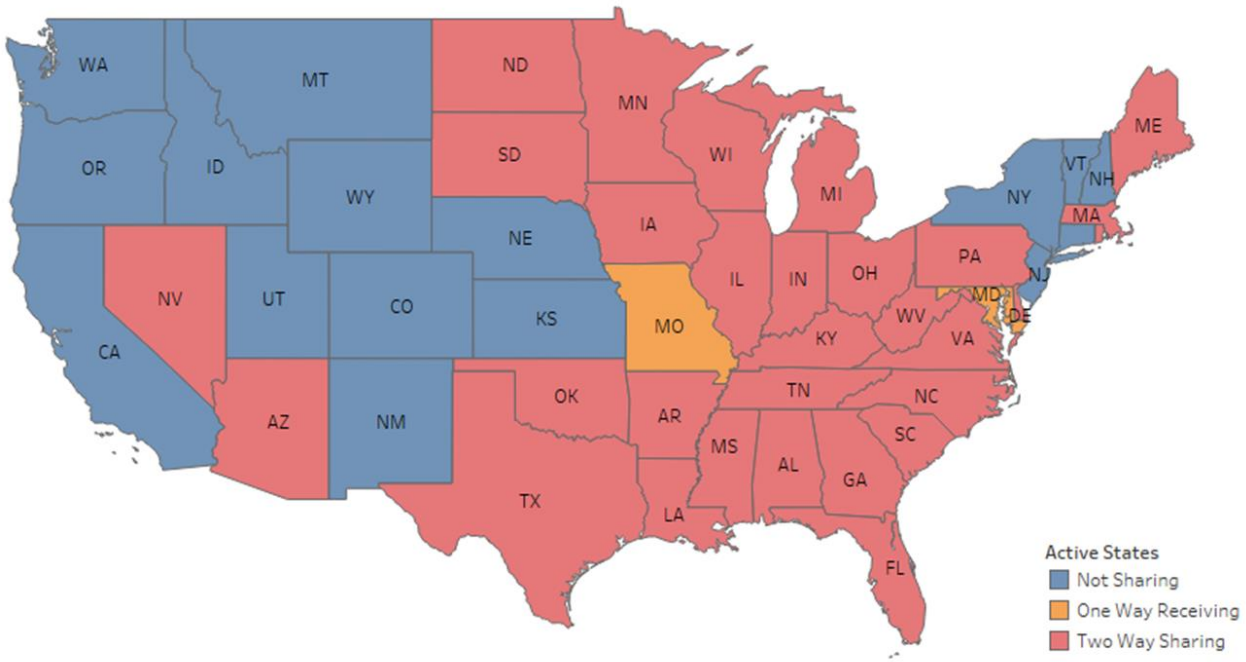
Database Metrics and Browser Recommendations

The CSMD team works diligently with the vendor to continue providing a stable environment for healthcare providers. The CSMD system uptime was 99.9% for 2021. One attribute of the CSMD system is the less than one-second response time when a patient request is initiated, given that the request does not include data from another state. As of June 15th, 2022, Microsoft will no longer be updating Internet Explorer. For healthcare providers to experience the best performance, the following browsers are recommended: Microsoft Edge, Safari, Chrome, or Firefox.

Increased Interstate Data Sharing

The CSMD program now shares data with many states in addition to the entire southeast United States. Each state or jurisdiction has unique regulations and requirements that require collaboration to share data to address regulatory compliance. The CSMD program utilizes, at no cost to state, the National Association of Boards of Pharmacy Prescription Monitoring Program InterConnect (PMPi) to allow TN to share data. The PMPi is a highly secure communications exchange platform that facilitates the transmission of PDMP data across jurisdictions to authorized requestors, while ensuring that each PDMP's data-access rules are enforced.

In 2021, TDH has connected the CSMD with RxCheck, an interstate data sharing and integration system developed with support from the BJA and designed to complement current CSMD activities. It is of no cost to jurisdictions or CSMD users and allows jurisdictions to have an additional option for querying prescription data across jurisdictions. RxCheck also provides functionality for integration with EHRs using nationally recognized interoperability standards. RxCheck is governed jointly by the Integrated Justice Information Systems Institute (IJIS), BJA, and a board of PDMP administrators in connected jurisdictions. Currently, BJA has made a commitment to fund RxCheck and support both the jurisdictions and governing body with training and technical support. In the coming year, TDH will be working closely to ensure successful data sharing with other states utilizing RxCheck complying with appropriate technical and administrative processes. TDH continues to work on a pilot focused on using RxCheck for EHR integration with CSMD data. The figure below provides a diagram of our partnerships with other jurisdictions:



Note: Tennessee receives data one way from Military Heath System, Maryland, and St. Louis County, Missouri

Security Measures

In order to ensure that only those individuals and entities authorized pursuant to the PSA of 2016 have access to the information contained in the database, the CSMD employs the following security measures:

- All entities and individuals who are authorized to access the database in accordance with Tenn. Code Ann. §§ 53-10-306(a)(1)-(6), and (13) must first undergo a registration process during which the CSMD validates their identifying credentials and generates a unique username with instructions to create a password. As of January 26, 2022, all healthcare practitioners registered with the database must maintain a valid e-mail address associated with their database user profile. For healthcare practitioner delegates, an additional approval from their supervising healthcare practitioner is required.
- Any access by a quality improvement committee, as defined in Tenn. Code Ann. §§ 63-1-150 and 68-11-272, must strictly adhere to the requirements of Tenn. Code Ann. §§ 53-10-306(a)(9) and (10). Notably, the quality improvement committee cannot share any information obtained from the database.
- Before the Office of Inspector General, the Medicaid Fraud Control Unit, and the TennCare personnel identified in Tenn. Code Ann. § 53-10-306(a)(7) are given access to the database, they must submit a written request approved by their supervisor. The CSMD staff verifies each requester's credentials before issuing a unique, individual username with instructions to create a password. TDH and the CSMD Committee have partnered with TennCare to provide data sets which are subject to different security protocols as required by TennCare's agreements with various vendors. The data sets provided to TennCare are defined data sets limited to TennCare recipients.
- The CSMD staff has oversight of the data accessed, updated, or viewed by all users through the creation of an audit trail for each user.

