

VDH Drug Overdose Needs Assessment Tool: Methodology and Recommendations

Updates to the methodology from 2021:

- Indicator 2 now uses 100,000 population versus 10,000 ED visits.
- Prescription drug names were added for Indicator 7.
- Indicator 8 now uses 15-34 years of age for Hepatitis C cases versus 18-30 years of age.
- Indicator 10 no longer includes treatment admissions where alcohol or cannabis were the primary drug/substance used.
- The results section was removed from this methodology document. Results are available on the website.

For more information about methodology updates, please visit the [Frequently Asked Questions](#) document.

I. Background

In 2022, Governor Youngkin launched the [Right Help, Right Now](#) behavioral health transformation plan. This three-year plan outlined that all Virginians will be able to access behavioral health care and prevention and management services, including substance use disorder treatment services. This tool was developed to support the *Right Help, Right Now* initiative.

II. Indicator selection and data source documentation

The Virginia Department of Health (VDH) compiled the methodology below to determine Virginia localities at higher need for drug overdose-related prevention and intervention strategies, such as comprehensive harm reduction program expansion, naloxone distribution, and fentanyl wastewater surveillance piloting through the *Right Help, Right Now* initiative. Indicators are used to assess whether a locality may have higher drug overdose and misuse burden and other infectious disease outcomes associated with drug use (e.g., hepatitis C and HIV) in their communities. Socioeconomic indicators (e.g., poverty and unemployment) are also included because these factors are related with a locality being at higher risk for drug overdose and misuse.^{1,2}

These indicators are listed below:

1. Counts and crude rates per 100,000 population of all-drug overdose deaths
2. Counts and crude rates per 100,000 population of all-drug overdose emergency department visits

¹ <https://www.sciencedirect.com/science/article/abs/pii/S0376871618308408?via%3Dihub>

² <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6968850/>

3. Counts and crude rates per 100,000 population of nonfatal all-drug overdose inpatient hospitalizations
4. Percent of population in poverty
5. Percent of population unemployed
6. Counts and crude rates per 100,000 population of people prescribed opioids (i.e., prescription opioid volume)
7. Counts and crude rates per 100,000 population of people prescribed buprenorphine (i.e., buprenorphine prescription volume; potential to provide medication-assisted treatment)
8. Counts and crude rates per 100,000 population of newly reported hepatitis C cases among people aged 15-34 years
9. Counts and crude rates per 100,000 population of newly diagnosed HIV cases
10. Counts and crude rates per 100,000 population of new drug treatment admissions to publicly funded community service boards
11. Counts and crude rates per 100,000 population of arrestees for drug/narcotic-related arrests
12. Counts and crude rates per 10,000 emergency medical services incidents of patients receiving naloxone with positive responses

Selected Indicators and Relevant Notes

The following section includes the list of indicators with accompanying data sources and relevant notes.

1. Overdose Deaths

Description: All-drug overdose deaths by locality in calendar year (counts and rates per 100,000 population)

Data source: Death certificate data from the VDH Vital Event Statistics Program

Notes: Drug overdose deaths include all drugs and all intents (unintentional, suicide, homicide, or undetermined). Deaths are of Virginia residents only, including Virginia residents who died out of state. All-drug overdose deaths follow the World Health Organization and [Centers for Disease Control and Prevention \(CDC\) definition](#). Data are maintained by VDH Office of Information Management and analyzed by Injury and Violence Prevention epidemiology staff, VDH Division of Population Health Data, Office of Family Health Services.

2. Emergency Department Visits

Description: Emergency department visits due to all-drug overdoses by locality in calendar year (counts and rates per 100,000 population)

Data source: Syndromic surveillance emergency department visit data from CDC ESSENCE

Notes: Syndromic surveillance data reporting to VDH by hospitals and freestanding emergency departments in Virginia of count and rate statistics for emergency department visits for unintentional drug overdose among Virginia residents; 100% of hospital-based emergency

departments report to ESSENCE. [The all-drug case definition was updated in June 2022](#). Geographic location is assigned based on patient's residential zip code provided. A single zip code may span multiple localities in Virginia. If a patient resides in a spanning zip code, the visit is assigned to the locality where most of the population lives. Some localities were combined to calculate an overdose visit count and rate due to zip counts spanning multiple localities. Those localities are indicated in the report. Localities that were combined received the same count and rate for score calculation. Data are maintained and analyzed by the VDH Enhanced Surveillance Team, Division of Surveillance and Investigation, Office of Epidemiology.

3. Nonfatal Inpatient Hospitalizations

Description: Nonfatal inpatient hospitalizations due to all-drug overdoses by locality in calendar year (counts and rates per 100,000 population).

Data source: Inpatient hospital discharge data from the [Patient-Level Data file](#).

