## Case 1:

**Methamphetamine treatment, outpatient, best practices**

**Instructions:**

- Work through this activity together as a group, being sure that PGY1, 2, and 3 voices are all being included in the discussion.
- You are provided with a case, an abstract, and a figure from an article, as well as questions and prompts.
- Choose a spokesperson or two to report on your group's conclusions.

**Case Intro:**

35yo woman with OUD who you are seeing for buprenorphine MAT. UDS is positive for BUP and MET/AMP. All previous UDS has also been positive for methamphetamine. She says that for the last year she was smoking meth about 2x per week "for energy" in order to get her housework done after her kids go to bed. She has had increasing use to almost daily and is worried about becoming addicted. She finds that she is needing higher amounts to get the energy effect. She has tried to quit, but is so exhausted when she stops smoking it that she cannot complete her role as mother. She wonders if there is something you can give her, like Adderall, which she has taken a couple of times and found helpful.

Question:

1. How many DSM5 criteria does she meet? Would you classify her methamphetamine use disorder as mild, moderate, or severe?
2. Have you seen or heard of any other medications being prescribed to help with methamphetamine use disorder?
3. Have you had a similar experience of a patient asking for stimulants? What are other challenges you've experienced with patient who use methamphetamine?

**Look at the Abstract and Figures below:**

**Article:**

Galloway GP, Buscemi R, Coyle JR, et al. A randomized, placebo-controlled trial of sustained-release dextroamphetamine for treatment of methamphetamine addiction. Clin Pharmacol Ther. 2011;89(2):276-282. doi:10.1038/clpt.2010.307

**Abstract:**

Sixty treatment-seeking individuals with methamphetamine (MA) dependence entered a randomized, placebo-controlled, double-blind clinical trial of oral dextroamphetamine (d-AMP) as a replacement therapy for MA dependence. The subjects took 60 mg sustained-release d-AMP for 8 weeks, during which time they received eight 50-min sessions of individual psychotherapy. Adverse events and urine toxicology for MA were assessed two times a week. There were no serious adverse events. Urine samples containing <1,000 ng/ml of MA were classified as negative for MA. The MA-negative scores in the d-AMP group (3.1 ± SD 4.6) were no higher than those in the placebo group

(3.3 ± SD 5.3; P > 0.05). However, withdrawal and craving scores were significantly lower in the d-AMP group (P < 0.05 for both). Although subjects taking d-AMP did not reduce their use of MA, the significant reductions observed in withdrawal and craving scores in this group support the need for further exploration of d-AMP as a pharmacologic intervention for MA dependence, possibly at higher doses.