- Law enforcement personnel, as defined by Tenn. Code Ann. § 53-10-302, has two methods to obtain information sent to, contained in, and reported from the database in accordance with Tenn. Code Ann. § 53-10-306(a)(11). The first method is a paper process whereby law enforcement personnel submits a written request with a case number corresponding to a criminal investigation. Before releasing any information, CSMD staff confirms that the requester is on the approved list as required by Tenn. Code Ann. § 53-10-306(a)(11). The second method is via electronic registration and approval. Once electronically registered, law enforcement personnel can obtain the information directly from the CSMD web portal. Both methods create an audit trail.
- Requests for access by persons other than those individuals outlined in Tenn. Code Ann. §§ 53-10-306(a)(1)-(7), (9), and (10) are reviewed by Board of Pharmacy staff and TDH's Office of General Counsel (OGC) to determine whether their requests should be granted. The OGC also reviews all subpoenas and court orders to ensure compliance with the law before releasing any information from the database
- In 2016, TDH expanded its internal access systems as part of the creation of the TDH IDS, which is designed to efficiently provide usable data access to a limited number of authorized users for various TDH data systems. The security and access related to this project is handled by various partners including Strategic Technology Solutions (STS), OGC, and OIA, in conjunction with oversight from the participating data source programs. The TDH IDS, which maintains certain CSMD data, resides in the State Data Center and is behind the State network firewalls that prevents any access outside of the state firewall without the proper approved connection through the state's Virtual Private Network. All data on these servers are encrypted.
- Currently, only administrators and a select group of individuals who have been granted authority by the CSMD program have access to the CSMD data made available through the TDH IDS. Authorized users of the IDS have to receive permission from the Director of the OIA and the Director of the TN CSMD Program to access CSMD data from the TDH IDS.

TDH Grants Update

TDH has been awarded a number of federal grants aimed at building capacity for public health surveillance and prevention of drug overdose. Recognizing the important role that prescribers and PDMPs play in both surveillance and prevention activities, most of these grants have included activities intended to enhance the CSMD directly or to better utilize CSMD data in prevention, planning, and enforcement. The following active grants support enhancements to the CSMD or analytics projects using data from the CSMD:

- In 2017, TDH received a CDC grant to enhance surveillance of opioid overdoses, called Enhanced Surveillance of Opioid Overdose in States (ESOOS). For this grant, TDH worked to expand nonfatal overdose data gathering from TDH's syndromic surveillance system, the Electronic Surveillance System for the Early Notification of Community Epidemics (ESSENCE). TDH also gathered and submitted expanded information on fatal overdoses in collaboration with the Office of the State Chief Medical Examiner. These fatal overdose data were submitted to a nationwide system called the State Unintentional Drug Overdose Reporting System (SUDORS). SUDORS data submitted under the ESOOS grant contain detailed information on toxicology and scene investigation for opioid overdose deaths. TN SUDORS is a part of the National Violent Death Reporting System, also sponsored by the CDC.
- In 2018, TDH received two grants from the DOJ's BJA Comprehensive Opioid Abuse Program (COAP). One of these grants fund work to connect the CSMD to RxCheck and partially supported predictive

modeling of overdose risk, conducted by VUMC. The other grant funds the integration of EMS overdose data into TDH's IDS, expands overdose and drug surveillance to other substances of concern, and continues the interagency collaborations started under the 2016 Hal Rogers funding. These grants have received several no-cost extensions and are expected to be completed in 2022.

- In 2019, the CDC combined activities from previous opioid-focused grants into a single, more expansive grant opportunity called Overdose Data to Action (OD2A). In addition to the surveillance activities undertaken for the ESOOS grant and the CSMD-related data work for Prevention for States (PfS) funding, the OD2A grant expands the funding available for overdose prevention activities across the state. The TDH Overdose Response Coordination Office has worked closely with regional and metro health departments across the state to start or expand local prevention activities, academic detailing, opioid overdose education for prescribers, and treatment resource locators. The CDC has extended funding for these activities for an additional year, and the grant is anticipated to last through 2023.
- In 2020, TDH was awarded a three year opportunity under the FY2020 Hal Rogers grant to continue enhancements to the CSMD and related data systems. These funds are being used in a number of ways with the first to extend the amount of time that TDH can offer support for Gateway workflow integration to CSMD users. Second to expand the use of RxCheck for EHR integration. Third to improve the system for receiving drug shipment data from distributors and wholesalers. And lastly this grant continues and expands integration of data from the TBI with TDH data.

