

TOXICOLOGY & NEVADA'S OVERDOSE SURVEILLANCE SYSTEM

Needs Assessment & Recommendations

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Contents

Preface	4
Introduction	4
Methods	12
Results	12
Recommendations	19

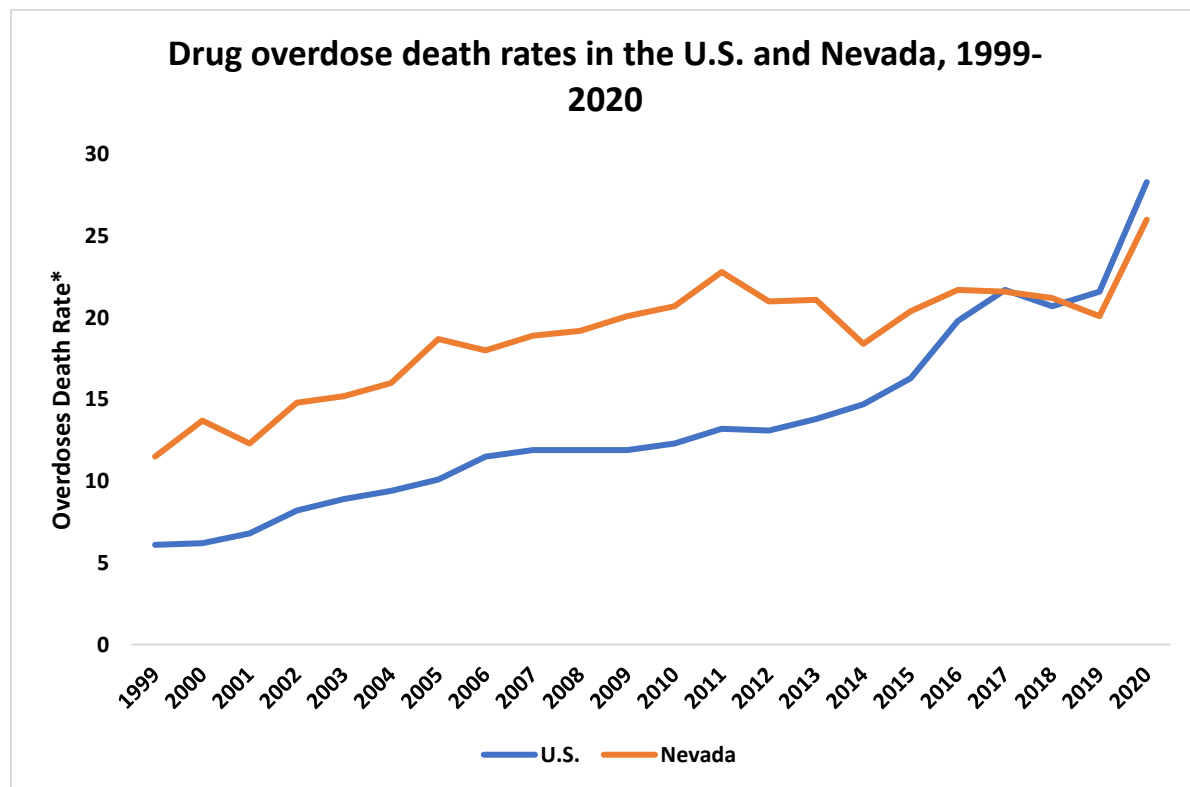
Preface

This needs assessment was conducted in response to CDC’s Overdose Data to Action (OD2A) grant requirement, for all OD2A recipient states to conduct a Toxicology Needs Assessment. This assessment includes findings related to the need for a state-level toxicology lab that can test toxicology samples (non-criminal samples) and forensic toxicology (specific to criminal investigations). Additionally, this assessment includes opportunities for ante-mortem testing.

Introduction

As the opioid crisis has evolved, it can be outlined by three distinct waves. The first wave was an increase in deaths related to prescription opioids due to an increase in prescribing and use, the second wave was an increase in illicit opioid overdose deaths, primarily from heroin, and the third wave was a rise in synthetic opioids such as fentanyl, resulting in an increase of fentanyl-related overdose deaths due to rampant adulteration of drug supplies. The illicit substance landscape is ever-changing as fentanyl can be found in a variety of drugs such as heroin, counterfeit pills, and cocaine, resulting in polysubstance overdose (CDC, 2021a). Nevada has historically had a higher rate of overdose deaths compared to the national rate up until 2018, depicted in [Figure 1](#).