**Figure 3** Proportions of methamphetamine-negative urine samples by time and group. *d*-AMP, dextroamphetamine.

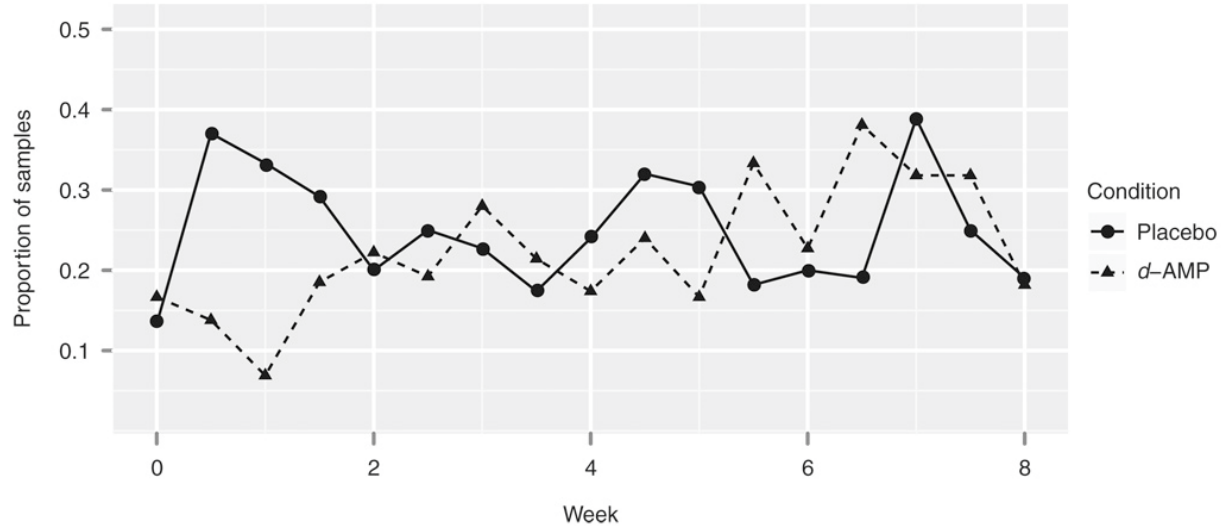
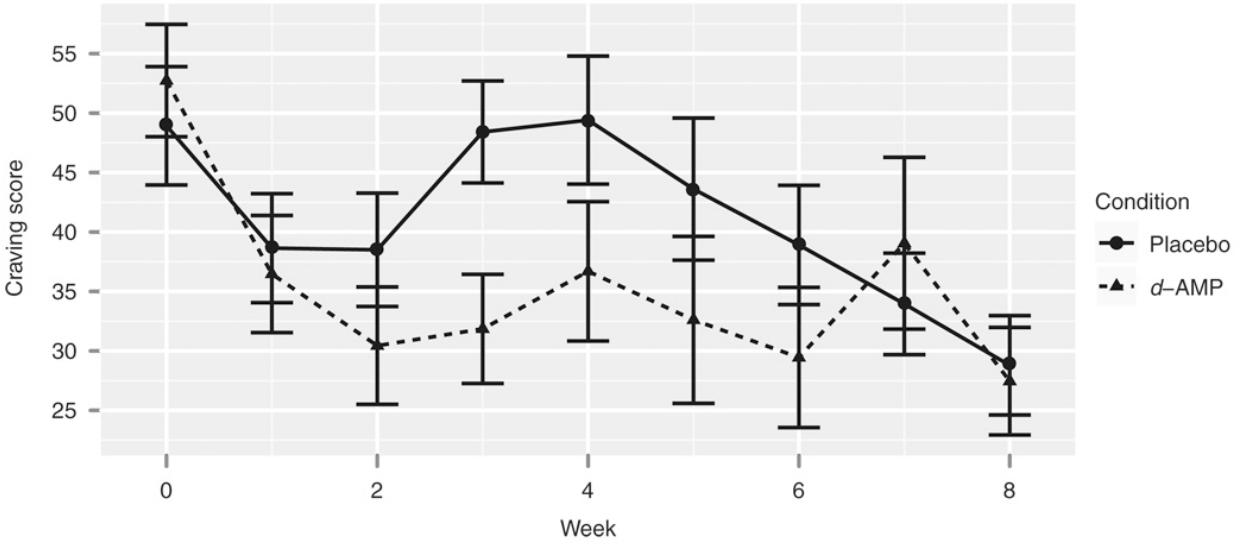



**Figure 5** Methamphetamine craving visual analog scale scores by time and group. *d*-AMP, dextroamphetamine.



Questions:

1. Be prepared to briefly describe the study (don't read the abstract aloud!)
2. What type of study is this and how does that influence your confidence in the results?
3. Interpret the two figures provided.
    a. Did dextroamphetamine impact negative urine drug screens?
    b. Did dextroamphetamine improve cravings? Was this effect sustained?
4. What happened to the cravings in the placebo group over time? Why?
5. Based on this data and your clinical experiences, would you prescribe dextroamphetamine to the patient in the case study?

## Case 2:
## Benzos and buprenorphine, co-prescribing, risks

**Instructions:**

- Work through this activity together as a group, being sure that PGY1, 2, and 3 voices are all being included in the discussion.
- You are provided with a case, an abstract, and a figure from an article, as well as questions and prompts.
- Choose a spokesperson or two to report on your group's conclusions.

**Case Intro:**

Ms. J is a 30 yo obese woman presenting to you as a transfer from an outside provider on 24 mg- 6mg daily buprenorphine-naloxone for her chronic OUD, and 6mg daily of alprazolam. Medical history is also notable for OSA, PTSD, and chronic back pain after being the victim of a hit-and-run. She reports that she has been on these medications for years, except when she's missed appointments and not had her prescriptions. Benzodiazepine use started with small amounts of clonazepam given to her by a friend when she was feeling anxious then taken over by her prior PCP. She does not think the alprazolam is sedating but was recently rear-ended because she fell asleep at a stop light after taking her medications as prescribed. A few months ago she ran out of her medication early because she was needing extra doses. She went for 3 days without the alprazolam. She had a withdrawal seizure and had to be hospitalized. She is hoping you will be able to give her something a little stronger because she doesn't think the 6mg is "holding" her. She denies alcohol use and denies ever using any of her medications or other substances IV. She reports that her pain and OUD are under good control, which is consistent with UDS results.