TDH Recommends the Following Approaches to the Prescription Drug Misuse and Abuse

1. Prevent opioid and other drug misuse and addiction through an effective and comprehensive approach to prevention.
    - Implement effective public education/awareness campaigns.
    - Ensure that schools and communities implement effective prevention initiatives.
    - Reduce availability of and accessibility to addictive opioids and other controlled substances.
    - Utilize PDMPs.
    - Participate in Safe Prescribing Initiatives for pain management.
    - Utilize the TN Chronic Pain Guidelines located on the TDH website at: https://www.tn.gov/content/dam/tn/health/healthprofboards/pain-management-clinic/ChronicPainGuidelines.pdf
    - Support and maximize use of Prescription Take-Back Programs and related options.
    - Continue to regulate Pain Management Clinics. (See most recent report on Prescription Drug Abuse and Pain Management Clinics at https://www.tn.gov/content/dam/tn/health/program-areas/reports_and_publications/2020-Pain-Management-Clinic-Annual-Report.pdf)
2. Reduce overdose deaths and other harmful consequences through harm reduction strategies.
    - Increase community access to naloxone through co-prescribing.
    - Implement Syringe Exchange Programs (SEPs).
    - Monitor and react rapidly to emerging drug trends.
3. Improve opioid addiction treatment through an effective and comprehensive approach.
    - Increase treatment capacity.
    - Increase availability of MAT.

- Provide comprehensive recovery support services following treatment.
- Work to alleviate the stigma associated with seeking treatment for SUD.

In summary, the drug epidemic continues to have a major impact on the State of TN, taking more lives than motor vehicle accidents and suicides combined. Real, effective solutions will require a shift in the way TDH thinks and responds to SUDs, including our abilities to prevent, treat, destigmatize, and advance harm reduction through the dissemination of evidence-based practices.

Conclusion

The CSMD is reliably available and provides a powerful tool to allow healthcare providers access to a patient's history of controlled substance prescriptions before making a decision about prescribing or dispensing high risk medications. The information in the CSMD continues to be used to improve patient safety and quality of care.

The epidemic of opioid misuse and abuse has continued to change. More people died of drug overdoses in 2020 than ever before. Overdose deaths involving illicit opioids increased substantially from 2019 to 2020. The number of overdose deaths in which fentanyl was involved increased 85%. At least 18% of overdose decedents had a nonfatal overdose in the year before their death. Therefore, TDH is working hard to better understand data from various reporting systems and work collaboratively with other agencies to improve prevention opportunities. Data from the CSMD are at the center of numerous innovative efforts to use TDH data to understand and predict overdose risk, educate patients and prescribers, decrease inappropriate prescribing, and improve access to treatment.

A multi-pronged approach, including prevention of exposure to opioids and other controlled substances, early diagnosis and treatment of SUD, and the life-saving work of law enforcement to reduce availability of illicit addictive substances, are all needed to turn the tide. Strong actions are needed most acutely at the community level, but also at the state and federal level.

TDH would like to provide a special thanks to the current and past members of the legislature, the CSMD Committee, and the leadership of other federal and state agencies as we continue to work together in preventing harm to the public health from the drug epidemic.