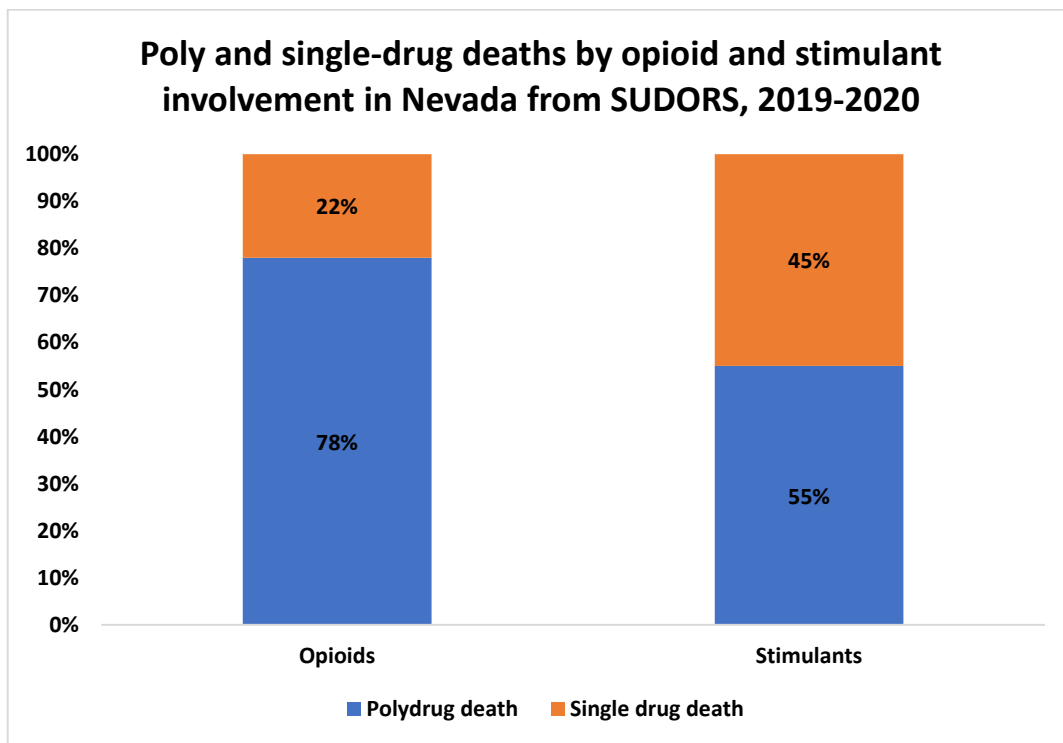
Figure 1 - Drug Overdose Death Rates in the U.S. & Nevada (2019-2020)



Data Source: CDC Wonder (1999-2020).
*Age-adjusted mortality rates per 100,000.

Polysubstance use and exposure increase the chance of mortality. Exposure can either be intentional or unintentional. Mixing of prescription opioids and illicitly manufactured fentanyl can slow down breathing and induce medical conditions such as cardiac arrest, ultimately leading to death. Mixing of opioids and stimulants are even more unpredictable, by either enhancing the effect of one drug or masking the other, which can result in additional drugs ingested (CDC, 2022). Polysubstance use has been reported in about nearly 50% of overdose deaths in recent years (O'Donnell et al., 2020). Using data that was collected through the State Unintentional Drug Overdose Reporting System (SUDORS), it was found that 1 in 10 overdose deaths involved heroin and a psychostimulant, 1 in 11 overdose deaths involved prescription opioids and benzodiazepines, and 1 in 12 overdose deaths involved benzodiazepines and fentanyl in the State of Nevada (Thomas, 2021). In 2020, 60% of drug overdoses of unintentional/undetermined intent in Nevada involved two or more substances. As depicted in [Figure 2](#), polysubstance use accounts for 55% of overdose deaths when ingesting stimulants and 78% when ingesting opioids.

Figure 2 - Poly and Single-drug Deaths by Opioid and Stimulant Involvement in Nevada (2019-2020)

