

Coffee and Conversation Speaker Series

Proceedings from “Opioids, Emerging Response, and the Problem of Drugged Driving”
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Katie Harmon Ph.D.
Postdoctoral Research Associate
UNC Highway Safety Research Center

With more and more states legalizing recreational marijuana while much of the nation faces a major public health concern due to opioid addiction, drugged driving has become more of a problem than the public realizes. However, we lack adequate testing methods and data to properly characterize the problem. In this session, we will discuss a major road safety concern with few apparent solutions.

Katie Harmon, Postdoctoral Research Associate at the UNC Highway Safety Research Center, tackles these issues in her talk “Opioids, Emerging Response, and the Problem of Drugged Driving.” She discusses the current state of policies and research needs around opioid use and driving. The talk is part of the Coffee and Conversation III theme “Building Resilience into a Transportation System for All.”

“More research is necessary to discover associations pertaining to opioid use,” said Harmon. There is plenty of research about alcohol and, with marijuana legalization in a number of states, there is also more research on marijuana. Opioid use remains under-researched.

The history of opioid use dates way back, as far as 3000 BCE, including use by the Greeks and Romans. Since 1999, however, drug overdose fatalities have risen 200%. Along with suicide and chronic liver disease, drug overdoses have contributed to one of the first declines in U.S. life expectancy since the 1918 flu pandemic.

As an epidemiologist Harmon is interested in the distribution and determinants of disease. These diseases are not limited to infectious diseases, said Harmon. Drug addiction is a health issue about which epidemiologists are concerned. Drugs are defined as “A medicine or other substance which has a physiological effect when ingested or otherwise introduced into the body.”¹

One way to look at the effect of a drug on society is to measure its cost. This includes costs related to crime, lost work productivity, and medical treatment. In those terms, tobacco remains the costliest, at \$300 billion annually, followed by alcohol at \$249 billion, illicit drugs at \$193 billion. Prescription opioids account for \$78.5 billion in costs annually.²

¹ Online Oxford Dictionary. Drug. English Oxford Living Dictionaries. <https://en.oxforddictionaries.com/definition/drug>. 2019. Accessed March 11, 2019.

² National Institute on Drug Abuse (NIDA). Trends & Statistics. NIDA. www.drugabuse.gov/related-topics/trends-statistics. April 2017. Accessed March 11, 2019.

Opioids are:

- Typically administered orally or intravenously
- Primarily used for pain management
- Effective for surgical pain
- Not good for chronic pain. People become quite tolerant to the drugs and require higher doses to calm pain. Risk of addiction. Non-cancer pain, specifically.
- Euphoria is a common effect of opioids.

Adverse Effects include:

- Pruritus (Itching)
- Constipation
- Fatigue
- Dizziness
- Drowsiness
- Nausea
- Sexual Dysfunction
- Respiratory Depression
- Anorexia
- Allergic Reaction
- Addiction
- Death

“The typical opioid user is a white, middle-aged man” based on the available statistics, said Harmon. Areas in North Carolina that are most affected are mostly in the western part of the state. This is consistent with seeing increased opioid use in Appalachia and other rural areas.

A 2013-2014 roadside survey³ found that of those testing positive for drugs in their system, the following proportions were found:

- 2.4% of drivers tested positive for opioids
- 11.6 % tested positive for Tetrahydrocannabinol (THC) (marijuana)
- 4.6% tested positive for alcohol

It is illegal to drive while impaired on alcohol, or other drugs. Without research into opioids, it is even more difficult to assess its pharmacology, or how it interacts with other drugs. For example, what kind of driving impairment can we expect from someone who is using both opioids and benzodiazepines such as Xanax? The current body of research is limited and some of it is highly experimental. One example was a German study in which users were given opioids for the first time and then were tasked with driving.⁴

³ Kelley-Baker T, et al. 2013-2014 National Roadside Study of Alcohol and Drug Use by Drivers: Drug Results. No. DOT HS 812 411. www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/13013-nrs_drug-053117-v3-tag_0.pdf. Published May 2017. Accessed March 16, 2019.