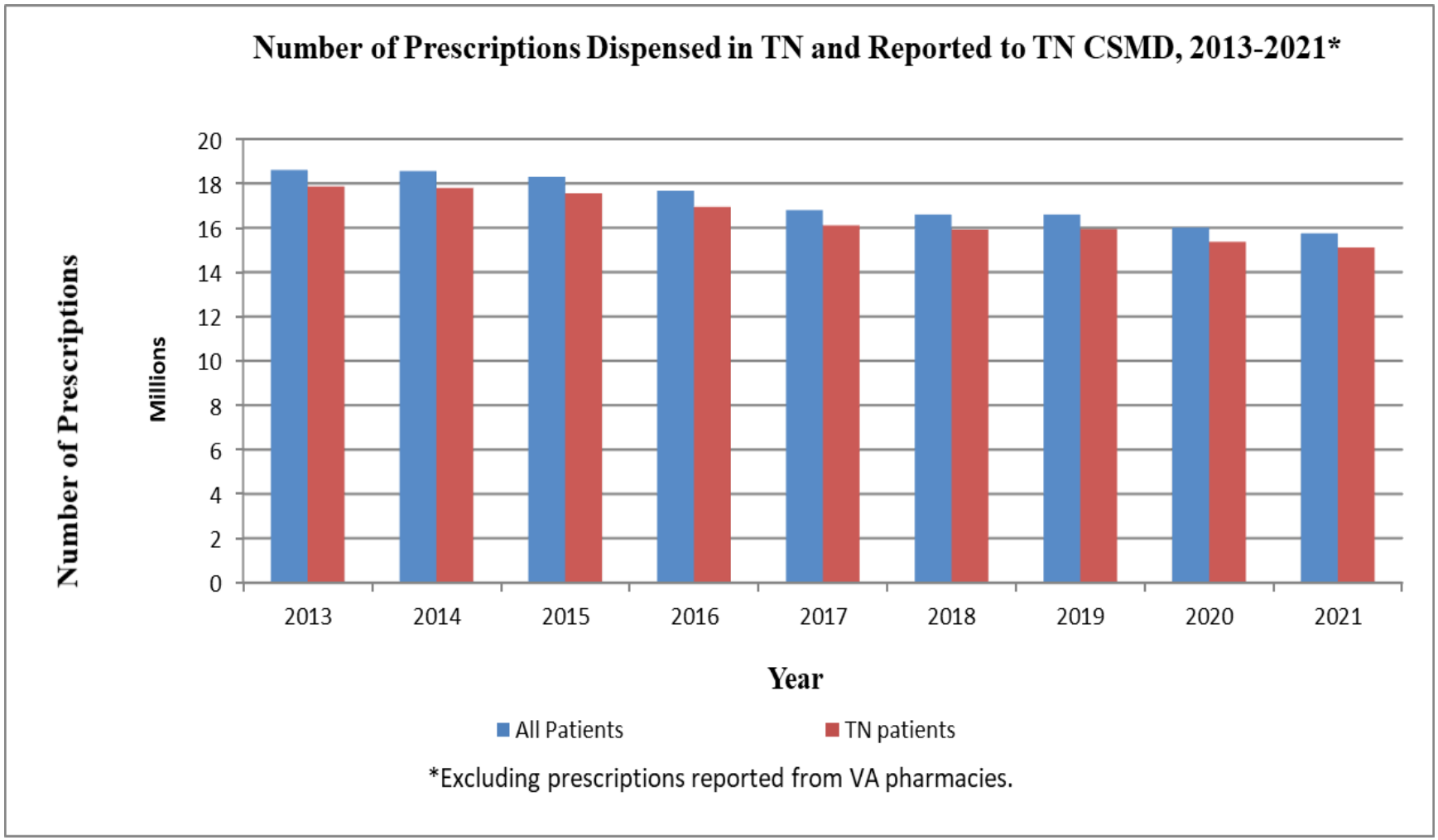
2021 Members of the CSMD Committee

Member Name	Board
Melanie Blake, M.D.	Board of Medical Examiners
Robert Caldwell, D.M.D.	Board of Dentistry
Amber Wyatt, APRN	Board of Nursing
Tonya Reynoldson, O.D.	Board of Optometry
Shant Garabedian, D.O.	Board of Osteopathy
Adam Rodgers, D.Ph.	Board of Pharmacy
Bhekumuzi Khumalo, D.P.M.	Board of Podiatry
Robert Simpson, D.V.M.	Board of Veterinary Medical Examiners
Brett Reeves, PA-C	Board of Physician Assistants
Robert Ellis	Public Member Board of Medical Examiners
Jake Bynum	Public Member Board of Pharmacy

Appendix

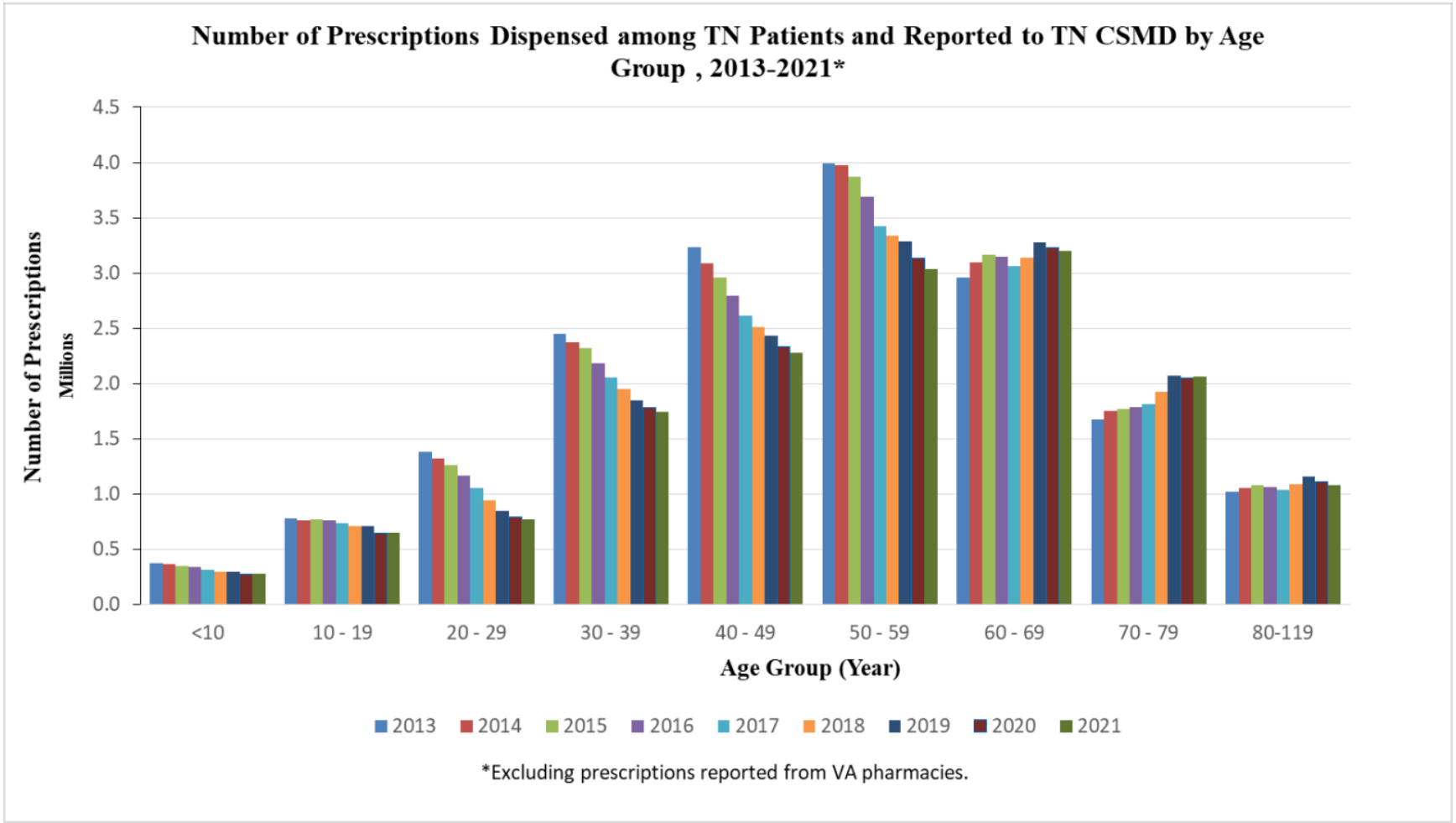
The CSMD data used for this report were downloaded on January 8, 2022. MME calculations were only limited to the opioid products that were listed in CDC's MME conversion tables from 2011 to 2021. The CDC has adjusted certain drug conversion factors over time for various reasons. If a drug had different MME conversion factors in different version tables, the data analysis provided through 2021 used the conversion factor provided in the latest version of the CDC table. Therefore, different MME results for a similar indicator would be expected for CSMD annual reports published in previous years. Prescriptions and MME identified for TN patients were based on a patient's state listed as 'TN' or state Federal Information Processing Standard (FIPS) code of '47' on the patient's address associated with a prescription. Otherwise, the patient was identified as a non-TN patient. Classification of controlled substances was based on combination of CDC tables and 2021 IBM Micromedex Red Book Select file. If a drug in the CSMD was not classified, the drug was classified as 'other' in this report. Due to improvements in the classification of prescriptions reported to the CSMD, some totals in this year's report may appear larger than in previous years. In particular, stimulant counts have increased with the addition of Schedule III and IV stimulants, and gabapentin prescriptions are now classified separately. These prescriptions were previously classified in the 'other' category. Please note that human and animal prescription data are included in this report as it relates to the data analysis through 2021.

