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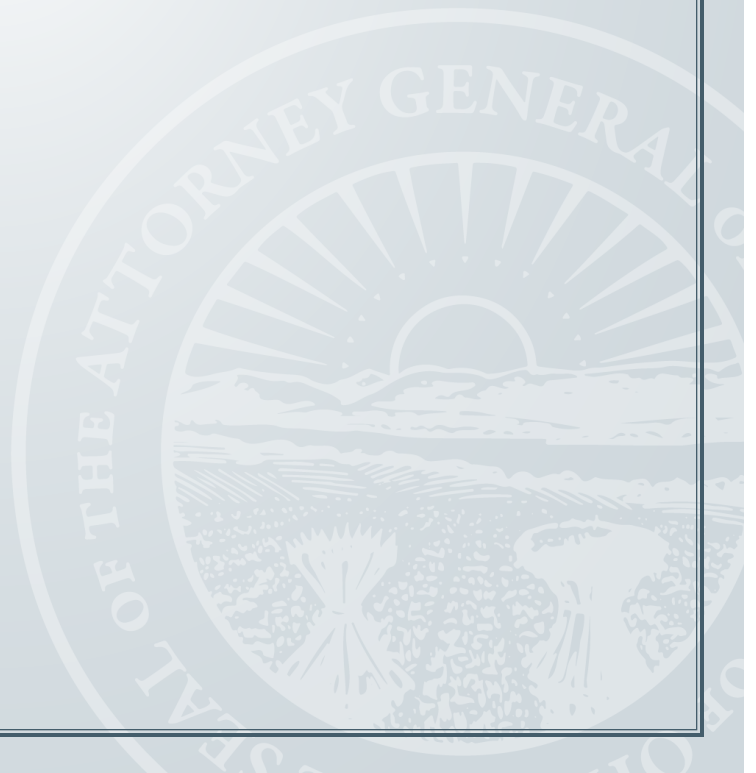


**SCOPE: Scientific Committee on
Opioid Prevention and Education**

ADVANCING THE FIGHT TO SAVE LIVES



DAVE YOST
OHIO ATTORNEY GENERAL



FROM THE ATTORNEY GENERAL

My Fellow Ohioans,

When I assumed the office of Attorney General, Ohio and many other states were being pounded by the opioid epidemic.

Then the COVID-19 epidemic hit — and opioid-related overdoses went from bad to worse. A crisis on top of a crisis.

Addiction is a disease that, once it takes hold, does all sorts of damage to its victims' brains. Science tells us that.

How else might science help Ohio in its fight to slay the deadly scourge of opioid addiction, particularly regarding prevention? Five years ago, that question inspired the Scientific Committee on Opioid Prevention & Education.

I called on Dr. Jon Sprague, head of my office's Center for the Future of Forensic Science at Bowling Green, to organize and lead SCOPE. Dr. Sprague, in turn, invited experts in medicine and pharmacy, human relations, behavioral economics, data analysis, epidemiology and medical anthropology to serve on the committee.

The SCOPE team is using science — hard data — to come up with innovative prevention techniques and strategies. In other words, it's working to find ways to keep more people from succumbing to the claws of opioid addiction before the addiction ever begins.

Chief among the committee's successes to date is a study to identify genetic factors that make an individual more prone to becoming dependent on opioids. SCOPE's research, including the development and validation of data, is very exciting, as it is laying the foundation for a potential sea change in the way we deal with the public threat of opioid addiction and how we approach prevention, education and treatment.

Our hope is that, one day soon, breakthroughs will reduce the number of people who fall victim to opioid dependence. I have sat with far too many parents whose children have struggled for years to break free from the chains of this often-devastating addiction. Countless others have lost one or more loved ones to an overdose.

Not one of the people I've talked to ever thought that their 18-year-old honor student, their brother or sister, or their best friend was destined for an early grave at the hands of opioids.

These heart-wrenching exchanges underscore the pain and grief that so many families have had to endure. They also reinforce the tremendous value and urgency of SCOPE's work.

This is a fight Ohio cannot afford to lose.

Yours,



Dave Yost
Ohio Attorney General



SCOPE: ADVANCING THE FIGHT

At five-year mark, committee created to combat Ohio's opioid crisis with science logs noteworthy gains

With Ohio and other states waging war against an opioid crisis in January 2019, Dave Yost began his tenure as Attorney General of Ohio with a goal of fighting this devastating epidemic at its source.

