Senate Caucus on International Narcotics Control Hearing

Marijuana and Public Health

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HEALTH SCIENCES

Introduction

Senators Cornyn and Feinstein, and Members of the Caucus it is a pleasure to be here today to discuss issues related to the use of marijuana and driving. As a way of a brief introduction, my first job out of graduate school was as a forensic toxicologist in Virginia helping to determine the cause and manner of death in Medical Examiner cases. At the Medical Examiner's office, I saw the devastating effects of driving under the influence on a routine basis. I also had the opportunity to work with State and Local police along with prosecution and defense attorneys to present scientific data in courts of law. Currently I am clinical toxicologist at UC San Diego where my research focuses on developing analytical methods to measure concentrations of THC and metabolites following recent marijuana exposure. I am part of a large team of investigators at the UCSD Center for Medical Cannabis Research (CMCR) focused on understanding both beneficial and detrimental effects of cannabis on human health. We recently completed enrolling subjects in one of the largest studies to date looking at the effect of smoked marijuana on driving performance and are in the initial stages of analyzing data.

The relationship between marijuana use and driving impairment is complex because of the unique pharmacokinetic and pharmacodynamic properties of delta-9-tetrahydrocannabinol (THC). With ethanol there is a clear relationship between amount of alcohol consumed, blood concentrations, and effects on driving performance. With marijuana these types of relationship are much more complex. The relationship between blood THC concentrations and crash risk has not been established, but there is a clear understanding that THC impairs driving performance. The question that remains is how to best identify drivers who are impaired by marijuana. There are no perfect solutions and legislative directives must balance keeping our roadways safe with due process.

Problems with determining the relationship between concentrations of THC and impairment is that levels of THC in blood vary widely depending on the route of administration, the time of sampling after dosing and the characteristics of the individual using marijuana. Generally, smoked marijuana causes effects that start shortly after inhalation and last about 3 hours, while subjects who eat marijuana start feeling effects about an hour later and can have effects up to 8 hours. Unlike alcohol which is cleared with 24 hours of drinking, THC and several metabolites accumulate in the body with repeated dosing so frequent users have baseline concentrations that exceed the per se limits currently used in some states for driving under the influence. After smoking, THC concentrations in blood change rapidly and our studies have documented the poor relationship between blood concentrations of THC and measures of impairment. Studies like this led the National Safety Council to put out a position statement in 2017 that reads:

“It is further concluded that due to rapid changes in blood THC concentrations over time, there is no minimum safe threshold blood concentration below which a driver can be considered to have been unaffected while driving following recent marijuana use. Consequently, there is no scientific basis for the adoption of THC per se laws for driving.” This statement was also supported by the International Association of Police Chiefs. Despite these position statements, 18 States currently have some form of per se statutes.

How do we keep our roads safe? In California prosecution of driving under the influence of drugs is currently based on officer observations combined with results of toxicology testing. This practice will likely continue for the foreseeable future.

Since there is no reasonable expectation that THC or a metabolite of THC will be useful for per se impairment an alternative would be to develop methods to identify “recent use” biomarkers. The biological specimens that could be used to determine if a driver has recently used marijuana are blood, breath, and oral fluid. The primary advantages of breath and oral fluid over blood is that they can be collected at the roadside at the time of a traffic stop as opposed to blood which typically takes about 90 minutes to collect. This is an important consideration because unlike ethanol, concentrations of THC can fall by more than 90% in this short timeframe. There are a variety of ongoing efforts to identify markers of recent use.

In respect of my time limit I would like to close my initial statement by mentioning two items that this caucus needs to be aware of so they can help shape appropriate regulations.

1. Due to federal restrictions, investigators cannot study the cannabis products our population is exposed to. This is a critically important public health issue that needs to be changed.
2. Currently there is no standardized data collection for driving under the influence of drugs. Without good data it is difficult to develop good policy.

I hope my testimony was helpful and look forward to answering any questions members of the caucus may have.