Number of Prescriptions Dispensed in TN and Reported to CSMD, 2013-2021



Number of Prescriptions Dispensed in TN and Reported to TN CSMD, 2013-2021*				
Year	**All Patients**	**Change (%)**	**TN Patients**	**Change (%)**
2013	18,606,177	-	17,857,210	-
2014	18,558,634	-0.3	17,793,122	-0.4
2015	18,294,374	-1.4	17,550,671	-1.4
2016	17,664,744	-3.4	16,943,397	-3.5
2017	16,796,401	-4.9	16,102,013	-5.0
2018	16,594,057	-1.2	15,909,756	-1.2
2019	16,597,429	0.0	15,934,427	0.2
2020	16,003,440	-3.6	15,363,464	-3.6
2021	15,749,765	-1.6	15,109,568	-1.7
***Excluding prescriptions reported from VA pharmacies.**				

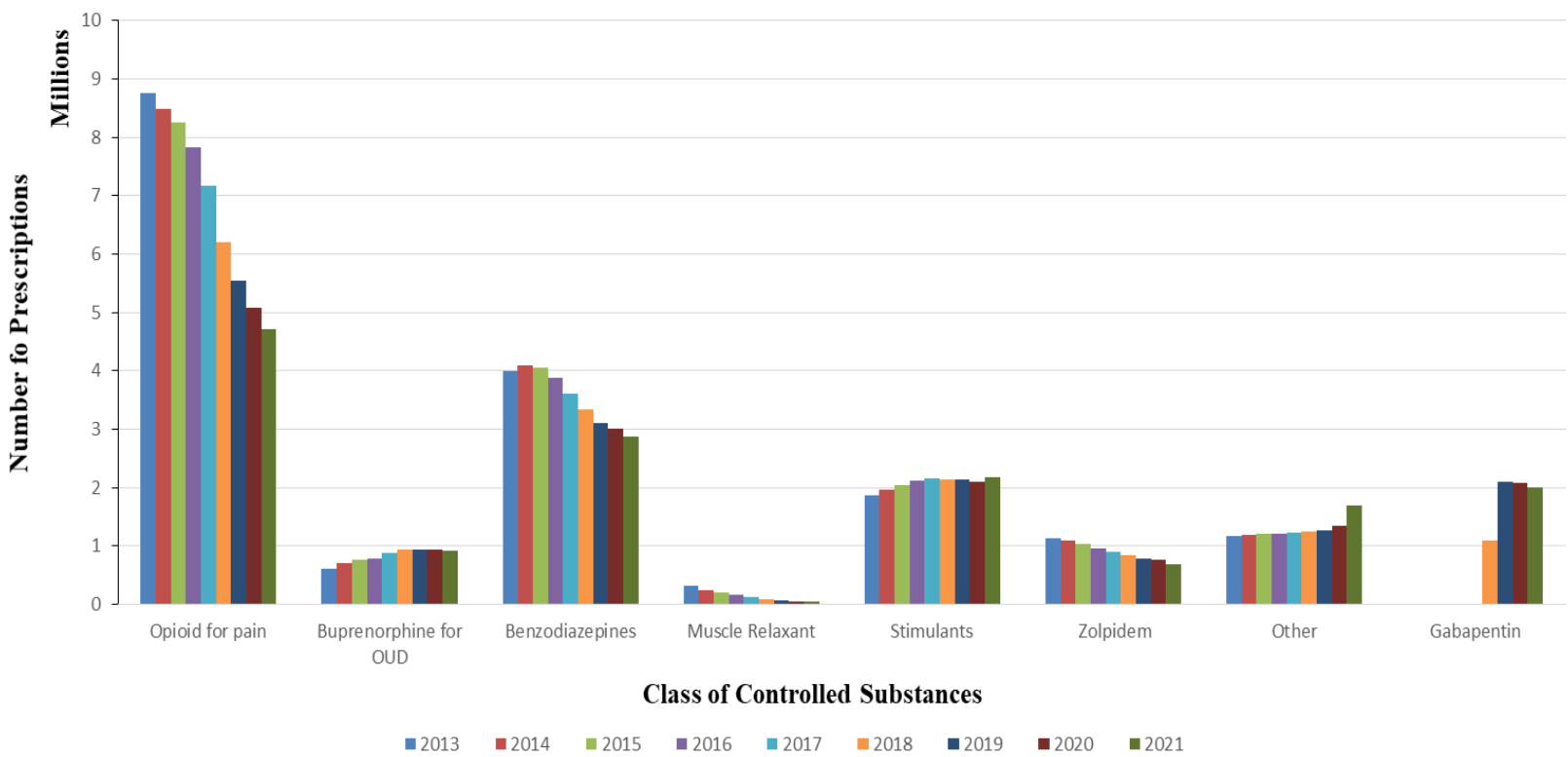
Number of Prescriptions Dispensed among TN Patients and Reported to CSMD by Age Group, 2013- 2021