“Think of it like a break in an underground water main,” Yost said. “We’ve been sandbagging the flooding, but we need to shift our focus to shutting off the water.”

Within six months, he had established the Scientific Committee on Opioid Prevention & Education (SCOPE), made up of experts from medicine, nursing, pharmacy, data analysis and other fields who are working to shut off the water.

Committee members began meeting monthly in June 2019 to develop innovative prevention and educational strategies to reduce the number of Ohioans who succumb to opioid overdoses. Seeking a model for examining potential links among opioid use disorder (OUD), substance use disorder (SUD) and reasons for abstinence from drug use, they reviewed literature, created summary tables and hosted journal club discussions in associated areas: adverse childhood experiences (ACEs); mental health, including attention deficit hyperactivity disorder, depression, post-traumatic stress disorder and anxiety; genetics; socioeconomic factors; and more.

From those meetings, the committee members developed several areas of focus:

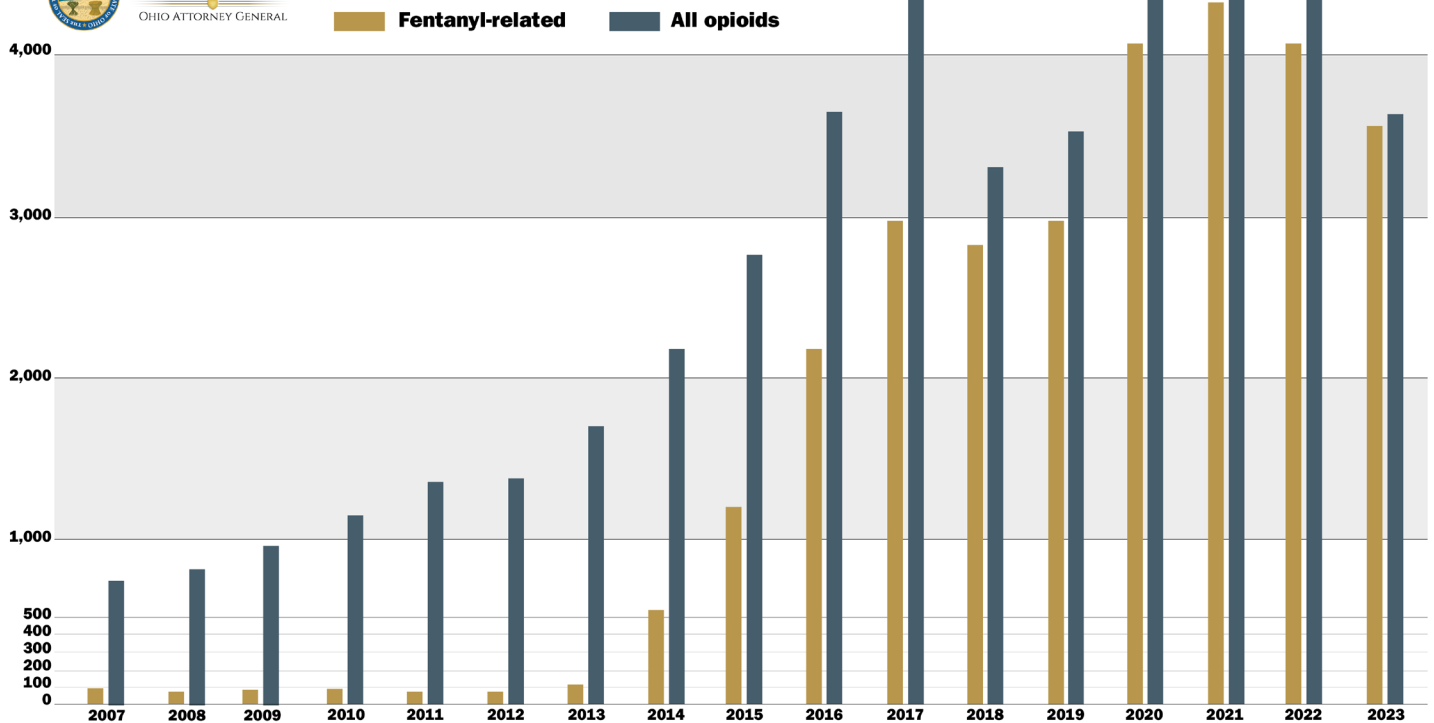
- Public awareness
- Health-sciences education
- Drug disposal and storage
- Pharmacogenomics

What follows is a high-level overview of SCOPE's progress during its first five years.



