



# Fentanyl in Rural Michigan

The overdose epidemic remains one of the most pressing public health issues, with more than a half million deaths in the US over the past decade and nearly 100,000 deaths in 2020 alone.<sup>1</sup> Most of these deaths are opioid involved, though the type of opioid has varied across multiple waves, each one resulting in more deaths than the last. Increases in overdose deaths initially began with the increased availability of prescription opioids.<sup>2,3</sup> As the availability of prescription opioids decreased, a second wave of overdose was initiated as opioid users transitioned to heroin<sup>2,4-5</sup> and then beginning in 2013, the third wave of the overdose epidemic was driven by fentanyl, a synthetic opioid 50 to 100 times more potent than morphine.<sup>6,7</sup> The most recent trends in national overdose data suggest sharp increases in deaths associated with synthetic stimulants, cocaine and methamphetamines,<sup>8</sup> which some have labeled as the fourth wave of the epidemic.<sup>9</sup>

This return to methamphetamines has been [highlighted in Michigan](#), particularly among populations in criminal-legal systems, with research showing stimulants more likely to be detected through urine testing than opioids.<sup>10</sup> However, drugs being seized or detected by law enforcement are not always the same substances detected in overdose deaths. To examine this the CBHJ partnered with the [Mid Michigan Medical Examiner Group](#) to examine postmortem toxicology results from overdose deaths that occurred between January 1, 2018 and December 31, 2020 in 11 rural counties (Alpena, Clare, Crawford, Lake, Mecosta, Montcalm, Montmorency, Newaygo, Oceana, Otsego, and Wexford).



Among 107 deaths that occurred over the three-year period we examined the detection of fentanyl, heroin, prescription opioids, cocaine, methamphetamine, and benzodiazepines. As illustrated in Figure 1, fentanyl was overwhelmingly the most common substance detected. There was a 94% increase during the three-year period, with fentanyl present in 70% of all the deaths in these counties in 2020. Prescription opioids detection also increased from 2019 to 2020, from 24% to 28%. Cocaine presence decreased from 28% in 2018 to only 8% in 2020 while methamphetamine detection increased from 18% in 2018 to about 30% in 2019 and 2020. Benzodiazepines decreased from 36% in 2018 to 20% in 2020.