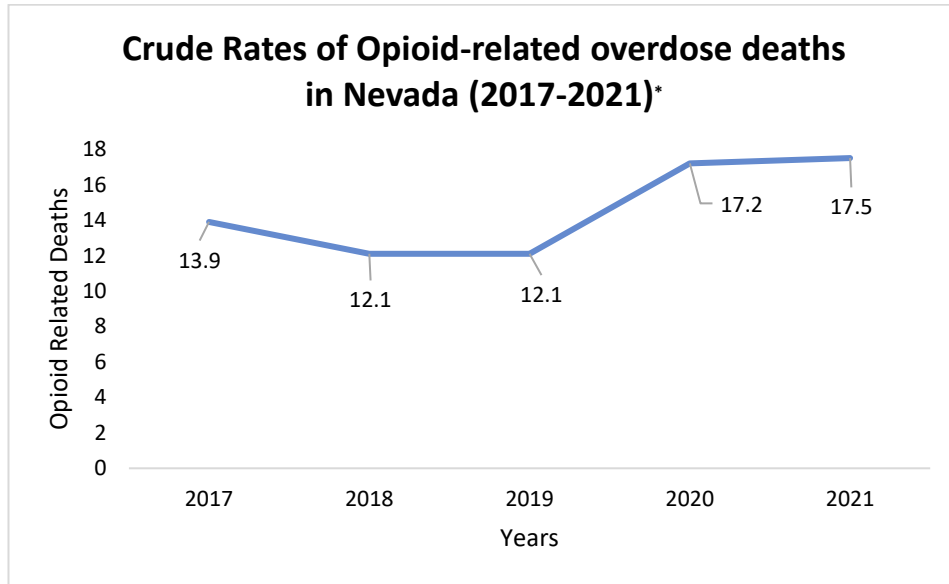


Drug overdose death rates in the U.S. and Nevada, 2019-2020

As depicted in [Figure 3](#), the increase of opioid-related overdose deaths in Nevada increased in the last five years. After an initial drop in 2018, there was a 5.1% increase in opioid-related overdose deaths from 2019 to 2020. There was a total increase of 25% in opioid related deaths in the last five years. Similarly, counts and rates of opioid-related emergency department (ED) visits also increased in the last five years as depicted in [Figure 4](#). Like overdose deaths, a small

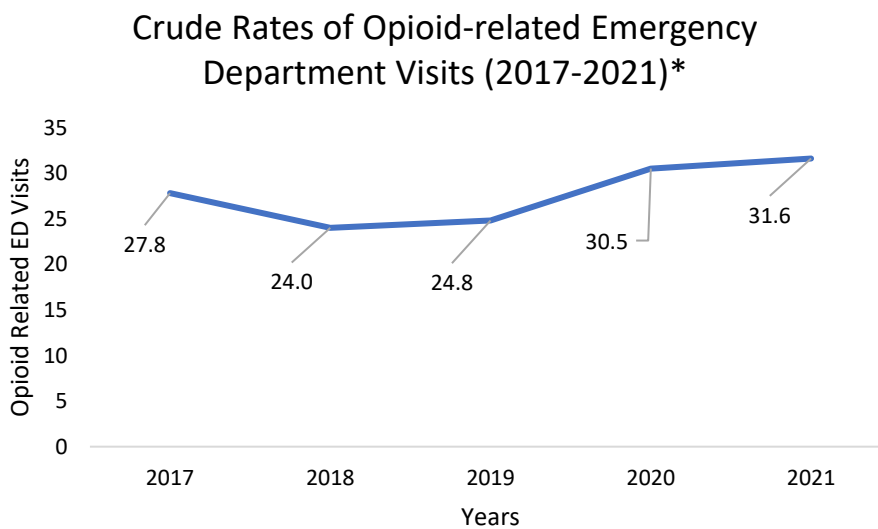
decrease occurred followed by a 5.7% increase in opioid-related overdose ED visits from 2019 to 2020 (Nevada Department of Health and Human Services, Office of Analytics, 2022). Of note, these numbers only account for incidents that used ED services. Individuals that overdose on opioids may refuse EMS transport to hospitals, which may underestimate the true burden of overdose data (Bergstein et al., 2021). Additionally, fentanyl analogs have become increasingly more prevalent in returned syringe programs in other states which likely indicates that opioid-related overdoses are expected to increase nationwide (Giltner et al., 2022).

Figure 3 - Crude Rates of Opioid-related Overdose Deaths in Nevada (2017-2021)



*Crude rate per 100,000

Figure 4 - Crude Rates of Opioid-related Emergency Department Visits (2017-2021)



*Crude rate per 100,000

Fentanyl adulteration is no longer limited to heroin and can be found in multiple drugs (cocaine, pressed pills, etc.). As new fentanyl analogs enter the drug market, detection becomes increasingly difficult as standard testing relies on established molecule libraries. The true extent of the synthetic opioid monitoring is underappreciated due to the lack of routine monitoring and the possibility of cases not being reported due to new analogs ingested (Armenian et al., 2018).

To handle the emerging crisis of fentanyl, states' testing systems must be adaptable to keep up with the ever-changing illicit drug market. Nevada does not have a statewide toxicology lab^a (Vanlaar et al., 2020). The state is supported by two county labs (Washoe County Sheriff's Office and Las Vegas Metro Police Department) and one city lab (housed in the Henderson Police Department). In addition to their jurisdictions, these labs serve the rest of the rural counties in the state. Of note, these labs are specialized in forensic toxicology. This type of toxicology is specific and used in support of criminal investigations and not public health surveillance. The Coroner and Medical Examiner (CME) for Clark and Washoe County utilize National Medical Services Labs (NMS) for toxicology analysis of postmortem (after death) samples.

There may be a missed opportunity for real time data surveillance on samples that have already been collected for forensic purposes. Due to bandwidth obstacles, impaired driving blood samples are not tested for drugs at one lab if there was an initial positive test for alcohol, while both drugs and alcohol are tested at another lab regardless of the initial alcohol test result. The lack of standardization can potentially be undercounting the prevalence of opioid use in impaired drivers, given that poly-drug use has risen in the past decade (Vanlaar et al., 2020). This is a missed opportunity for ante-mortem testing ("before death").