Attorney General Dave Yost (third from left, in back) with the SCOPE team in 2024 at the Ohio Attorney General's Office in Columbus

Ohio resident death report, 2007-2023



Source: Ohio Department of Health's Public Health Information Warehouse

Raising public awareness

In many ways, the COVID-19 pandemic created a perfect storm for those battling addiction, causing a temporary setback in the gains made to that point in curbing opioid overdoses.

Underlying the crisis was the proliferation in Ohio and elsewhere of illicitly manufactured fentanyls (IMFs), which are often added to other drugs. Polydrug substances containing IMFs are not only more powerful but also cheaper, more addictive and more dangerous.

The shifting trends in the illegal drug market were reinforced by the work of the Chemistry Unit in the Ohio Bureau of Criminal Investigation's Laboratory. There, a comparison of substances submitted for testing in 2013 versus those submitted nearly a decade later, in 2022, revealed an eightfold increase in the number of polydrug substances.

Also noteworthy: In 2013, the components most often found in the polydrug samples were cocaine and heroin, with illicitly manufactured fentanyls found in just 2.2% of the submitted samples. By 2022, more than 89% of the polydrug samples were found to contain IMFs — a 335-fold increase. The most prevalent IMFs were fentanyl and para-fluorofentanyl, in combination with heroin, cocaine and/or methamphetamine.

Given the significant increase in the number and types of deadly drugs being sold on the streets, Ohio — like many other states — was paying dearly.

In 2021, SCOPE had begun a longitudinal study of opioid overdose data from Ohio Department of Health death records dating back to 2007. The committee found that the death rate from opioid overdose (per 100,000) reached 14.29

for the second quarter of 2020, significantly higher than the previous peak level of 8.34 deaths in the second quarter of 2017 — and still the highest quarter to date in Ohio.

The pandemic-related setbacks reinforced the need for enhanced public education. To that end, SCOPE created public-service announcements, submitted op-eds and letters to the editors to scientific journals, and doubled down in cautioning health-care professionals and scientists statewide about the hidden dangers of purchasing illegal drugs on the streets.

With opioid deaths showing signs of subsiding to pre-pandemic levels, the hope is that Ohioans are getting the message.

Opioid-related deaths of Ohio residents

2019	2020	2021	2022	2023
3,553	4,492	4,573	4,295	3,819

Source: Ohio Department of Health

Educating future health-care professionals

SCOPE developed a survey in December 2019 designed to assess what students enrolled in health-care professional programs at Ohio's public universities were learning about OUD.

The survey encompassed four domains surrounding OUD: initial screening of patients, training in OUD, training in care for patients at high risk for OUD, and education in evaluating patients for adverse childhood experiences (ACEs). It was distributed to 49 health-care professional schools in Ohio spanning the disciplines of medicine, pharmacy, advanced

practice registered nurse, physician assistant, dentistry and optometry.

The results underscored the need for standardization in OUD curricula statewide. To that end, SCOPE partnered with Dr. Kelsey Schmuhl, an assistant professor in Ohio State University’s College of Pharmacy, who developed the Interprofessional Program on Opioid Use Disorder.

To date, more than 2,000 students in 21 health-sciences professional programs representing 13 universities have completed the course.

Before getting started, students take a survey to gauge their knowledge and attitudes about working as part of an interprofessional team and their perceptions of patients with OUD.

The course encompasses seven asynchronous modules that give students consistent foundational knowledge surrounding OUD and a virtual synchronous escape room that provides a complex patient case study. Students who finish both parts receive a certificate of completion from the Attorney General’s Office indicating that they’ve completed 10 hours of education in OUD.

An assessment of the course suggests that students who complete the asynchronous modules show a significant improvement in the seven knowledge-based areas: neurobiology, treatment of OUD from a medication and treatment of care standpoints, adverse childhood experiences, social determinants of health, motivational interviewing, and ethics and stigma.