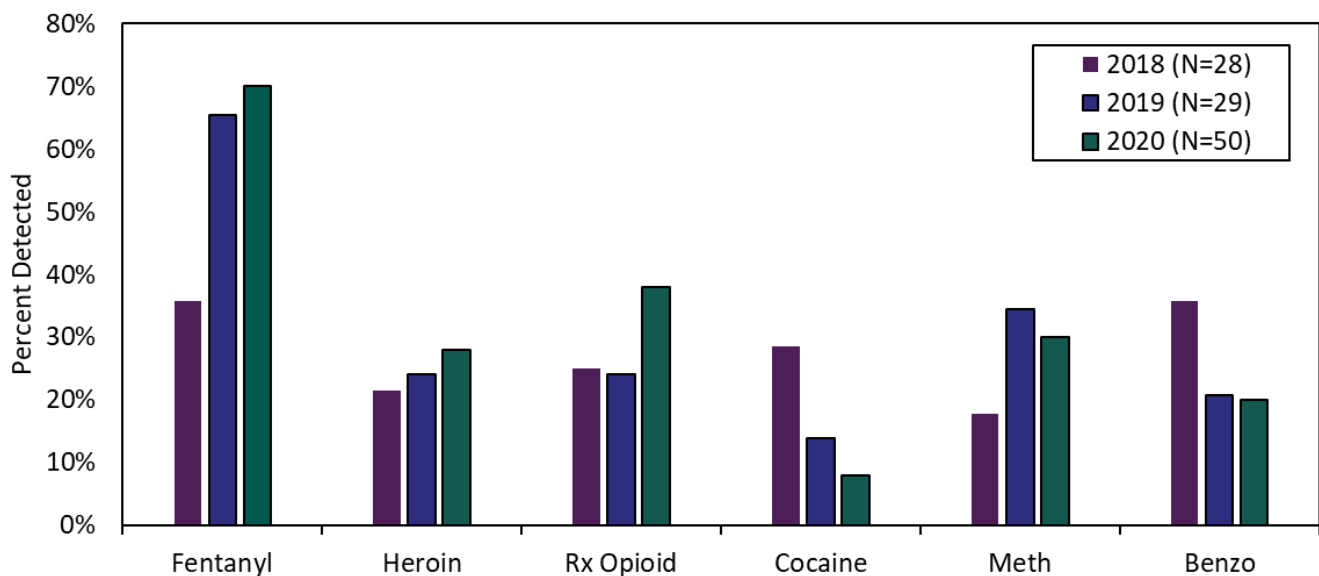


Figure 1: Trends in Substances Detected in Rural Michigan (2018-2020)

While historical trends suggest opioids and stimulants alternate in periods of use, current patterns suggest polydrug co-use among these substances along with instances of dealers cutting heroin and other illicit substances with fentanyl.<sup>11</sup> Therefore, consistent with national data we found that stimulants are rarely detected outside of polydrug combinations



that contain fentanyl. In fact, of the deaths we examined where cocaine was detected, 69% also contained fentanyl as did 77% of deaths with methamphetamine detected.

Figure 2 illustrates the polydrug detections among these substances across each year that data were collected. The thickness of each line represents the frequency of occurrences between connected drugs for a given year. The node size represents the frequency of each specific drug. Thus, the thicker line, the more frequent the occurrence of certain polydrug combinations. Each line can be compared across years to examine changing frequencies of unique polydrug combinations. As illustrated here, in rural Michigan fentanyl has been the dominant substance in overdose deaths since 2019, first in combination with methamphetamine and more recently alone, as fentanyl was detected without any of these substances in 28% of the 2020 cases.

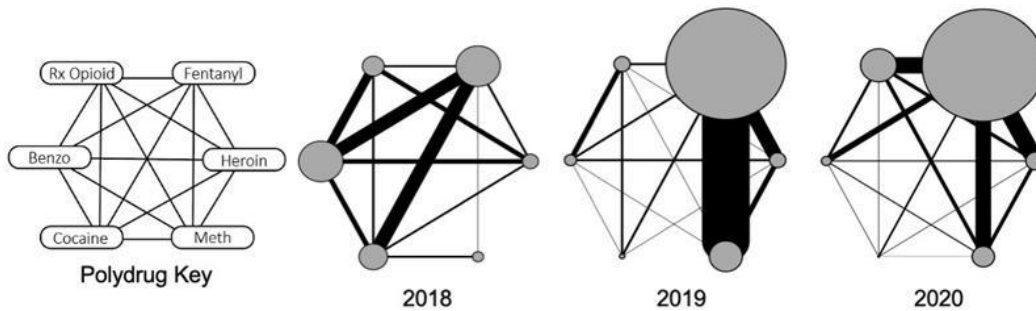


Figure 2: Polydrug Detections in Rural Michigan (2018-2020)

The lack of a “safe supply” is driving overdose increases, as illicit opioid users have shifted from prescription medications, to heroin, to heroin (and potentially other substances) cut with fentanyl. The federal government approved the purchase of “fentanyl testing strips” which allows someone to place a small amount of the drug sample in a small container, add water, and swirl the testing strip in the sample for about 15 seconds. After 2 minutes, a red line may appear on the strip which indicates the presence of fentanyl. You can watch a [brief video](#) and [download printable instructions](#); contact the CBHJ for information on ordering the test strips.

