Methamphetamine and DUI

Vina Spiehler, Ph.D., DABFT
Newport Beach, CA
Traffic Fatality Risks by Drug Class

- **Very High Risk:** Alcohol, Benzodiazepines, Cannabis + Alcohol, and CNS Depressants + Alcohol.
- **High Risk:** Cocaine, Methamphetamine
- **Moderate Risk:** Cannabis, Amphetamine, MDMA
- **Low-Moderate Risk:** Opiates, Methadone, Antihistamines
- **Low Risk:** Antidepressants
Methamphetamine

-CH2-CH-NH-R

R = H
R = CH3

- CNS stimulants usually taken orally, by injection or smoked
- Effects can include increased heart rate and blood pressure, curbed appetite, irritability, anxiety and paranoia.
- Increased willingness to take risks at low levels
Methamphetamine Metabolic profile

Spiehler 1999
Window of Detection
Methamphetamine

Spiehler 1999
DRE Amphetamine

3 Best Predictors

- High pulse rate (x 3)
- High blood pressure
  - (Systolic + Diastolic) x 3
- Decreased errors on the OLS test
  - Efficacy = 86.5%

Heishman et al JAT 1998
<table>
<thead>
<tr>
<th>Drug</th>
<th>PPV at 10%</th>
<th>PPV at 5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amphetamines</td>
<td>52.6%</td>
<td>34.5%</td>
</tr>
<tr>
<td>Cocaine</td>
<td>44%</td>
<td>25%</td>
</tr>
<tr>
<td>Cannabis</td>
<td>85%</td>
<td>73%</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>72.5%</td>
<td>55.5%</td>
</tr>
</tbody>
</table>
Hysteresis Graph of Methamphetamine Effects

Blood concentration

stim

t = 0

depres

Blood concentration
24 yr old H M driving girlfriend to work.

Observed weaving in and out of traffic, driving on shoulder and against traffic.

Speeding 70 + mph, apparently racing train to crossing.

Drove around RRX barrier and collided with train. Driver survived, passenger died.

Driver’s blood methamphetamine 0.280 ug/ml.
Assault on Officer w Car

- 2345: Repeatedly rams other vehicles on fwy. Follows them off the fwy.
- 0010: Repeatedly rams occupied police unit. Drives off at high speed.
- 0248 Bld drawn at hosp. Hallucinations.
Assault on Officer w Car

- 35 yr old W M 5’8” 210 lbs
- Blood: 1.0 ug/ml methamphetamine, <0.050 ug/ml amphetamine
- Says Satan was following him and he lost control of his car.
- At 0300 hrs at hospital:
  - pulse 110 bpm, RR 18-20
  - BP 170/100, temp 99.5
  - PERL normal diameter
AZ-NM Trucker

- Smoked methamphetamine with female in motel room Saturday-Sunday. No sleep.
- One hour late for work. Left Phoenix for Texas driving truck. No apparent signs or symptoms.
- Following drivers witnessed truck going over lane lines multiple times. Alternate driver woken by truck leaving roadway.
- NM patrolman struck and killed by truck as it leaves roadway while writing citation for another driver.
AZ-NM Trucker

- T/A 1410
- Bld drawn 2038
  - 0.18 ug/ml methamphetamine
  - 0.03 ug/ml amphetamine
- Urine collected 2045
  - 37.766 ug/ml methamphetamine
  - 6.8 ug/ml amphetamine
  - 97% d-methamphetamine, 3% l-
Asleep in Car

- Two women found by police asleep in car
- Blood methamphetamine 1.7 mg/L and 2.1 mg/L
- Diazepam also present
- Halle Weingarten presented at 1984 CAT meeting and cited in Baselt 5th Ed.
Conclusions

- Methamphetamine effects depend on dose and time since dose.
- Tolerance and sensitization occur.
- Chronic users of methamphetamine lose structure and function in dopamine tracts of brain.
References