In addition, the escape-room experience significantly changed student perceptions of working in interprofessional teams while managing OUD patients.

The program has received more than \$200,000 in funding — including \$158,000 from the National Association of Attorneys General — to support taking it nationwide.

“It’s really exciting to think about how this program could be shared with students and practitioners across the country,” Dr. Schmuhl said. “OUD is not just a problem in Ohio; it’s an issue everywhere. So I’m looking forward to getting this program out to more people.”

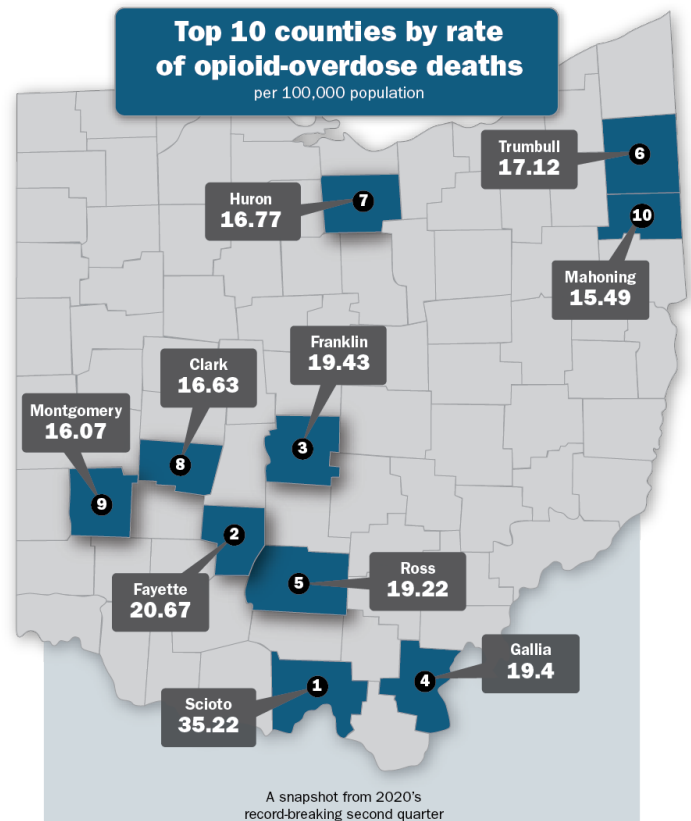
Emphasizing proper drug storage, disposal

Multiple studies — most in surgical literature — indicate that patients often have opioid pills left over from prescriptions and that the medicine is often stored in an unsecured location at home.

The danger in this finding is underscored in a study by Wisconsin Poison Control, which from 2002 to 2016 fielded 3,320 calls regarding unintended opioid exposure (Creswell et al., 2019). Of those cases, 61% involved children ages 0 to 5 years and 29% involved teens (ages 13 to 19 years). The study authors emphasized the importance of safely storing these



Unused or expired prescriptions and over-the-counter medicines collected during Drug Dropoff Days are safely destroyed.



Drug Dropoff Day collection numbers

COUNTIES	POUNDS COLLECTED
Scioto, Fayette, Franklin	466
Clark, Montgomery	710
Trumbull, Mahoning	300
Hamilton	210
Ross	262
Allen	601
Huron	64
Total	2,613

medications and the dangers of their unintended exposure to others in the home, especially children.

A separate national study uncovered a threefold increase in the number of opioid-related pediatric deaths during the previous 18 years — 604 such deaths involving children ages 0 to 4 (Gaither et al., 2016).

To address the challenge of opioid misuse in Ohio, SCOPE worked with the U.S. Drug Enforcement Administration to initiate the Attorney General’s Drug Dropoff Days, which, combined with the DEA’s Drug Take-back Days, provide Ohioans with more opportunities throughout the year to get leftover medications out of their homes so they cannot be misused.

In planning the events, AG Yost’s office regularly partners with county sheriffs, other law enforcement agencies, and retail and media outlets. In more recent years, the Ohio SEA Grant Program has joined the effort — to help raise public awareness about the environmental hazards (to Ohio’s landfills and waterways) of discarding leftover drugs in the garbage or flushing them down toilets.

