Some Issues & Challenges:
Prescription Drugs and Traffic Safety

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My Perspective

- Law enforcement
- Drug Recognition Expert
Isaac Newton & the DRE

- Newton’s First Law of Motion: An object will continue to move at a constant velocity, unless acted upon by an external force.

- Role of officers and prosecutors: the External Force
- Behavior changes when...there’s consequences
- Without consequences....behavior may not change
My Perspective

- Law enforcement
- Drug Recognition Expert
- Distinguish between opinion and facts
- Much based on real or anticipated court issues and challenges
- Prevalence not a primary topic
Approaches to DUI enforcement...
Alcohol and/or drugs

- Impairment versus Biological
  - Impairment approach
    - Behavior emphasized
    - Officer skill in identifying impairment paramount
    - Toxicology supportive role
  - Biological approach
    - Emphasizes presence and levels
    - Toxicology definitive
Approaches to DUI enforcement...

- US today
  - Impairment AND Biological
  - Reflected in laws
    - Basic DUI law prohibits DUI
    - Per se law prohibits a BAC & possibly Drugs
  - Drugs
    - Often zero tolerance for illegal drugs
    - Movement to specific blood nanogram levels
Prevalence issues

- **Prevalence**
  - Proportion of a population with a given condition
- Rapidly changes; Not accurately known
- As Dr. Burns once remarked....
  - Each generation has to discover for itself the bad effects
- Because we don’t see something today, doesn’t mean we won’t see it tomorrow
- Example: Deleting hallucinogens and inhalants suggested
  - “Chicken and the egg” discussion with labs
- Continuous dialogue with labs a must
Golden Triangle of Abused Legal Drugs

- 1,000s of drugs
- Abuse primarily of 3 of 7 DRE Drug Categories
  - “The Pills”
  - Central Nervous System Stimulants
    - E.g. Adderall, Provigil, etc.
  - CNS Depressants
    - Xanax, Zolpidem (Ambien), etc.
  - Narcotic Analgesics
    - Oxycodone, vicodin, methadone, etc.
    - New drug: Hyslinga ER (hydrocodone)
Hydrocodone ER

- Recently approved by FDA
- Purdue Pharma
- Hysingla ER tablet
- Abuse-deterrent properties
  - Turns into a gel when dissolved
  - Unlike Zohydro ER capsule
- Schedule II
- 20 to 120 mg tablets
- Duration 24 hours
  - Zohydro 12 hours
Which Drugs Abused?

Those that In small amounts (depends on the drug!)
A alters mood
Drugs of Abuse affect the Brain
Psychoactive substances
The Central Nervous System
Means they cross the Blood-Brain Barrier (BBB)
No CNS effects unlikely to be abused
Can be “misused” however
Psychoactive

• A chemical that alters brain/body function resulting in temporary changes:
  – In Perception (sensory info)
  – Mood (state of mind or emotion)
  – Consciousness (feelings of awareness)
The Drugs of Abuse according to DRE...

A Categorization Schema NOT based upon...

- Legality, such as scheduling
- Shared chemical structure
- Therapeutic uses, if any
DRE Categorization IS based upon the premise that...

Each category produces a PATTERN of effects

The signs and symptoms
That is unique to the category

A signature, not a fingerprint
DRE Drug Classification

- Seven Drug Categories
- Cross-abuse within category
  - Helpful in predicting drug use trends
- Tolerant to one drug in a category
  - Likely tolerant to others in the category
Seven categories of Drugs

- Central Nervous System Depressants
- CNS Stimulants
- Hallucinogens
- Dissociative Anesthetics
- Narcotic Analgesics
- Inhalants
- Cannabis
Spock logic?

- “I use it but it doesn’t do anything to me.”
Why people use drugs?

- Heroin conference presentation
- Researchers on methadone
  - If on methadone, people won’t use heroin
  - Not consistent with my observations!
- Researchers correct!
  - No biochemical reason to use heroin when using methadone
  - EXCEPT......
Use, Under the Influence, Impairment

- Related, but not identical
- Signs of use the same as signs of impairment?

- Use: Signs and symptoms may be evidence of use
- Under the Influence: Alcohol and/or drug causes effects
- Impairment: may not be by alcohol and/or drugs; deterioration in ability to do something
Use, Under the Influence, Impairment

- What about the so-called “clinical signs?”
  - With a movement to statutory drug levels...
  - IMO will be increasingly important

- Clinical signs (from DRE)?
  - Info on “use” or exposure?
  - Or actual impairment?
  - HGN, VGN, Lack of Convergence?
  - Bloodshot eyes?
  - Pupil size issues?
  - Vital signs?
Alcohol v. Other Drugs

Blessing and Curse of Alcohol!
Alcohol has simple pharmacokinetics
   The “ins, arounds, changes, and outs”
Zero order pharmacokinetics
   The exception! Not the rule
Easy to study & measure
All are familiar with alcohol
The numbers relate (imperfectly) to impairment
Alcohol v. Other Drugs...