Number of Prescriptions Dispensed among TN Patients and Reported to TN CSMD by Age Group, 2013-2021*									
Age Group	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
<10	375,828	366,841	352,430	340,175	318,980	299,804	302,673	279,970	280,061
10 - 19	776,549	764,455	768,991	766,032	735,199	708,431	714,829	649,558	651,329
20 - 29	1,379,464	1,320,232	1,262,923	1,164,877	1,053,154	942,332	850,773	795,031	773,010
30 - 39	2,446,511	2,373,759	2,318,648	2,186,486	2,050,686	1,953,670	1,845,419	1,779,821	1,747,994
40 - 49	3,234,474	3,090,611	2,957,643	2,797,368	2,611,721	2,513,146	2,435,026	2,330,526	2,276,118
50 - 59	3,989,674	3,972,466	3,875,230	3,686,648	3,425,299	3,335,782	3,282,823	3,137,226	3,037,514
60 - 69	2,957,310	3,093,087	3,162,466	3,147,302	3,059,883	3,140,582	3,272,933	3,228,714	3,199,610
70 - 79	1,673,696	1,751,630	1,772,719	1,787,550	1,811,656	1,926,250	2,073,981	2,049,873	2,065,545
80-119	1,023,675	1,060,020	1,079,585	1,066,954	1,035,411	1,089,726	1,155,731	1,112,376	1,078,102
Unknown	29	21	36	5	24	33	239	369	285

***Excluding prescriptions reported from VA pharmacies**

Number of Prescriptions Dispensed and Reported to TN CSMD by Class of Controlled Substances, 2013 - 2021