To determine which areas of the state to target first with the Drug Dropoff Day events, organizers used SCOPE’s analysis of opioid-overdose rates at the county level. The three counties chosen for the initial event — Fayette, Franklin and Scioto — had suffered the most opioid-overdose deaths in the record-breaking second quarter of 2020: Scioto County had 35.22 per 100,000 people; Fayette, 20.67; and Franklin, 19.43.

To date, Drug Dropoff Day events have been held in 11 Ohio counties, yielding a combined 2,600+ pounds of unwanted leftover prescription medications.

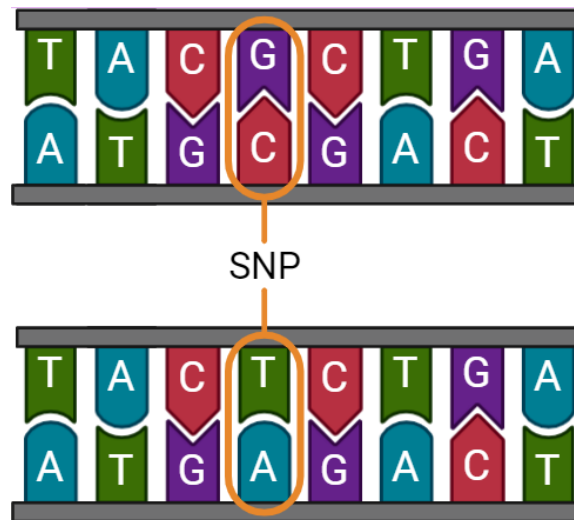
Also in an effort to keep prescription drugs from ending up in the wrong hands, SCOPE and the Attorney General’s Office in 2024 helped to fund a program to ensure that all Ohioans have access to resources for safe storage of medications.

This medication-storage program is being piloted in Allen County.

Prioritizing pharmacogenomics

Genetics play an important role in OUD, but few specific gene variants have been identified.

Pharmacogenomics is the study of how genes affect a person’s response to drugs. Scientists examine individual genetic variants known as single nucleotide polymorphisms (SNPs, also called “snips”) and how those associate with that person’s response to a drug. SNPs can also influence how a drug is removed from the body.



SCOPE research identified novel SNPs associated with opioid use disorder and with opioid overdose.

DNA is made of nucleotides that are aligned A to T and G to C. In the diagram, a SNP is located in the lower DNA strand with the G from the top strand having been replaced with a T. This change represents a single nucleotide polymorphism.

As a result, the final gene product protein could change, leading to reduced drug function or drug elimination from the body.

(Figure designed in Biorender)

In a first-of-its-kind study, SCOPE partnered with the hospital emergency departments at the University of Cincinnati and The Ohio State University to identify potential genetic variants and their possible association to opioid use disorder.

A combined 1,301 patients were enrolled in the study between June 2020 and November 2021, and the potential link between 180 SNPs and OUD was analyzed.

Six SNPs found in four genes were associated with OUD. Variants within the dopamine reward and opioid metabolism pathways have significant positive and negative associations with OUD.

Identification of these variants provides promising possibilities for genetic prognostic and therapeutic targets for future investigation.

The study also screened for environmental factors (such as risk-taking behavior) and genetics and their combined association with OUD. Using this information to develop treatment guidelines could potentially reduce morbidity, mortality and health-care costs associated with OUD and opioid overdose.

SCOPE is now conducting a validation study with Ohio State.

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As of November 2024, the SCOPE team has shared its findings through educational presentations and with the publication of 17 peer-reviewed papers, contributing to the body of scientific literature on opioids and opioid-use disorder. For a list, visit <https://www.ohioattorneygeneral.gov/Individuals-and-Families/Victims/SCOPE/Tools-resources>.

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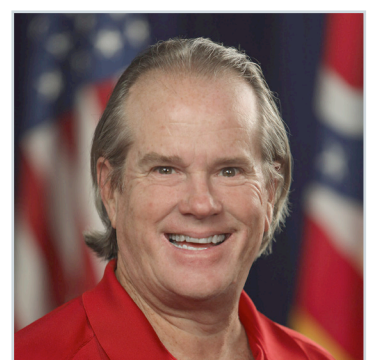
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To learn more about SCOPE, visit:

www.OhioAttorneyGeneral.gov/SCOPE

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