Notes: Data are nonfatal inpatient hospitalizations only and represent Virginia resident hospitalizations within Virginia. Virginia residents hospitalized outside of Virginia are excluded, which may cause potential underreporting of Virginia residents from bordering areas of the state who go out of state for care. Hospitalization data are from 100% of Virginia-licensed hospitals and do not include federal entities, rehabilitative hospitals, or state psychiatric hospitals. Indicator definitions come from the [Drug Overdose Indicator](#) from the Council of State and Territorial Epidemiologists (CSTE). The city/county is based on the zip code of the patient's residence at time of hospitalization. Some Virginia zip codes may cross city/county boundaries. This may cause under- or over-reporting of hospitalizations at the city/county level for those localities with zip codes that cross boundaries. Data are from [Virginia Health Information](#), maintained by VDH Office of Information Management (OIM) and analyzed by Injury and Violence Prevention (IVP) epidemiology staff, VDH Division of Population Health Data, Office of Family Health Services.

4. Poverty estimates by locality

Description: Poverty estimates by locality in calendar year; percentage of persons living in the locality below the poverty threshold (percentages)

Data source: United States (U.S.) Census Bureau: Small Area Income and Poverty Estimates

Notes: Poverty percentage estimates are based on all ages by locality in Virginia; see [Census Methodology page](#) for additional details on the model used to estimate poverty. Data are from the U.S. Census Bureau [Small Area Income and Poverty Estimates \(SAIPE\) data dashboard](#).

5. Unemployment estimates by locality

Description: Unemployment estimates by locality in calendar year (percentages)

Data source: U.S. Bureau of Labor Statistics Labor Force Data by County. Annual Averages: Local Area Unemployment Statistics

Notes: Data are from labor force data by county, annual averages are from: [Local Area Unemployment Statistics](#). See [Bureau of Labor Statistics Methodology page](#) for additional details on the model used to estimate labor force and unemployment.

6. Prescribed Opioid Volume by locality

Description: Persons prescribed prescription opioids by locality in calendar year (prescription opioid volume) (counts and rates per 100,000 population)

Data source: Virginia All-Payer Claims Database

Notes: Opioid prescription claims are calculated using the Virginia All-Payer Claims Database and subset to the individual count of persons receiving prescription opioids in calendar year. The Virginia All-Payer Claims Database currently contains 100% Medicare, 100% Medicaid, and about 45-60% of the commercial population. The All-Payer Claims Database collects paid medical and pharmacy claims for roughly 4-4.5 million Virginia residents. Most individuals not included are federal employees, those who are active duty or have TRICARE, and the uninsured. The largest missing population are individuals with ERISA self-insured plans (big private employers), since those plans are not required to submit data to the All-Payer Claims Database. Data are based on the patient's residence at time of pharmacy claim. More information can be found at the [Virginia Health Information \(APCD\) page](#).

7. Persons prescribed buprenorphine by locality

Description: Persons prescribed buprenorphine by locality in calendar year (potential to treat opioid use disorder) (counts and rates per 100,000 population)

Data source: [Virginia All-Payer Claims Database](#)

Notes: Buprenorphine prescription claims are calculated using the All-Payer Claims Database for the individual count of persons receiving a prescription for buprenorphine in calendar year. Claims for prescription drugs included were: Belbuca, Bunavail, Buprenex, buprenorphine, buprenorphine buccal, buprenorphine HCL, buprenorphine HCL/naloxone, buprenorphine hydrochloride, Butrans, Sublocade, Suboxone, Subutex, and Zubsolv. The Virginia All-Payer Claims Database currently contains 100% Medicare, 100% Medicaid, and about 45-60% of the commercial population. The All-Payer Claims Database collects paid medical and pharmacy claims for roughly 4-4.5 million Virginia residents. Most individuals not included are federal employees, those that are active duty or have TRICARE, and the uninsured. The largest missing population are individuals with ERISA self-insured plans (big private employers), since those plans are not required to submit data to the All-Payer Claims Database. Data are based on the patient's residence at time of pharmacy claim. More information can be found at the [Virginia Health Information All-Payer Claims Database web page](#).

8. Newly Reported Hepatitis C cases

Description: Newly reported hepatitis C cases among persons aged 15-34 years in calendar year (counts and rates per 100,000 population)

Data source: Virginia Electronic Disease Surveillance System

Notes: Data included are probable and confirmed hepatitis C cases among Virginia residents aged 15-34 years. Data also include people who were incarcerated, so localities containing correctional facilities may show higher rates of newly identified cases. Injection drug use is the most common risk factor reported among newly identified confirmed-acute hepatitis C cases, and particularly among those aged 15-34 years. The denominator used to calculate rates per 100,000 population only include persons aged 15-34 years. Data are maintained and analyzed by the VDH Division of Surveillance and Investigation, Office of Epidemiology.