In Nevada, a death certificate is documented into an electronic system known as the Electronic Death Registry System (EDRS). Information that was collected in the Overdose Death Investigation Survey found that financial barriers in finalization of death certificates resulted in a two-to-three-month lag time. Additional barriers in processing includes delay due to ancillary tests, mandatory follow up investigations, and individuals reporting that EDRS is not "not user friendly" has resulted in delays in processing cases that can go months without finalization on EDRS. These types of delays and obstacles make using death certificate data difficult to plan for timely interventions.

By the time post-mortem data comes back, the illicit drug landscape may have changed and interventions that were planned may no longer be appropriate. Ante-mortem testing can provide accurate data in real time, can help plan appropriate interventions and can arise from testing that is currently conducted. Ante-mortem testing and mandatory reporting across the state could result in faster delivery of data when compared to often delayed mortality data.

^aIn August of 2022, the Nevada Legislative Interim Finance Committee appropriated funds to support the expansion of the existing Nevada State Public Health Lab. This expansion will include capacity to support toxicology testing capacity for the State of Nevada.

Nevada's Surveillance Systems

Only a few states have a single cohesive reporting system. These systems have data on fatal and non-fatal drug overdoses, controlled substance prescribing, and naloxone distribution. These types of systems strive to make overdose information available to allow for an appropriate community response (RIDOH, 2022). However, these states may not face the same funding issues or larger populations that other states face. The Nevada Overdose Data to Action Program (NV OD2A) is working to create a centralized data system for analysis and reporting of overdose data and information in Nevada. The NV OD2A Program is a CDC Cooperative Agreement housed in the Nevada Department of Health and Human Services (DHHS), Division of Public and Behavioral Health (DPBH), Office of Public Health Investigations and Epidemiology (OPHIE). The NV OD2A program is being administered at the University of Nevada, Reno in the School of Public Health Trudy Larson, M.D. Institute for Public Health Impact and Equity (Larson Institute). DHHS uses many data sets to depict Nevada's substance misuse and overdose risk. Many states, including Nevada, have access to similar data sources for substance misuse reporting. These sources are listed below.

Syndromic Surveillance

The hallmark of the CDC's Drug Overdose Surveillance and Epidemiology (DOSE) system is the use of standardized syndrome definitions suspected of all drugs, all opioid, heroin, and all stimulant overdoses (CDC, 2021b). Nevada DHHS uses hospital emergency room (ER) data to report on the suspected overdose morbidity in the state. This data comes from the National Syndromic Surveillance Program (NSSP). Nevada captures NSSP data from >90% of the state's emergency departments. The system collects de-identified information on patient chief complaints, ICD-10 codes at discharge, and other information. Although most diagnostic codes provide sufficient indication of a suspected overdose, any subset of diagnostic codes is less specific on which specific drug was taken. A free text field is called a "chief complaint" which represents the purpose of an ER visit. To be included as an overdose-related emergency department (ED) visit, records must include text indicating an overdose or poisoning and text indicating an involvement of a drug or a diagnostic code for opioid use or dependence (CDC, 2021b) Common misspellings are included in search terms to reduce any possible errors in misclassification. However, this data only reports events that require emergency services, which leaves unaccounted overdose events, such as events that do not involve emergency services and overdose events that are missing the necessary coding inputs in their medical record.

Syndromic surveillance is a decent measure for overdose morbidity as it provides close to real-time data from hospitals. The ability to collect and report data at this frequency gives public health officials information about emerging and persistent emergency health issues. The strengths of this system include having most data available within 24 hours and high percentage of utilization (>90% of hospitals report into the system). This system can also capture demographic information, which may be helpful in focusing interventions on specific populations. Conversely, there are some limitations. The first limitation being that the data system only captures overdoses that used the ED, which may underestimate the burden of drug overdoses in the community. The second limitation is that syndromic surveillance can

overestimate cases when compared to ED billing data, which can lead to conflicting data as visits are labeled as “suspect” due to a lack of a confirmatory drug test. The last limitation is that it is not standard practice for hospitals to do a urine drug screen or blood test to confirm substances. Many local hospitals may lack the ability to test for fentanyl derivatives or may only have the resources to complete a qualitative test and not quantitative. This means that the chief complaint ICD-10 codes that get reported as an overdose from a substance are only “suspected”.

Syndromic surveillance data is currently incorporated in NV OD2A’s monthly overdose surveillance reports and incorporated into the quarterly situational awareness reports which are sent to all Overdose Data Mapping Application Program (ODMAP) level one users and provided to other partners in ad-hoc reports.

Vital Records Data

Nevada was one of the first states in the U.S. to fully process death records electronically to help reduce lag time and improve documentation. The cause of death must be certified by any of the following: a physician, advanced practice registered nurse (APRN), physician’s assistant (PA), chief medical officer of where the hospital or institution the death occurred, or a pathologist who performed the autopsy. This process must be completed within 48 hours after being assigned as the certifier. The certifier is responsible to report the following:

- Date of death
- Time of death
- Social security number
- Cause of death, including approximate interval between time of onset and time of death
- If death was caused by a communicable disease
- If death was contributed to by tobacco
- “If female” section

The cause of death portion is meant to reflect their best medical opinion. (Electronic Death Registration System, 2018).

