STEM
Systematically Testing the Evidence on Marijuana

Cannabis and Impaired Driving

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Driving after using cannabis products can be misperceived as "safe." This misperception partially stems from comparing alcohol impairment to cannabis impairment, perceptions that compensatory driving behaviors (e.g., driving slower) while under the influence of cannabis leads to safer driving, and previous mixed findings in research. However, driving after using cannabis products may increase the chance of a crash.

Evidence Highlights

- While earlier research provided mixed findings on whether cannabis use impairs driving ability, several newer meta-analyses provide stronger evidence that cannabis impairs driving-related skills including **increasing reaction time** (i.e., taking longer to react), and **decreasing attention and lateral control** (i.e., lane weaving).[1-3] Further, recent research suggests cannabis impairment **reduces visual acuity** which in turn reduces driving skills.[4]
    - Drivers under the influence of cannabis may engage in ***compensatory* driving behaviors**, (i.e., behaviors intended to help them counteract their impairment) such as driving slower, but these compensatory behaviors are more difficult when tasks are complex and therefore may not reduce the risk of crash or receiving a ticket.[5-8]
    - While higher levels of alcohol will affect driving to a greater extent than cannabis,[9] cannabis impairment still may increase the risk of a crash.[10-13] **Driving under the influence of *both* alcohol and cannabis is especially dangerous** as research suggests driving skills may be more negatively impacted than when using alcohol or cannabis alone.[3,5,7,14]
    - There is some variability in the research **on how long an individual should wait to drive after using cannabis products.** While some research suggested the effects of cannabis are reduced starting at 4.5 hours[15], other research and meta-analyses suggests almost all effects are recovered between 5-7 hours after inhalation.[2, 16] However, given the differences in potency and modes of use, current guidelines suggest waiting 6-8 hours after inhalation and 8-12 hours after oral ingestion.[16] Different modes of use (e.g., smoking, edibles, dabbing) can change the time to onset and length of impairment.[15]
- Mild **residual impairment** in episodic and working memory, processing speed, and executive functioning can persist for days

following cannabis abstinence.[17] These effects can reduce driving skills and may be why some research has found increases in crashes among those who use cannabis more generally, even when they were not acutely impaired.

- **Cannabidiol (CBD) by itself does not appear to affect driving ability.**[18] However, contrary to the belief of some, there is no evidence that CBD reliably protects against THC-induced driving impairments.[19,20]
- Tolerance is important to consider. Several studies suggest that driving impairment is worse among those who use cannabis infrequently, compared to those who use more frequently.[2,5,16] However, these individuals may also be using cannabis products in ways that increase their overall THC levels (e.g., using more or higher potency products to combat tolerance).[16] Additionally, compared to those who use cannabis less frequently, they may be less aware of their impairment and report higher levels of confidence in their driving.[21] **Thus, in real-life scenarios those with a higher tolerance to cannabis may not be any safer to drive after using cannabis than those without tolerance.**
- Research on how **synthetic cannabinoids** (e.g., Delta-8, Delta-10, Spice, K2) may impact driving is limited and consists primarily of case studies and experimental research on psychomotor effects.[22-25] However, the available research suggests that synthetic cannabinoids are typically more potent than THC,[26] and therefore can impair driving at least as much as THC products.

Clinical Considerations

- Just as states differ on legal status of cannabis, **states also differ on cannabis impaired driving laws.** Some states have per se laws, where the presence of a certain amount of THC or its derivatives (e.g., 5 ng/mL in blood) constitutes impairment. Others have zero tolerance laws where any amount is considered impairment. **Key factors to consider with patients include:**
  - THC and its derivatives can last in the blood stream longer for people who use cannabis more frequently and more heavily.[27] Therefore, they may have THC in their blood without feeling acutely impaired.
  - While consumers can readily purchase Blood Alcohol Content (BAC) breathalyzers, comparable products to detect level of cannabis-induced impairment do not currently exist.
- Increasingly, many available cannabis products have **high percentages of THC**,[28] which may increase the likelihood of driving impairment.