9. Newly Diagnosed HIV Cases

Description: Newly diagnosed HIV cases in calendar year (counts and rates per 100,000 population)

Data source: Enhanced HIV/AIDS Reporting System

Notes: New HIV diagnoses are based on the date of diagnosis and the locality where the HIV case was residing at time of diagnosis. Data come from the [Annual HIV/AIDS Report](#). The COVID-19 pandemic impacted access to HIV testing, HIV care services, and HIV case surveillance activities. Data during the acute COVID-19 pandemic years of 2020, 2021, and 2022 should be interpreted with caution as totals are likely lower than expected. Data are maintained and analyzed by the VDH Division of Disease Prevention, Office of Epidemiology.

10. New All-Drug Use Disorder Admissions

Description: New all-drug use disorder admissions to publicly funded community service boards in calendar year (counts and rates per 100,000 population)

Data source: Virginia Department of Behavioral Health and Developmental Services

Notes: Data are new admissions, not number of patients, and based on patient's residence at time of admission. Some patients may have more than one admission. Counts do not include new admissions from out-of-state residents or residents who are unhoused. Admissions do not include alcohol or cannabis as primary drug used for admission to treatment. Data are maintained and analyzed by data analyst staff at the Virginia Department of Behavioral and Developmental Services.

11. Arrests

Description: Arrestees for drug/narcotic violations by locality in calendar year (counts and rates per 100,000 population)

Data source: Virginia State Police Virginia Crime Repository

Notes: Data come from the Arrests by Jurisdiction report on the [Virginia Crime Repository](#). Arrests include local agencies and Virginia State Police arrests. Arrests are a count by persons and not by charges lauded. Data are maintained by Virginia State Police.

12. Naloxone Administrations

Description: Naloxone administrations with positive responses in calendar year (counts and rates per 10,000 emergency medical services incidents)

Data source: VDH Office of Emergency Medical Services ESO Pre-Hospital Data System

Notes: Data inclusion criteria are: Unit Notified by Dispatch Date is between January 1 and December 31 of the calendar year; Medication Given includes “Naloxone” or “Narcan”; and Response to Medication is equal to “Improved”. Data exclusion criteria are: Records that did not have a submission status of “passed”; Records with a Type of Service Requested equal to Mutual Aid, Public Assistance, or Standby; and Records with an Incident/Patient Disposition of Assist, Canceled, Standby, Non-Patient Transport, or Patient Treated, Transferred Care to Another EMS Unit. Total doses of naloxone administered is more than the number of patients who received naloxone, as the same patient can receive multiple doses. Numbers do not reflect total number of naloxone administrations given in Virginia, as naloxone can be administered in other healthcare encounters. Accuracy of the data within ESO is limited by system performance and accuracy of data submissions from hospitals. Data are maintained and analyzed by the VDH Office of Emergency Medical Services.

III. Methodology for Scoring

Crude rates are calculated as the total count per 100,000 population (Indicators 1-3, 6-11), or total count per 10,000 emergency medical services incidents (Indicator 12). Rates are the total count divided by the specified population size and multiplied by 10,000 or 100,000. [Single-race population estimates](#) from the United States Census Bureau were used to calculate rates per 100,000 population. Locality percentages are provided for Indicators 4 and 5.

Indicators are counted as one (1) point for each locality if the locality count, rate, or percentage is above the state average count, state rate, or state percentage. If a locality meets both the count and the rate for Indicators 1-3 and/or 6-12, that locality receives two (2) points for that indicator. If a count, rate, or percentage for a locality is equal to or under the state threshold, the locality receives zero (0) points for that indicator. The points that each locality receives from the 12 indicators are added together to provide an overall indicator score for that locality. The minimum score a locality can receive is zero (0), and the maximum score a locality can receive is 22.

A state average indicator score is also calculated (total number of points for the state divided by 133 localities). If the locality’s indicator score is above the state average score, the locality is considered a higher need locality.

IV: Conclusion and Recommendations

VDH presents this tool to help identify localities at higher need for drug overdose prevention and intervention strategies statewide. The methodology includes counts *and* rates when assessing localities that may be at higher risk for drug overdose and related outcomes. Counts reflect higher morbidity (i.e.,

nonfatal drug overdose) and mortality (i.e., drug overdose death) in an area and should be considered when assessing potential burden, but counts are typically higher in larger population sizes (i.e., higher number of drug overdose deaths where there are more people living in a locality). This can result in smaller, and potentially more rural, localities to not be considered. Rates are used to compare equally across population sizes, thus allowing for smaller, and sometimes more rural, localities to be considered. However, rates may underestimate burden in localities with larger population sizes. Scoring methodology that uses counts and rates may more comprehensively identify localities at higher need while still maintaining a selective approach based on available data.

It is important to note that this tool **does not** assess a locality's resource capacity, readiness, or ability to reach the most highly impacted populations to develop and implement prevention and intervention strategies. These factors should also be considered when establishing, expanding, and sustaining drug overdose and substance use-related prevention initiatives. A designation of "lower need" does not mean there is no need in those localities for drug overdose and substance use prevention. This overdose needs assessment tool should be considered as **one of many** available tools that can assess drug overdose risk burden and inform prevention efforts.