DHHS uses death certificate information from the EDRS to report on overdose mortality in the state. This source relies on ICD-10 codes. On average, the cause and manner of death are available 60-90 days after the death investigation and may take longer to be put in a useful format by state and local health departments. Another limitation is select ICD-10 codes group multiple opioids together, making it difficult to separate specific opioids that may have been attributed to deaths. In addition, complete toxicology and information about the circumstances preceding death are unavailable.

Nevada State Unintentional Drug Overdose Reporting System (SUDORS)

SUDORS uses death certificates and coroner/medical examiner reports (including post-mortem toxicology testing results) to capture detailed information on toxicology, death scene investigations such as route of administration and other risk factors that may have been associated with the overdose. These risk factors include any past substance use/misuse, if this person is on any current pain treatment, veteran status, homeless or recently released from

institution. The first half of the year (January to July) is reported before January of the following year and the second half of the year is reported by August. For case definitions, the decedent's place of residence was in Nevada and was assigned the following ICD-10 on their death certificate: X40-44 (unintentional drug poisoning) or Y10-Y14 (drug poisoning of undetermined intent) or a death classified as a drug overdose by a medical examiner/coroner. Limitations include the delay in reporting due to the time it takes to abstract data from multiple data systems. Data completeness is dependent on the information listed above that is documented at the time of death which leads to a large amount of missing data (Thomas, 2022).

ImageTrend

ImageTrend is a statewide surveillance system utilized by the state Emergency Medical Services (EMS) program. Serving our community since 1988, ImageTrend is responsible for collecting and analyzing important data for programs like EMS and Fire & Rescue. Some of this data includes critical care transportation documentation, hospital-based medical registries, overdose due to substance abuse, and integrated healthcare and community paramedicine. Providing real-time location, users can monitor these types of incidents in their community and provide aid in future crisis situations. Having this ability only assists data collection for ODMAP in the state's efforts to monitor trends of substance abuse. The software also provides learning tools for its users to familiarize themselves with access to the data collected by multiple agencies, provides learning webinars and video tips, and provides release notes from past medical service calls. One of the known limitations of ImageTrend stems from a linkage between EMS transport records and hospital care. For example, when EMS arrives on the scene of a medical emergency and the patient refuses hospital transport, the user may not see that data from hospital records and may only view records that are provided by the responding agency (ImageTrend, n.d.)

ODMAP

Nevada has been working to implement the High Intensity Drug Trafficking Areas (HIDTA) system with Overdose Data Mapping Application (ODMAP). The Attorney's General's Office has established an automated program interface between the Emergency Medical Service (EMS) Electronic Medical Record (ImageTrend) and ODMAP. This allows for ODMAP to be updated automatically. A program like ODMAP and ImageTrend will give the state, and local communities a snapshot of overdose morbidity and mortality rates.

Assessment Objectives

This needs assessment was conducted in response to CDC's Overdose Data to Action grant requirement, for all OD2A recipient states to conduct a Toxicology Needs Assessment. NV OD2A has conducted this needs assessment to understand how our toxicology testing could improve near real-time testing of overdose, how to better improve reporting to create an active surveillance system and the potential benefit of having a statewide toxicology lab. NV OD2A recognized the need to better understand the surveillance data collection system from a more holistic perspective and decided to expand on the CDC's assessment requirement. Nevada's project objectives include:

- Clarify and document the processes for data collection and reporting through various systems, specifically related to opioids and other substances implicated in overdose and death.
- Understand state and federal chain of command rules and regulations for drug testing
- Identify gaps in information within public health reporting systems.
- Identify opportunities to improve surveillance and data sharing toward the aim of reducing overdose and death and support a robust community response to overdose events.
- Identify critical issues and provide recommendations for next steps.

Key Questions

- What resource limitations affect organizations' ability to collect and disseminate data?
- What other barriers exist in sharing data with public health partners?
- What types of additional toxicology data can be used to inform Nevada's overdose risk?
How can that data be reported and collected?
- What data would your organization benefit from seeing? Who are the people/ organizations that would need access? Under what timeline?

Methods

A project team, consisting of two primary NV OD2A staff and one MPH internship student from the University of Arizona facilitated this project between April 2022 and October 2022. Focus groups, key informant interviews, and document reviews were used to fact-find and gather information about the existing toxicology and surveillance systems in Nevada. The project was completed in several phases, as outlined below.

Inquiry

- Document Review: Review existing documents that can inform the assessment.
- Literature Review: Review existing literature from other states and countries on their methods of opioid reduction.
- Surveys were used to collect quantitative information from identified stakeholders.
- Key Informant Interviews: Interviews took place via phone or zoom. Interviews provided in-depth information on key areas of inquiry. Interviews were recorded with consent and notes were taken.
- Focus Groups: Groups of stakeholders were convened to answer key questions.