Questions:

4. How many DSM5 criteria does she meet? Would you classify her benzodiazepine use disorder as mild, moderate, or severe?
5. What are the general risks of combining opioids with benzodiazepines?
6. How is buprenorphine different than other opioids with respect to respiratory depression?
7. Have you had a similar experience of a patient asking for benzodiazepines with opioids? What are other challenges you've experienced with similar patients?

**Look at the Abstract and Figure below:**

**Article:**

Schuman-Olivier Z, Hoeppner BB, Weiss RD, Borodovsky J, Shaffer HJ, Albanese MJ. Benzodiazepine use during buprenorphine treatment for opioid dependence: clinical and safety outcomes. Drug Alcohol Depend. 2013;132(3):580-586. doi:10.1016/j.drugalcdep.2013.04.006

**Abstract:**

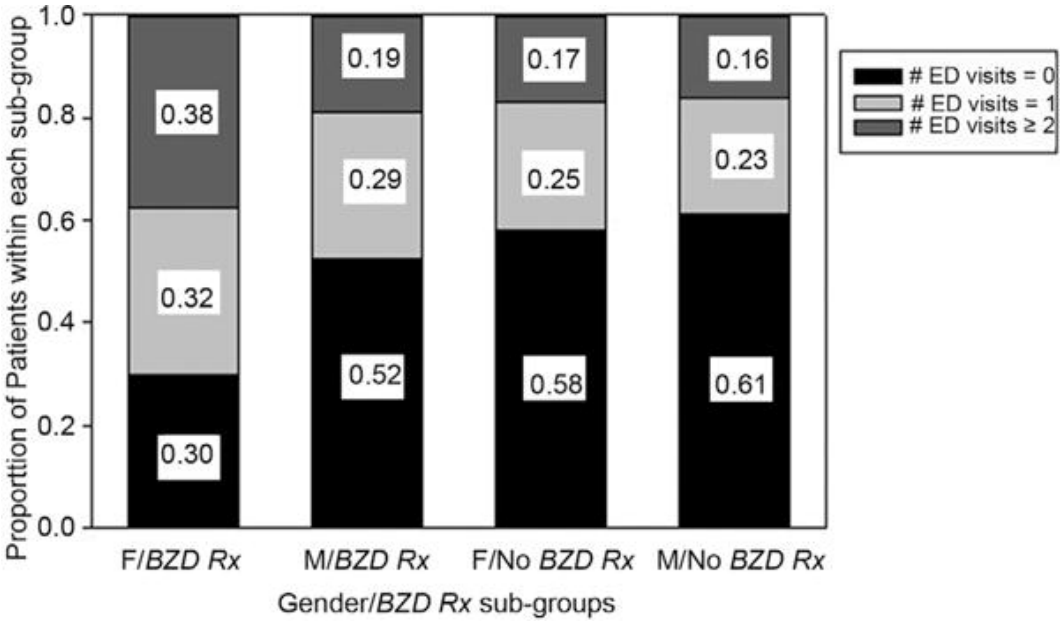
Background: Prescribing benzodiazepines during buprenorphine treatment is a topic of active discussion. Clinical benefit is unclear. Overdose, accidental injury, and benzodiazepine misuse remain concerns. We examine the relationship between benzodiazepine misuse history, benzodiazepine prescription, and both clinical and safety outcomes during buprenorphine treatment.

Methods: We retrospectively examined outpatient buprenorphine treatment records, classifying patients by past-year benzodiazepine misuse history and approved benzodiazepine prescription at intake. Primary clinical outcomes included 12-month treatment retention and urine toxicology for illicit opioids. Primary safety outcomes included total emergency department (ED) visits and odds of an ED visit related to overdose or accidental injury during treatment.

Results: The 12-month treatment retention rate for the sample (N=328) was 40%. Neither benzodiazepine misuse history nor benzodiazepine prescription was associated with treatment retention or illicit opioid use. Poisson regressions of ED visits during buprenorphine treatment revealed more ED visits among those with a benzodiazepine prescription versus those without ($p<0.001$); benzodiazepine misuse history had no effect. The odds of an accidental injury-related ED visit during treatment were greater among those with a benzodiazepine prescription (OR: 3.7, $p<0.01$), with an enhanced effect among females (OR: 4.7, $p<0.01$). Overdose was not associated with benzodiazepine misuse history or prescription.

Conclusions: We found no effect of benzodiazepine prescriptions on opioid treatment outcomes; however, benzodiazepine prescription was associated with more frequent ED visits and accidental injuries, especially among females. When prescribing benzodiazepines during buprenorphine treatment, patients need more education about accidental injury risk. Alternative treatments for anxiety should be considered when possible, especially among females.