Drug checking can provide people who use drugs the ability to identify the presence of fentanyl in unregulated drugs. Testing strips can be applied broadly to drugs that are injectable, powder or pills. [Being aware if fentanyl is present is a powerful overdose prevention tool](#) and allows people to implement appropriate harm reduction strategies to reduce the risk of an overdose.<sup>12-14</sup>



## References

1. National Institute on Drug Abuse. Overdose Death Rates [Internet]. National Institute on Drug Abuse. 2021 [cited 2021 Jun 29]. Available from: <https://www.drugabuse.gov/drug-topics/trends-statistics/overdose-death-rates>
2. Cicero TJ, Ellis MS, Surratt HL, Kurtz SP. The changing face of heroin use in the United States: a retrospective analysis of the past 50 years. *JAMA psychiatry*. 2014;71(7):821–6.
3. Grau LE, Dasgupta N, Harvey AP, Irwin K, Givens A, Kinzly ML, et al. Illicit use of opioids: Is OxyContin® a “gateway drug”? *The American Journal on Addictions*. 2007;16(3):166–73.
4. Rudd RA, Paulozzi LJ, Bauer MJ, Bureson RW, Carlson RE, Dao D, et al. Increases in heroin overdose deaths—28 states, 2010 to 2012. *MMWR Morbidity and mortality weekly report*. 2014;63(39):849.
5. Strickler GK, Zhang K, Halpin JM, Bohnert AS, Baldwin G, Kreiner PW. Effects of mandatory prescription drug monitoring program (PDMP) use laws on prescriber registration and use and on risky prescribing. *Drug and Alcohol Dependence*. 2019;
6. Gladden RM. Fentanyl law enforcement submissions and increases in synthetic opioid–involved overdose deaths—27 states, 2013–2014. *MMWR Morbidity and mortality weekly report*. 2016;65.
7. O’Donnell JK, Halpin J, Mattson CL, Goldberger BA, Gladden RM. Deaths involving fentanyl, fentanyl analogs, and U-47700—10 states, July–December 2016. *MMWR Morbidity and mortality weekly report*. 2017;66(43):1197.
8. Hedegaard H. Drug Overdose Deaths in the United States, 1999–2018 [Internet]. 2020 [cited 2020 Mar 25]. Available from: <https://www.cdc.gov/nchs/products/databriefs/db356.htm>
9. Volkow ND, Blanco C. The changing opioid crisis: development, challenges and opportunities. *Molecular Psychiatry*. 2020 Feb 4;1–16.
10. Magura S, Weller BE, Smith DR, Saxton MM, Amaratunga P. Surveillance by oral fluid of drugs subject to misuse among individuals under arrest. *The American Journal of Drug and Alcohol Abuse*. 2021 Mar 4;47(2):247–54.
11. Park JN, Rashidi E, Foti K, Zoorob M, Sherman S, Alexander GC. Fentanyl and fentanyl analogs in the illicit stimulant supply: Results from U.S. drug seizure data, 2011–2016. *Drug and Alcohol Dependence*. 2021 Jan 1;218:108416.
12. Jacka BP, Goldman JE, Yedinak JL, Bernstein E, Hadland SE, Buxton JA, et al. A randomized clinical trial of a theory-based fentanyl overdose education and fentanyl test strip distribution intervention to reduce rates of opioid overdose: study protocol for a randomized controlled trial. *Trials*. 2020 Nov 26;21(1):976.
13. Zibbell JE, Peiper NC, Duhart Clarke SE, Salazar ZR, Vincent LB, Kral AH, et al. Consumer discernment of fentanyl in illicit opioids confirmed by fentanyl test strips: Lessons from a syringe services program in North Carolina. *International Journal of Drug Policy*. 2021 Jul 1;93:103128.
14. Peiper NC, Clarke SD, Vincent LB, Ciccarone D, Kral AH, Zibbell JE. Fentanyl test strips as an opioid overdose prevention strategy: Findings from a syringe services program in the Southeastern United States. *Int J Drug Policy*. 2018 Oct 3;