Documentation

- With consent, interviews and focus groups were recorded. Key themes were extracted from notes to report in the needs assessment.
- A report template served as the main repository for results and findings.

Analysis

- Information was compiled and synthesized.
- Participatory methods were used to analyze data further and identify recommendations for system improvements.

Results

Nevada has a decentralized toxicology system which is serviced by three public toxicology labs. There is one lab in Washoe county located in Northern Nevada, which services Washoe County Sheriff's Department and 13 of 17 counties in the State. There are two labs in Clark County in Southern Nevada, the Las Vegas Metro Police Department (LVMPD) and Henderson Police Department. Clark County Coroner and Regional Medical Examiner's Office use NMS labs to process post-mortem samples. Additionally, Clark County covers Lincoln, Nye, and White Pine County.

The labs above ensured that methods and assays that are used for forensic testing are up to date, validated and are annually reviewed. These labs submit seized drug data to the National Forensic Laboratory Information System (NFLIS), which is a program of the Drug Enforcement Administration (DEA). Seized drug data is released midyear and annually. A similar database for toxicology data has been created and the three labs are currently working to report into NFLIS. Data such as this is valuable in detecting trends and new analogs. However, this data is not

typically used in Nevada’s public health surveillance systems. In late 2022, NFLIS launched a public data query system, making it possible to query state-level data.

Lastly, the challenge of tourism may also be increasing the resources that are needed. During 2019-2021, 14% of overdose deaths were from individuals with residencies out of state (Thomas et al., 2023).

Description of the Current System & Opportunities of Increase Testing

Post-mortem Testing for Fatal Overdose Cases

The CDC developed a testing survey tool to help OD2A funded jurisdictions to better understand toxicology testing protocol and identify strengths and gaps in testing procedures. Looking at results, toxicology testing in the state is uniform between CME offices. Each lab has confirmed that method and procedures are validated prior to use, which ensures each lab obeys regulatory and accreditation guidelines.

Testing Frequency	% of cases
Almost Always Tested	91-100
Often Tested	68-90
Sometimes	34-67
Rarely tested	1-33

Substance	Washoe County Frequency	Clark County Frequency
Almost Always Tested	Almost Always Tested	Almost Always Tested
Alcohol	Almost Always Tested	Almost Always Tested
Amphetamine	Almost Always Tested	Almost Always Tested
Barbiturates	Almost Always Tested	Almost Always Tested
Benzodiazepines	Almost Always Tested	Almost Always Tested
Bupropion	Almost Always Tested	Almost Always Tested
Cannabinoids	Almost Always Tested	Almost Always Tested
Cocaine	Almost Always Tested	Almost Always Tested
Common opioid medications	Almost Always Tested	Almost Always Tested
Fentanyl	Almost Always Tested	Almost Always Tested
Methamphetamine	Almost Always Tested	Almost Always Tested
Piperazine	Almost Always Tested	Almost Always Tested
MDMA	Almost Always Tested	Almost Always Tested
Gabapentin	Almost Always Tested	Almost Always Tested
Ketamine	Almost Always Tested	Almost Always Tested
LSD	Almost Always Tested	Almost Always Tested
Fentanyl Analogs	Almost Always Tested	Almost Always Tested
Mitragynine	Almost Always Tested	Almost Always Tested
Muscle Relaxants	Almost Always Tested	Almost Always Tested
Naloxone	Almost Always Tested	Almost Always Tested

Substance	Washoe County Frequency	Clark County Frequency
OTC medications	Almost Always Tested	Almost Always Tested
Other synthetic opioids	Almost Always Tested	Almost Always Tested
Phencyclidine/PCP	Almost Always Tested	Almost Always Tested
Sedative hypnotics	Almost Always Tested	Almost Always Tested
Tryptamines	Almost Always Tested	Almost Always Tested
Volatiles	Almost Always Tested	Almost Always Tested
Xylazine	Almost Always Tested	Almost Always Tested
Other NPS	Sometimes Tested	Rarely Tested
Phenethylamines	Sometimes Tested	Often Tested
Synthetic Cannabinoids	Sometimes Tested	Sometimes Tested
Cathinones	Rarely Tested	Rarely Tested
GHB	Rarely Tested	Rarely Tested
Antidepressants	Almost Always Tested	Often Tested
Antipsychotics	Almost Always Tested	Often Tested
Anti-seizure	Almost Always Tested	Often Tested

There are some differences in turnaround times for death certificates. Once toxicology results are received, they must be reviewed by the assigned forensic pathologist. Additionally, any additional ancillary test and follow up investigation must be completed prior to finalizing a death certificate.