⁴ Verster JC, et al. Effects of an opioid and an NSAID on driving ability, memory function, psychomotor performance, pupil size, and mood. *Clin J Pain*. 2006; 22(5): 499-504.

Overall, limited research seems to agree that experienced users on low doses of prescription opioids as part of a well-managed treatment plan are of minimal crash risk.

A very recent study in the *Journal of the American Medical Association* examined matched pairs comparing crash initiators to non-initiators in the Fatality Analysis Reporting System (FARS).⁵ Analysis showed the following:

- There was a prevalence of opioids increased in both groups.
- One effect on driving was a tendency to not be able to stay in lane.
- Driving behavior was similar to drivers with a blood alcohol concentration (BAC) of .01-.07.
- Driving behavior was nowhere near drivers with a BAC above .08.

Given this research, however, is this the typical opioid user/driver? Again, more research is needed, Harmon asserts.

Moving along the opioid timeline, the growing use of synthetic opioids, those not derived from the poppy are creating new sets of strengths and effects from the drug. Between 1850 and 1900, the hypodermic syringe was invented and by 1898 we had heroin. In 1936, Demerol is the first truly synthetic opioid. In 1946 methadone is invented. In the 1990s, there were calls to improve pain management. This is the genesis of the opioid use we are seeing now, said Harmon.

One thing that is trending is that “we are seeing more use of heroin and street market versions of opioids,” she said. “A lethal dose of heroin is huge compared to a lethal dose of Fentanyl.”

With all of the versions of opioids available both by prescription and illegally, we still do not have a good understanding of opioids’ impact on impairment. Using alcohol research as a template helps demonstrate the dire need for more research in opioid use. Currently there is not a “dose response curve” for the relationship between level of opioid impairment and motor vehicle driving. This curve helps demonstrate how long after drug/alcohol use impairment is prevalent. Alcohol studies have led to a 3-hour curve. For opioid users, research is trying to catch up in merely having toxicology reports for opioid use so that one can capture the data.

To conclude, Harmon identified a list of crucial actions to help address opioid use in North Carolina and the nation. (Some of these are already implemented in some states):

- Address underlying socio-economic challenges that contribute to opioid use. “Many opioid users come from depressed counties, such as high unemployment,” said Harmon.
- Evidence-based strategies for non-opioid pain management. “I still believe there is a place for opioids in treating some pain, not chronic pain,” said Harmon. “However, they are really good at what they do.”
- Harm reduction strategies. These include:

⁵ Chihuri S & Li G. Use of prescription opioids and initiation of fatal 2-vehicle crashes. *JAMA*. 2019; 2(2): e188081.

- Distribute naloxone kits: "This is something that people are doing. This doesn't help underlying causes, but it does help prevent deaths from overdose." At this point, anyone can get a kit and be trained on administering."
- Needle exchange programs: This help prevent Hepatitis and HIV.
- Enforcement. Reduce trafficking of illegal drugs (and legal drugs used illegally).
 - Prosecute and adjudicate drugged driving cases
- More testing. Develop better onsite oral fluid tests for detecting opioids. Currently tests have lower accuracy, sensitivity.
 - "I would start with more roadside testing," said Harmon. This would help us "identify the places in our state where drivers are on the influence of opioids."
 - Pull hospital toxicology reports to match roadside testing to further identify prevalence.
- Educational campaigns: "We can mitigate the risk to themselves and others."
- Continue to tackle the problem of alcohol problem. "It is still the largest problem in our state and across the country."

ABOUT THE SPEAKER

Harmon received her doctorate in epidemiology at the University of North Carolina at Chapel Hill, with a concentration in injury prevention. She also has a M.P.H. from Saint Louis University, with a joint concentration in epidemiology and environmental and occupational health and a B.S. in environmental health science from The University of Georgia.

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