Bottom Line

Cannabis use can impair driving and driving after cannabis use is associated with elevated risk of a crash. Unlike alcohol, there is no ready way to calculate whether an individual is still impaired following recent cannabis use. Clinicians should be aware of the misperceptions regarding the safety of driving after cannabis use and advise patients who report using cannabis to avoid driving after use. While ranges can vary based on mode of use, potency, and amount used, patients could be encouraged to wait at least 4.5-6 hours, preferably 6-8 hours, before driving after inhaling, and 8-12 hours before driving after oral ingestion.

Q&A

What to do if you think someone is acutely impaired by cannabis and they drove to your clinic:

- First, it is important to not make assumptions – red eyes could mean allergies, odor could mean they were with someone who was using cannabis. Next, ask when they last used cannabis.
  - If the patient states they used recently and they drove to your clinic, it is important to first know your own office's policy on impaired patients in case there is something you are required or mandated to do.
  - Next, discuss options for safe transportation or a space for waiting.

What you could hear a patient say about cannabis use and driving, and how you could respond:

- "I drive better after smoking weed."
  - You could respond: "Some people report they drive better after using cannabis because cannabis reduces their anxiety. However, there is no research to support that driving improves after cannabis use. Many people do report driving slower after using cannabis and this could be why you might feel you drive better. However, even if you drive slower, other factors such as your ability to react quickly to other drivers, and your ability to stay in your lane, are impacted by cannabis and can increase your chances of a crash or getting pulled over."

- **"I drank too much and needed to sober up, so I smoked weed."**
  - You could respond: "Research shows that driving after using both alcohol and cannabis together may be more dangerous than using either one alone because of the drug interaction introduced when both substances are used. What are some other things you think you can do instead if you feel you drank too much to drive in the future?"
- **"Driving after smoking weed is safer than drinking."**
  - You could respond: "Yes, drinking alcohol at higher amounts could impact your ability to drive more than cannabis might. However, driving after using cannabis is still unsafe. Using cannabis is likely to feel different than using alcohol, which makes sense since they are different substances. However, it is important to know they both can impair your ability to drive."
- **"It is legal here, so I can use cannabis and drive legally."**
  - You could respond: "You're right that using cannabis is legal here, but driving impaired by cannabis is not. In fact, in some states driving after using cannabis is not legal." Next, you can discuss your state's impaired driving laws. If your state has a zero tolerance or per se law, you may consider discussing the implications of having THC in their blood without impairment.
- **"Right after smoking, my driving might be impaired, but I'm fine after about an hour and a half."**
  - You could respond: "That's a pretty common belief, and research does show that folks perceive their own cannabis-related impairment goes away about 90 minutes after smoking. However, when researchers tested their driving ability, they continued to find impairment in driving despite most participants feeling confident in their ability to drive." [16]
- **"How long should I wait to drive after using cannabis?"**
  - You could respond: "The time you should wait depends on several factors including how much cannabis you use and how you use it. I suggest you wait at least 4.5-6 hours, however it will be safer, and the current low-risk guidelines suggest waiting 6-8 hours after inhaling, such as smoking and vaping, and 8-12 hours for ingestion, or eating or drinking. How do these times map on to how long you typically wait to drive?"

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Suggested citation:
Hultgren BA, Kilmer JR, Walton TO, Gilson MS, Lambuth J. Cannabis and Driving Impairment. The Systematically Testing the Evidence on Marijuana Project; February 2025. Accessed (Month DD, YYYY). https://www.cannabisevidence.org/clinician-resources/clinician-briefs/cannabis-and-driving-impairment/

Acknowledgments:
Thank you to Esther Choo, MD MPH and Thomas D. Marcotte, PhD for critically reviewing this document.

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All authors are affiliated with the University of Washington.

Disclosure of Potential Conflicts of Interest:
All authors have no conflicts of interest to declare.

VA | U.S. Department of Veterans Affairs
Veterans Health Administration
Office of Rural Health

Funding provided by the U.S. Department of Veterans Affairs (VA) Office of Rural Health. Visit www.ruralhealth.va.gov to learn more.