Nevada's overdose surveillance system is only receiving toxicology input from death investigations, where toxicology information is translated and reported through the NV OD2A program. The NV OD2A program funds data abstractors in each CME office to aid in this process. These data abstractors support reporting in SUDORS. Currently, the surveillance system does not receive toxicology input from seized drugs or from the state's DUI Impaired Driving Program. However, this information would be valuable to report into a centralized data system as a form of ante-mortem data.

Opportunities for Additional Non-Criminal Toxicology Testing

For recent innovations, OD2A can follow other state's lead. To fill the gaps in surveillance needs, Maryland's Department of Public Health partnered with law enforcement to create a Rapid Analysis of Drugs (RAD) Project that tests routine paraphernalia of participants in their Syringe Service program. Under legislation, these collections may not be prosecuted when activities are a direct result of this program. Materials are wiped down with a wipe/swab that is mailed to a responsible testing center. If needed, samples are sent to a laboratory for a secondary confirmation. Results are shared to individuals who submitted the sample and generalized results are sent for community education material. Providing drug users with information about the composition of drugs they plan to consume have shown promising signs to reduce overdoses by users opting out if fentanyl is detected or consuming a smaller dose. Similar testing in supervised consumption sites in Canada, found that most inner-city drug purchases are adulterated, and most purchasers are not aware (Tupper et al., 2018).

The OD2A staff met with their counterparts in Minnesota and learned about their Minnesota Drug Overdose and Substance Use Surveillance Activity ([MNDOSA](#)). The Minnesota Department of Health (MDH) launched MNDOSA to track hospital-treated cases of substance misuse in near-real time. As toxicology testing is rarely done in hospital-treated overdoses, it is a missed opportunity to collect a living biological sample that can provide ante-mortem data to inform prevention efforts. MDH uses these biological samples to get an idea of the active drug supply in the area. Of note, these are residual samples and were not conducted on all suspected overdose cases. Public health labs are generally more fit to detect a wider range of substances than hospitals. Nevada could leverage a similar ER-based surveillance sample program, but current testing capacity and the required funding and training are obstacles in establishing this type of surveillance sample program. As these types of samples fall into general toxicology and not forensic, a state toxicology lab would be an appropriate place for these samples to be tested.

This type of surveillance fills a gap before health outcomes are observed, which can better inform prevention efforts. This form of collaboration generates data that informs law enforcement of

the evolving drug market and harm reduction specialists. These types of partnerships are valuable and ensures that resources are used effectively.

Nevada has two syringe service points: Change Point in Washoe County and Trac B Exchange in Clark County. These organizations provide needle exchange services, naloxone distribution, sexual health services such as HIV and STD testing, and shipping programs for rural participants who live 20+ miles from Las Vegas or Reno. Currently, there is testing on returned syringes, but it is not reported in a centralized fashion that can provide ante-mortem data to inform prevention. (<https://www.tracbexchange.com/>)

Forensic Testing Capacity in Nevada

Funding for Forensic Testing

In Nevada, forensic testing is paid by each lab charging the individual, local, state, federal and tribal agencies for the toxicology analysis. NRS 453.575 requires a court to include a \$60 fee for analysis of the controlled substance or other substance or drug. Per the statute, these funds are to be included in the court's docket and collected by the municipal court. Fees collected under this statute are to be deposited into each county's fund for forensic services. The court assessed fees for analysis in the NRS does not adequately reflect the cost per toxicology test. If a county's forensic toxicology resources are limited, it may be a result of this limited funding. If counties can only recoup the cost for analysis after someone is determined to be guilty and fines are assessed this may cause delays and strains on resources. Additionally, as these laboratories provide services to the rural communities within Nevada, undercharging for forensic toxicology work is common to ensure adequate coverage.

Forensic Pathology Workforce Shortage

During a previous needs assessment kick-off meeting, the Washoe County Medical Examiner brought up her concerns about a forensic pathologist workforce shortage in Nevada. NV OD2A was not able to quantify the exact workforce shortage in Nevada, however, there were workforce training and pipeline issues identified. The forensic pathology workforce shortage expands across the nation.

As of January 2023, the Clark County Office of the Coroner/Medical Examiner formed a partnership with the UNLV Kerkorian School of Medicine to obtain accreditation from the Accreditation Council for Graduate Medical Education (ACGME) for a Forensic Pathology Fellowship Program.

Standardization of Testing & Centralized Reporting System

Currently, eight communities have adopted overdose spike response plans. These plans have been built using ODMAP, which is the only system that can be used for spike detection. As explained in the system overview, several limitations exist. However, an ideal community's spike response agency and plan should look to take information from various sources to inform the risk of spike events. In 2021, the NV OD2A surveillance coordinator and program manager worked to develop a proposal for a two-part surveillance system that would create a robust surveillance system that supports the rapid exchange of information at the community level which could then promote rapid community response by public health, public safety, and overdose spike response agencies. This system is almost up and running as protocols are being finalized. The program is hopeful that data sharing from local law enforcement can be implemented into this surveillance system to create a centralized system that can inform appropriate parties. Currently, OD2A does not receive toxicology input from seized drugs or from the state's DUI Impaired Driving Program. However, this information would be valuable to report into a centralized data system as a form of ante-mortem data. This proposal is included in the appendix of this report.