**Fig. 2 Relationship of BZD prescription (Rx) approval and gender on number of ED visits during treatment.**




Questions:

6. Be prepared to briefly describe the study (don't read the abstract aloud!)
7. What type of study is this and how does that influence your confidence in the results?
8. Interpret the figure provided.
9. What would you do for the patient in the case?
    a. Continue/discontinue/taper/change buprenorphine-naloxone? Explain your goal and reasoning.
    b. Continue/discontinue/taper/change alprazolam? Explain your goal and reasoning.

## Case 3:

**cannabis use in adolescents**

**Instructions:**

- Work through this activity together as a group, being sure that PGY 1, 2, and 3 voices are all being included in the discussion.
- You are provided with a case, an abstract, and a figure from an article, as well as questions and prompts.
- Choose a spokesperson or two to report on your group's conclusions.

**Case Intro:**

Jake is a 17-year old high school senior who you are seeing in your continuity clinic for cold symptoms. He has red eyes, a cough, and looks tired. When his mother leaves the room you ask you usual substance use screening questions, and Jake responds, "I vape wax, but not a lot, just to calm down or sleep." On further questioning, you discover that he started smoking THC occasionally at age 14, but over the last two years it has escalated to where he uses THC wax almost every day. He switched from marijuana to THC wax concentrates and is spending up to $100 per week on it. He has had trouble with grades at school because he's no longer motivated to do homework, he's worried about his college prospects as his grades are worsening. He denies driving while "high," says that he waits at least an hour after using before driving. On nights when he doesn't use THC he feels very grouchy and isn't able to sleep. He doesn't think his parents know that he uses THC because the products he uses are odorless. His long-term girlfriend recently broke up with him because she disliked how he has become apathetic toward doing activities with her.

**Questions:**

8. How many DSM5 criteria does he meet? Does he have cannabis use disorder? If so, would you classify his cannabis use disorder as mild, moderate, or severe?
9. Brainstorm at least 4 symptoms of each THC intoxication and withdrawal.
10. Have you ever tried to talk to a patient about cannabis addiction? How did that go?

**Look at the Abstract and Figures below:**

**Article:**

Dahlgren MK, Sagar KA, Smith RT, Lambros AM, Kuppe MK, Gruber SA. Recreational cannabis use impairs driving performance in the absence of acute intoxication. Drug Alcohol Depend. 2020;208:107771. doi:10.1016/j.drugalcdep.2019.107771