Some of the problems with drugs...
Complex pharmacokinetics
First order pharmacokinetics
Rate dependent on the amount
Complex pharmacology
  Eg: Metabolites may be active
Difficulty studying some drugs – on humans
Relationship between levels and impairment more complex
Levels!

- Big problem with drugs: Impairment
- Interpretation of levels
  - In blood!
- Example: Marijuana
  - If it’s in the brain
  - It’s not in the blood!
  - Impairment rising when blood level decreasing!
- Poly-drugs complicates
Narcan issues

- Nalozone
  - AKA the “Lazarus” Drug
  - Pure opioid antagonist
  - Reverses overdose from opioids!
  - If it works...possibly best evidence of drug influence!
  - Still positive blood test
  - Take away: If it works, the person was under the influence of an opioid
  - Duration different however
Therapeutic Range issue

- A defense?
- Prosecution burden?
- Timeline of use, influence, elimination
  - May be therapeutic level at time of blood draw
  - Not necessarily at time of use
- Doesn’t mean no adverse effect
  - May even be intended effect
  - Ambien, for example
- Therapeutic range of alcohol?
Withdrawal/Downside Issues

- Drug wearing off
- Effects are from lack of the drug
- Alcohol example
  - Withdrawal
  - Hangovers AFTER drinking not during
- Is withdrawal impairment?
  - As Driving with a Hangover
- But...is driving with a hangover DUI?
- “Spock logic” conundrum
  - Can one be DUI due to the absence of a drug?
Just because it’s legal...doesn’t mean....

- It was used appropriately
- It was the individual’s Rx
- The person wasn’t impaired

My opinion:
- It’s uncommon to arrest someone for DUI for appropriate use of a legal drug (non-alcohol)
- Even rarer for the person to be prosecuted
Relationship to illegal drugs

- ONDCP expressed surprise at Heroin increase
- After cracking down on “pill mills” that distributed so-called “pain pills”
- Not a surprise to DREs
- Understanding DRE categories an aid to anticipating drug use trends
- Limiting availability of one in a category
- Leads to diversion to a different drug in the category
- Alcohol example
Relationship to legal drugs (cont.)...

- May even divert to OTC, neutraceuticals
  - Valerian root example
- Overall....
  - When one drug is up, another goes down!
  - Profit motive a primary driver of this
- Example:
  - Putting heroin in capsules and selling as vicodin, etc.
  - Putting vicodin in capsule and selling as heroin
Statistics

- Einstein:
- Not everything that can be counted matters.
- And not everything that matters can be counted.
DRE Investigations

- Miranda Issues
  - Two-pronged test: Custody and Accusatory questions
  - DRE agencies vary in policy
    - Generally, the earlier the better
- Not part of the standardized procedure
Questioning the suspect

- Focus on the elements of the crime
  - Usually just driving, abilities impaired, due to presence of alcohol and/or drugs

- Topics:
  - Naïve user?
  - Absorption issues
    - When ate
  - Doctor’s, Pharmacist, HCP advise
  - Poly drugs, including alcohol
Questioning the suspect (cont.)...

- When taken/ingested
- How does it make you feel?
- How did you feel today?
- You felt some effects when driving?
- On a scale of zero to 10...
  - Zero being completely sober
  - 10 being the most wasted you’ve ever been
  - Where are you now?
  - Where were you when driving?
Poly Drugs....

- Complicates everything!
  - Search for meaningful Levels
  - Detection
  - Signs and symptoms

- Why poly drugs?
  - Duration issues
  - Avoid the “crash”
  - Strengthen effect
  - Add new effect
Poly Drugs (cont.)...

- But...
  - One drug doesn’t cancel out another’s effects!
Biological specimen...

- No perfect sample
- Gene Adler: “Blood and urine are both scientifically and legally defensible specimens.”
- Time-line issues...
  - Use
  - Drive
  - Police observation
  - Police Investigation
  - Transport
  - DRE
  - Sample taken
Biological sample (cont.)