Critical Issues

1. Toxicology testing funding mechanisms are antiquated and do not allow for the flexibility needed to meet the changing overdose and substance misuse landscape:
 - A cost analysis is recommended to better understand if a statewide toxicology lab (that can process post-mortem samples and ante-mortem samples) would be more cost-effective and timely compared to sending out post-mortem samples to labs outside of the state.
 - Tourism may be impacting the number of resources that are needed.
 - The existing overdose surveillance system is overly reliant on toxicology results from fatal overdoses cases (post-mortem).
2. Lack of standardization across jurisdictions as it relates to situational awareness and risk for overdose spike:
 - Lack of standardization in assessing jurisdictional risk for overdose spike.
 - Lack of standardization as it relates to public safety and drug data.
3. Lack of standardization across testing of forensic samples:
 - Labs do not have a standardized processing of sample processing. Ensuring that all laboratory parties follow the same processes and report in a similar fashion will lessen the risk of under counting in data reports. This data is valuable and should be reported into a centralized system in Nevada.
4. Lack of general toxicology testing (ante-mortem testing):
 - The state's testing capacity relies on post-mortem samples and seized drugs in the context of forensic toxicology, and not ante-mortem testing. Given the state's absence of a statewide toxicology lab and the high workload that each lab

faces, processing of general toxicology samples is essentially non-existent in the state of Nevada for public health surveillance.

Recommendations

- 1. Development of a statewide toxicology lab that can support surveillance sample testing, and other types of toxicology testing (including forensic and general) that may increase the amount of information used to inform situational awareness of risk overdose spike.**

This needs assessment supports the recommendation in the *Nevada Forensic Toxicology Laboratory: Gaps Analysis Report* to create a statewide toxicology lab. To support the overdose surveillance system a statewide toxicology lab should have the flexibility to test and report on various types of general toxicology specimens (ante-mortem samples and post-mortem samples) and any backlogged forensic samples. Additionally, a statewide lab needs to be built in a way to allow for specimen testing innovation to meet the needs of an ever-changing drug landscape, including the foresight to improve or change, anticipating the next analog or designer drug. However, various accreditation standards and grant fundings may make anticipating the next analog or designer drug difficult.

- 2. Expansion of surveillance testing will require a new funding formula for forensic toxicology, and a cost analysis on a state toxicology lab.**

- The funding mechanism laid out in NRS 453.575 is not appropriate in meeting the state's current forensic toxicology needs. The state could work with counties and their labs to see how OD2A and other funding sources can be better leveraged to support surveillance sample testing.
- A cost analysis is recommended to better understand the financial implications of creating a state toxicology lab for general (ante-mortem and post-mortem) toxicology analysis versus continuing to outsource post-mortem samples to private labs.

- 3. Standardized data sharing between public safety agencies and local spike response plans. Support local partners that can act quickly if needed.**

Currently, most Nevada Spike Response Lead Agencies are using ODMAP to identify a potential spike. Given the limitations in that system, jurisdictions should ensure they are obtaining information from various sources to help understand their risk for spike overdose. Additionally, at least one spike response lead agency is getting information via informal communication channels about the current events in the community as it relates to substance use. This type of data sharing should be formalized through a data sharing agreement to ensure standardization and that all information can be presented to inform prevention efforts. While every jurisdiction is going to have different needs and different resources at its disposal, the state should work to standardize data reporting and sharing as much as possible.

4. Improve ante-mortem testing capacity in the state

The state's testing capacity relies on post-mortem samples and seized drugs. The state could improve on general toxicology and ante-mortem testing. As new analogs enter the market, ante-mortem data becomes even more valuable. A state toxicology lab that has the capacity to analyze non-criminal toxicology samples for public surveillance and help reduce backlogs of forensic toxicology samples would reduce the reliance on post-mortem data to inform preventions and ensure quick turnaround for sample analysis.

Appendix-

Appendix attachments omitted for file size. To review the attachments, visit nvopioidresponse.org/od2a/ or contact ecmonroy@unr.edu

Meeting Notes, Presentations & Stakeholder Questions

- Needs Assessment Kick-Off Meeting
- Syringe Service Program Meeting Notes
- Health District Spike Response Program Meeting Notes
- Merit Peer Recovery Program

Additional Documents and Backup

- Nevada Forensic Toxicology Needs Assessment Report (A)
- Nevada Forensic Toxicology Needs Assessment Report (B)
- Public Safety Survey Results
- Overdose Death Investigation Survey
- Nevada Forensic Toxicology Laboratory: Gap Analysis
- Forensic Pathology Workforce Research
- ACGME Forensic Pathology Program Requirements
- Maryland Department of Health – RAD Project
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