Testimony of Professor Keith Humphreys, Stanford University to May 24, 2023 joint hearing of The California Assembly Select Committee on Fentanyl, Opioid Addiction, and Overdose, the Standing Committees on Health, and the Standing Committee on Public Safety

Chair Haney, Chair Jones-Sawyer, Chair Wood and Vice-Chairs of Standing Committees, thank you for convening this important hearing and also for allowing me to speak with you and your distinguished colleagues today. I have been asked to provide some basic information about fentanyl, addiction, and overdose so that everyone gathered here and listening and watching elsewhere can begin with a shared understanding of the challenge our state is facing, so let me dive right in.

First, what is fentanyl and why is it different than other drugs?

Fentanyl, first synthesized in 1959, is an opioid, so it's pharmacologically similar to drugs like morphine and oxycodone that are designed to relieve pain. Fentanyl is however much more efficient than other opioids at crossing the blood-brain barrier, meaning users experience its effect rapidly and at great intensity. In very small, precisely measured doses, this makes fentanyl useful in medicine: if you've had surgery, there's a good chance you've benefitted from fentanyl.

But a medically useful drug can become very dangerous when it's produced, sold, and used illegally. The ability of fentanyl to rapidly produce euphoria at a dose as small as 1/50th that of heroin makes it extremely addictive. Its addictiveness is a risk for users of any age, but particularly so for young people because their brains are still developing.

When fentanyl is no longer provided at precise doses by people with an interest in helping the person who takes it, the risk of overdose soars. That's why illicitly manufactured fentanyl killed about 70,000 Americans, including about 6,000 Californians, in 2021[1]. To give a sense of the risk of overdose even from very small doses, consider that if I had just a pound of pure fentanyl powder in front of me, and I cut it into 500 equal sized pieces, and then I cut any one of those into 500 more equally sized pieces, even one of those very little pieces – 1/500th of 1/500th of a pound -- could cause a fatal overdose.

Fentanyl being so potent in such compact amounts also means that interdicting the drug is hard. Experts at the RAND Drug Policy Research Center[2] estimate that the entire US annual consumption of illegally manufactured fentanyl weighs less than ten tons. That literally means that any one of the over 5 million trucks that cross the US-Mexico border each year could hold all the illegal fentanyl our nation consumes.

Second, how did fentanyl suddenly become so dominant and destructive?

Fentanyl is a disruptive innovation in the illegal drug industry that is extraordinarily lucrative. Unlike heroin, morphine, hydrocodone and every other opioid that has significant illegal sales and use, the raw materials for fentanyl do not come from plants. Fentanyl is an entirely synthetic drug, just as are the stimulant drug methamphetamine and the tranquilizer

xylazine, with which fentanyl is sometimes mixed. More and more illicit drugs being synthetic means that many things the federal government does to reduce the supply of drugs no longer work, e.g., eradicating poppies and coca in faraway countries, paying farmers in poor regions to grow other crops, intercepting big bales of drug crops with Coast Guard cutters; all of that is irrelevant to synthetic drugs. Production and supply chains of synthetic drugs can be as compact as a single room in a single house in Mexico or California that has Internet access and basic lab equipment.

Eliminating agriculture from drug production makes producing synthetic fentanyl dramatically cheaper than heroin. And because it's so short-acting, addicted fentanyl users purchase their drug more often than do addicted heroin users. As a result of these two effects, an addicted fentanyl user might generate as much profit for a drug trafficker in 6 months as an addicted heroin user does over decades. This makes dealing fentanyl an economically viable business model for drug traffickers despite the drug's higher death risk. That a very cold-hearted calculation…but these aren't nice people.

Fentanyl has been sold in significant quantities east of the Mississippi River for almost a decade, but given how profitable it is, it was only a matter of time until it migrated west. Our team at Stanford began observing the drug's diffusion about 5 years ago[3]. From 2017 to 2019 the share of US fentanyl deaths occurring out west increased 371%. Because fentanyl is relatively so profitable, it could entirely drive out heroin in California's opioid drug markets just as it already has in some parts of the eastern US.