- The closer in time to the driving the better!
- The best sample is all of them!
- 12th DRE Step – toxicology – doesn’t mean it’s the last thing done!
Why Rx and some OTC drugs abused

- Abuse may not become evident for years after the introduction of the drug

- Abused for:
  - Sedative Properties (CNS Depressants)
  - Stimulant Properties (CNS Stimulants)
  - Euphoric Effects (a “buzz”)
  - Dissociative/Hallucinogenic Effects
Potential for Abuse

- Controlled substances well-known
- Also certain non-controlled Rx drugs
  - And certain OTC medications
- Any substance that’s psychoactive may be abused
  - If in a high dose or high blood/cerebrospinal fluid level

Cite: Southern Medical Journal
Abuse of Medications That Theoretically Are Without Abuse Potential
Roy R. Reeves, DO, PhD, Mark E. Ladner, MD, Candace L. Perry, MD, Randy S. Burke, PhD, Janet T. Laizer, MD
Potential for Abuse

- Abuse defined: using a drug for a non-medical or pleasurable purpose
- Abuse potential of narcotic analgesics (opioids) well-known
- Abuse potential Not as well-known for other substances
  - Some start off non-controlled
  - Controlled once abuse evident
    - Carisoprodol (Soma) as an example
How Big a Problem?

- Incident unknown because of lack of formal reporting mechanisms
- Some evidence from DAWN
  - Increase in hospitalizations from
    - Diphenhydramine (Benadryl)
    - Muscle relaxants
    - Psychotherapeutic agents
- Evidence from Penal institutions
  - quetiapine, gabapentin, bupropion, trihexyphenidyl (for Parkinson’s), and tricyclics
- Medication abuse among older folks
Kinds of substances abused

- CNS activity a must!
- Effects desired are:
  - Relaxation, sedation (CNS Depressants)
  - Intoxication, euphoria
  - Increased energy (CNS Stimulants)
  - Hallucinations
Abused for depressant effects...

- antihistamines, quetiapine, olanzapine, tricyclics, gabapentin, skeletal muscle relaxants, and clonidine (catapres)

- Clonidine: for HBP and ADHD; sympatholytic
Abused for stimulant effects...

- pseudoephedrine
- tranylcypromine
- bupropion
- fluoxetine
- venlafaxine
Abused for euphoric effects...

- Anticholinergic agents and tricyclics
Abused for dissociative effects...

- dextromethorphan and anticholinergic agents
Medication may be abused to...

- Experience the “high” from the medication
- To prolong the effect of another drug
- Provide a new effect – a synergistic effect
- Counter the bad effects of one drug with another
Abused by...

• Taking much larger dose than recommended
• Changing route of administration
  • E.G.: insufflating a drug
  • E.G.: snorting bupropion
Cough & Cold...

- Decongestant properties: Pseudoephedrine
  - A sympathomimetic
  - Used for weight loss
  - Combat fatigue
  - Improve athletic performance
- Anti-tussive (cough control) agents
  - Dextromethorphan (DXM)
    - 5 times recommended dose
    - Dissociative, PCP-like effects
    - Dependence and withdrawal effects
Antihistamines...

- T’s and Blues” in the 1970’s
  - Pentazocine (Talwin) and tripelennamine
    - Heroin-like intoxication
- Diphenhydramine
  - Commonly known as Benadryl, Sominex
  - Abused for sedative-like properties
  - Effect dopaminergic pathways
    - Possible cocaine-like intoxication in some
Anti-Psychotics

- Primarily older anti-psychotics
  - Thorazine (chlorpromazine)
  - Sedating, CNS effects
  - Usually high doses
  - Combined with other CNS depressants
Seroquel...

- Quetiapine
- Anti-psychotic
- Treats bi-polar disorder
- Abused for sedation effects
- Also anxiolytic (stress reduction) effects
- “Quell” a slang term
- AKA “baby heroin”
- Removed from many prison formularies
Anti-Depressants

- Some have stimulant and sedating effects
- **Tranylcypromine (Parnate)**
  - Amphetamine like chemical structure
- **Tricyclic Antidepressants (TCAs)**
  - Elavil as example
  - Often abused with opioids
    - Appear to prolong opiate “high”
- **Prozac, Effexor, others**
  - Large doses may cause stimulant/hallucinogenic effects
Anti-convulsants...

- Gabapentin (neurontin) abuse on upswing
  - When snorted, effects similar to cocaine
  - Removed from prison formularies
  - Withdrawal similar to alcohol/benzodiazepine withdrawal
- Pregabalin (Lyrica) abuse widely recognized
Skeletal muscle relaxants...

- Carisoprodol abuse widely known
- Cyclobenzaprine (Flexeril)
  - Sedative effects
- Baclofen (Lioresal)
  - Related to GHB
  - Sedation
  - Ataxia
Dose makes something a poison!

- As Paracelsus noted, "All things are poisons, for there is nothing without poisonous qualities. It is only the dose which makes a thing a poison."

- Route of administration a factor too!
- Poly-drug use also