**Abstract:**

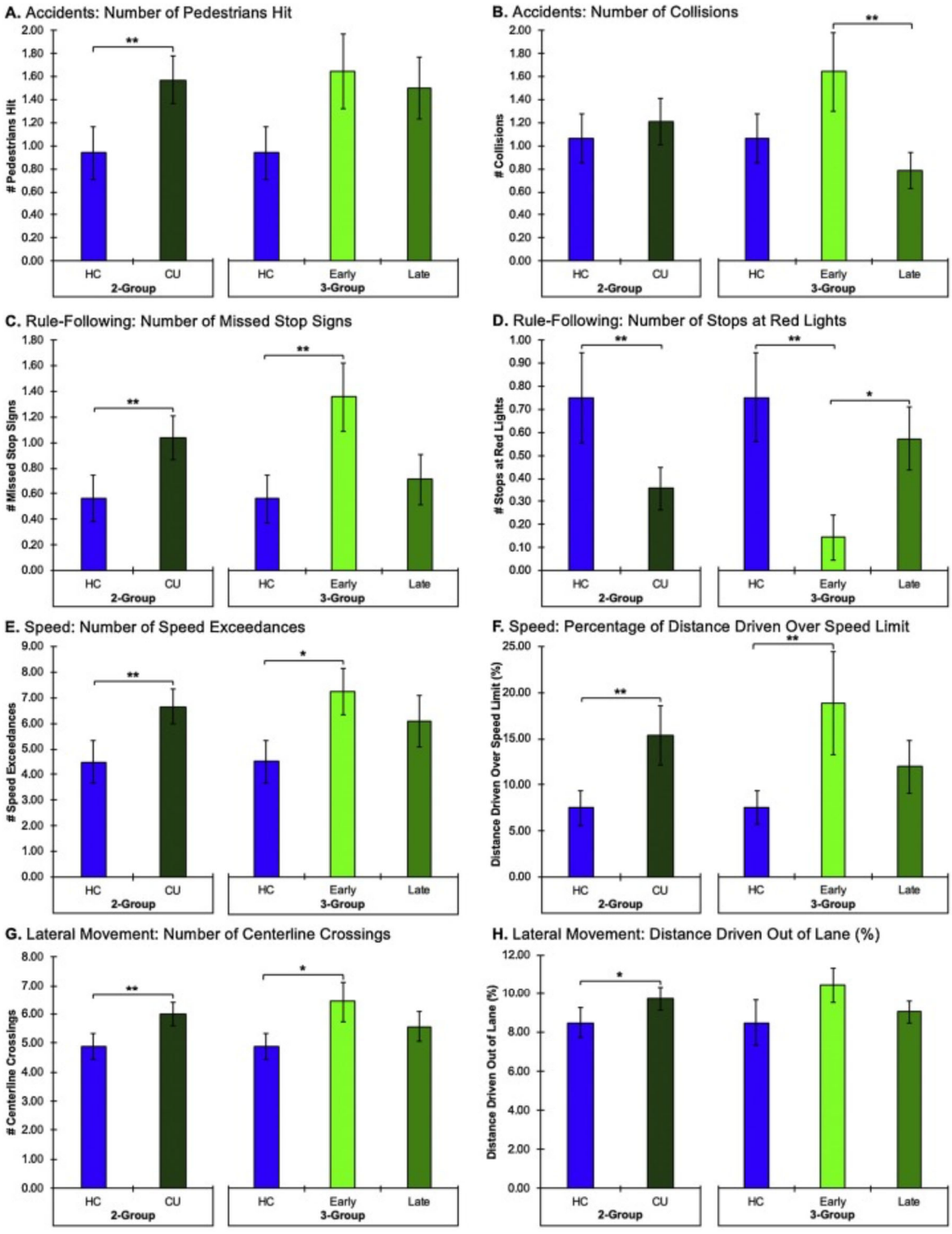
Background: Across the nation, growing numbers of individuals are exploring the use of cannabis for medical or recreational purposes, and the proportion of cannabis-positive drivers involved in fatal crashes increased from 8 percent in 2013 to 17 percent in 2014, raising concerns about the impact of cannabis use on driving. Previous studies have demonstrated that cannabis use is associated with impaired driving performance, but thus far, research has primarily focused on the effects of acute intoxication.

Methods: The current study assessed the potential impact of cannabis use on driving performance using a customized driving simulator in non-intoxicated, heavy, recreational cannabis users and healthy controls (HCs) without a history of cannabis use.

Results: Overall, cannabis users demonstrated impaired driving relative to HC participants with increased accidents, speed, and lateral movement, and reduced rule-following. Interestingly, however, when cannabis users were divided into groups based on age of onset of regular cannabis use, significant driving impairment was detected and completely localized to those with early onset (onset before age 16) relative to the late onset group (onset ≥16 years old). Further, covariate analyses suggest that impulsivity had a significant impact on performance differences.

Conclusions: Chronic, heavy, recreational cannabis use was associated with worse driving performance in non-intoxicated drivers, and earlier onset of use was associated with greater impairment. These results may be related to other factors associated with early exposure such as increased impulsivity.

**Fig. 1. Driving Simulator Performance Analyses.** The two-group assessments comparing the healthy control (HC) participants to all chronic, heavy cannabis users (CU) are on the left side of the graphs. The three-group assessments comparing HC versus early onset cannabis users (Early) versus late onset cannabis users (Late) are on the right side of the graphs. Note: ** denotes significance at $p \leq .05$ and * denotes significance at $p \leq .10$ (1-tailed).


A. Accidents: Number of Pedestrians Hit
# Pedestrians Hit
B. Accidents: Number of Collisions
# Collisions
C. Rule-Following: Number of Missed Stop Signs
# Missed Stop Signs
D. Rule-Following: Number of Stops at Red Lights
# Stops at Red Lights
E. Speed: Number of Speed Exceedances
# Speed Exceedances
F. Speed: Percentage of Distance Driven Over Speed Limit
Distance Driven Over Speed Limit (%)
G. Lateral Movement: Number of Centerline Crossings
# Centerline Crossings
H. Lateral Movement: Distance Driven Out of Lane (%)
Distance Driven Out of Lane (%)
HC
CU
Early
Late
2-Group
3-Group

Questions:

10. Be prepared to briefly describe the study (don't read the abstract aloud!)
11. What type of study is this and how does that influence your confidence in the results?
12. Interpret the figure provided. What are the most surprising findings for you?
13. What would you do for the patient in the case?
    a. How can you work with this family to increase his safety and reduce his THC use?