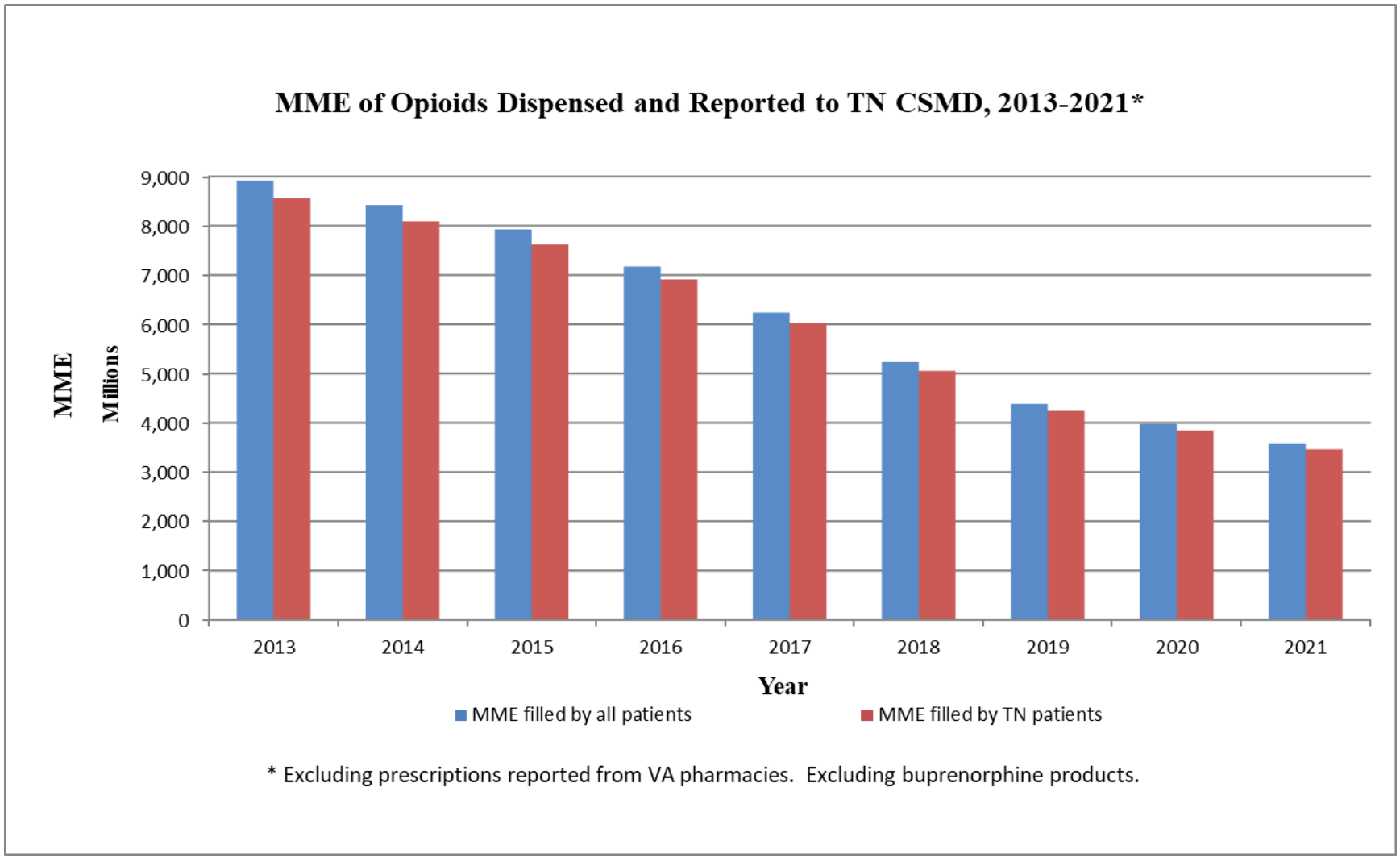


* 1) The class of controlled substances was defined based on a combination of CDC document and RedBook file. If a drug was not in the document, the drug was grouped into the 'Other'; 2) Excluding prescriptions reported from VA pharmacies. 3) Gabapentin was classified as controlled substance by TN law in July 1, 2018.

Number of Prescriptions Reported to TN CSMD by the Class of Controlled Substances, 2013-2021*								
Year	**Opioid for Pain**	**Buprenorphine for Opioid Use Disorders**	**Benzodiazepines**	**Muscle Relaxants**	**Stimulants**	**Miscellaneous Zolpidem**	**Other**	**Gabapentin**
2013	8,758,170	605,683	3,987,401	322,082	1,872,912	1,133,869	1,176,136	-
2014	8,493,021	714,096	4,101,457	250,312	1,962,436	1,085,124	1,186,487	-
2015	8,245,295	764,702	4,055,961	208,061	2,047,226	1,029,159	1,199,401	-
2016	7,819,633	783,230	3,887,510	159,852	2,110,741	965,354	1,213,493	-
2017	7,163,114	876,109	3,612,370	117,483	2,153,421	901,002	1,219,323	-
2018	6,208,842	939,672	3,338,861	88,395	2,140,178	839,975	1,251,758	1,102,075
2019	5,540,288	939,330	3,099,427	65,313	2,140,826	786,623	1,259,559	2,103,061
2020	5,076,305	931,172	3,008,785	52,693	2,102,647	762,181	1,341,805	2,087,876
2021	4,721,612	918,988	2,876,905	39,631	2,182,467	681,274	1,688,639	2,000,052

***The class of controlled substances was defined based on a combination of CDC document and RedBook file. If a drug was not identified, the drug was grouped into 'Other'.**
Excluding prescriptions reported from VA pharmacies.
Gabapentin was classified as controlled substance by TN law in July 1, 2018.

MME of Opioids Dispensed and Reported to TN CSMD, 2013-2021



MME of Opioid Dispensed and Reported to TN CSMD, 2013-2021*				
Year	**MME Filled by All Patients**	**Change (%)**	**MME Filled by TN Patients**	**Change (%)**
2013	8,914,404,682	-	8,565,567,915	-
2014	8,422,275,369	-5.5	8,091,356,384	-5.5
2015	7,925,677,639	-5.9	7,624,639,531	-5.8
2016	7,171,949,883	-9.5	6,909,837,241	-9.4
2017	6,238,850,245	-13.0	6,018,979,910	-12.9
2018	5,233,845,310	-16.1	5,055,586,256	-16.0
2019	4,382,002,811	-16.3	4,242,156,443	-16.1
2020	3,972,795,679	-9.3	3,839,619,279	-9.5
2021	3,581,720,526	-9.8	3,460,202,894	-9.9