Third, what do we need to do differently in light of fentanyl and other addictive synthetic drugs?

Let's start with state and local law enforcement. A staple of their work with drugs like heroin and cocaine has been securing product seizures. Unfortunately, drug seizures make less difference with synthetic than agricultural drugs, because rather than having to wait for another growing season or a large shipment from a faraway land, traffickers can have their chemists replace the seized drugs rapidly and physically close to retail markets.

Domestic law enforcement can still make a big difference, but only if we give police a mission they can reasonably fulfill. Specifically, they can use evidence-based strategies to deter some of the biggest harms of illegal drug markets, namely corruption, street violence, and the open-air markets that destroy the neighborhoods around them. This will not get rid of drugs or drug dealing and it's not intended to, but it will make the lives of many families safer, healthier, and happier, and will also sustain local businesses that might otherwise go broke or leave. The criminal justice system can make further contributions by giving people with drug problems whose addiction drives repeated offending the option of participating in drug court-supervised treatment rather than being incarcerated.

On the health policy side, thankfully the FDA-approved medications like buprenorphine and naltrexone that we have to treat opioid addiction seem to work for fentanyl addiction. We also have behavioral treatments like contingency management that can help people addicted to opioids as well to methamphetamine and other drugs. But we need to make sure everyone has access to all of these evidence-based treatments for addiction. We've got an excellent start on

doing this in our correctional system due to the work of many members of this body, including Assemblymembers Waldron and Wood. We also need to make sure that Medi-Cal reimburses providers adequately for prescribing medications and behavioral treatments for addiction. And we must require private insurers to obey federal and state parity laws that mandate adequate benefits for the treatment of drug and alcohol use disorders.

In terms of other public health strategies, there are some challenges around adapting overdose rescue with naloxone to the potent synthetic drugs Californians are taking, particularly combinations of fentanyl with methamphetamine and/or xylazine. That said, naloxone remains a remarkably powerful and affordable life-saving drug and rolling it our everywhere should be a priority both to individuals who use drugs, their families, and first responders and also to high-risk locations like bars, schools, and libraries. This should include requiring public and private insurers to contribute to paying the cost of over the counter naloxone, which is currently priced higher than many people can afford.

Even as we press forward with treatments and with supports for recovery from addiction, with overdose rescue, and with other health services like syringe exchange programs, we have to be realistic about what all of that can achieve. Sadly, no matter what we do, at least some people who are currently addicted to opioids will die of overdose or suffer from addiction for the rest of their lives, leading to great pain for themselves and their families. Which brings us to a basic truth about epidemics, whether it's COVID or HIV/AIDS or any other, the epidemic never ends if we focus only on helping people who are already very ill. Epidemics usually end through the prevention of new cases.

Because the original DARE prevention program was well-known and didn't work well, drug prevention currently has a worse reputation than it deserves. Today there are evidence-based programs (e.g., Communities that Care) adaptable in diverse communities that not only reduce children's likelihood of developing drug problems but also lower their odds of experiencing mental health, social, and academic problem. We can supplement such efforts that with prevention-oriented public education for example campaigns helping young people understand that pressed fentanyl pills are being sold on line as if they were an Ativan or Adderall or another drug, and, campaigns encouraging parents to lock up any potentially addictive medications they have been prescribed. Investing in prevention takes vision and leadership because the benefits take time to accrue, but I've worked with the Assembly long enough to know that you have the vision and leadership to recognize that as important as it to help Californians who are addicted to drugs, it's even better to help them never get into that awful situation in the first place.

Thank you again for having me here. I look forward to your questions.

Note: Dr. Humphreys' testimony reflects his own views and does not necessarily reflect official positions of his employers.

References

1 Centers for Disease Control and Prevention. (2023). National Vital Statistics System provisional drug overdose death counts. Available on line at https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm

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3 Shover, C.L., Falasinnu, T., Dwyer, C., Cunningham, N., Vest, N.B., Humphreys, K. (2020). Steep increases in fentanyl-related mortality west of the Mississippi River: Synthesizing recent evidence from county and state surveillance. Drug and Alcohol Dependence, 216, 108314.