*** Excluding prescriptions reported from VA pharmacies.**
Excluding Buprenorphine products.

MME for Long-Acting Opioids Reported to the TN CSMD, 2013-2021

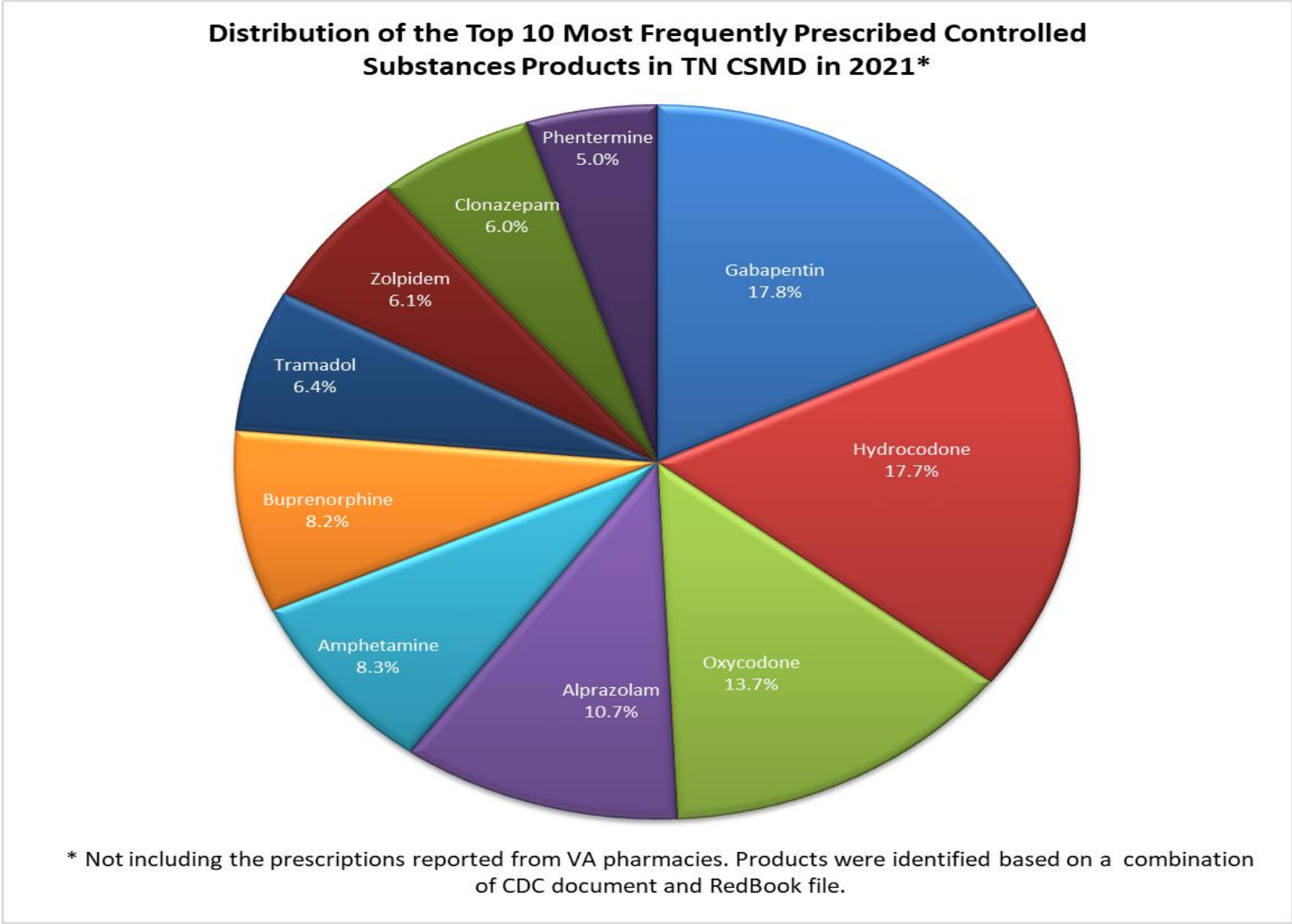
MME for Long-Acting Opioids Dispensed in TN and Reported to TN CSMD, 2013-2021*			
Year	**All patients**	**TN patients**	**Change among TN patients (%)**
2013	3,238,223,144	3,106,178,957	-
2014	2,924,800,617	2,806,117,935	-9.7
2015	2,552,378,561	2,454,223,718	-12.5
2016	2,125,042,337	2,046,014,999	-16.6
2017	1,630,483,307	1,569,076,216	-23.3
2018	1,208,055,035	1,164,931,220	-25.8
2019	909,734,071	878,420,518	-24.6
2020	739,764,916	711,708,569	-19.0
2021	590,586,845	566,834,559	-20.4

***The classes of controlled substances were defined based on a CDC document.**
Excluding prescriptions reported from VA pharmacies.
Excluding buprenorphine products.

MME for Short-Acting Opioids Reported to the TN CSMD, 2013-2021

MME for Short-Acting Opioids Dispensed in TN and Reported to TN CSMD, 2013-2021*			
Year	**All patients**	**TN Patients**	**Change among TN Patients (%)**
2013	5,676,168,895	5,459,376,630	-
2014	5,497,220,174	5,284,995,017	-3.2
2015	5,373,118,245	5,170,243,511	-2.2
2016	5,046,757,654	4,863,684,218	-5.9
2017	4,608,240,119	4,449,801,608	-8.5
2018	4,025,657,270	3,890,554,305	-12.6
2019	3,472,147,716	3,363,647,416	-13.5
2020	3,232,935,322	3,127,849,067	-7.0
2021	2,991,063,195	2,893,329,045	-7.5
***The classes of controlled substances were defined based on a CDC document. Excluding prescriptions reported from VA pharmacies. Excluding buprenorphine products.**			

Distribution of the Top 10 Most Frequently Prescribed Controlled Substance Products in the CSMD for 2021



Acronyms

Bureau of Justice Assistance	BJA
Centers for Disease Control and Prevention	CDC
Comprehensive Opioid Abuse Program	COAP
Controlled Substance Monitoring Database	CSMD
Controlled Substance Monitoring Database Committee	CSMD Committee
Department of Justice	DOJ
Drug Overdose Reporting	DOR
Electronic Health Record	EHR
Electronic Surveillance System for the Early Notification of Community Epidemics	ESSENCE
Emergency Medical Services	EMS
Enhanced Prescriber Report	EPR
Enhanced Surveillance of Opioid Overdose	ESOOS
Federal Information Processing Standard	FIPS
Integrated Data System	IDS
Integrated Justice Information Systems	IJIS
Medication-Assisted Treatment	MAT
Morphine Milligram Equivalents	MME
Neonatal Abstinence Syndrome	NAS
Office of Informatics and Analytics	OIA
Overdose Data to Action	OD2A

Physician Assistant Certified	PA-C
Prescription Monitoring Program InterConnect	PMPi
Prescription Drug Monitoring Program	PDMP
Prevention for States	PfS
Prescription Safety Act	PSA
Syringe Exchange Programs	SEP
State Unintentional Drug Overdose Reporting System	SUDORS
Substance Use Disorder	SUD
Tennessee	TN
Tennessee Bureau of Investigations	TBI
Tennessee Department of Health	TDH
Tennessee Department of Mental Health and Substance Abuse Services	TDMHSAS
Vanderbilt University Medical Center	VUMC
Veterans Health Administration	VHA

Tennessee Controlled Substance Monitoring Database
Director, Tennessee Controlled Substance Monitoring Database
665 Mainstream Drive, 2nd Floor Nashville, Tennessee 37243
https://www.tn.gov/health/csmd/