

# Dangerous drug combinations

**Presented by:**

Jack Kain, PharmD

Jeffrey Gudin, MD



# Today's discussion

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- Dangerous drug combinations or polysubstance use
- Drug combinations side effects
- Drug-drug interaction
- Examine the laboratory perspective
- Quest Diagnostics trends in drug test results

# What's the issue?

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- In 2018 there were 67,367<sup>1</sup> drug overdoses in the United States
- Drug overdoses decreased 4% from the prior year; however, it is still a growing issue
- Most significant symptoms are sedation and respiratory depression
- From 2010-2016<sup>2</sup>:
  - Significant increases in overdose deaths involving synthetic opioids that also involved prescription opioids, heroin, and other illicit or prescription drugs
  - Almost 80% of opioid deaths involve alcohol, another opioid, including prescription opioids; or another drug such as heroin; cocaine; benzodiazepines; psychostimulants; and antidepressants

# Polypharmacy/drug mixing

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- Drug testing samples sent for “MedMatch” analysis
  - 24% of patient test results showed signs of drug mixing
- Opioids and benzodiazepines
  - These two drug classes are known to cause respiratory depression individually
  - Combined they have an additive effect
- 17% of patient test results show potentially dangerous combining of opioids and benzodiazepines
- Other symptoms can occur depending on the drugs combined such as:
  - Serotonin syndrome

# Why do people combine substances?

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- Do not understand or think about the risks
- Deliberately combine substances to achieve a certain effect
- Combinations can be lethal and certain combinations predispose people to a greater risk of overdose and death
- Such as
  - Alcohol + Benzodiazepines
  - Alcohol + Opioids
  - Opioids + Benzodiazepines

# Central Nervous System (CNS) response

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The CNS is a highway for substances to travel and deliver messages throughout the body

- Substances travel through the CNS and reach their destination (often the brain) to impart their “upper” or “downer” effects
  - Cocaine speeds us up
  - Heroin slows us down (of course, while simultaneously causing euphoric effects)
  - For a period of time, cocaine and heroin might have a balancing effect
- Over time, the feel-good effects of cocaine and/or heroin may decrease
  - Due to this, a person may increase the dose of cocaine and/or heroin and overdose
- Studies suggest cocaine and heroin are more addictive when taken together
  - Do not combine opioid pain medications with other medications such as:
    - Sleep medications
    - Muscle relaxants
    - Social alcohol

# Patients with substance use disorders

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Patterns of behavior, for many:

- Have a drug of choice
- Those with concurrent psychiatric illness:
  - Will overuse any substance available
- **Goal of substance use is not simple euphoria—but rather numbing the mind in any way possible**

# How can drug combinations lead to harm in a patient?

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- Cause a side effect: drug–drug interaction
- A few of them are life-threatening:
  - Respiratory depression
  - Serotonin syndrome
  - Qt Prolongation/TdP
- Drug combinations can affect drug levels:
  - A pharmacokinetic drug-drug interaction
- Example, if a patient is taking fluoxetine (aka Prozac)
  - Can inhibit the breakdown of buprenorphine
  - Fortunately, buprenorphine has a ceiling effect
- **What happens when you combine with alcohol and other sedatives: the risk of excessive sedation**



# How does drug testing help?

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## Tools to identify dangerous drug combinations:

- Some EHRs and all pharmacies have clinical decision support systems that have prospective drug interaction alerts for prescribed drugs
  - Systems are vital to practice and keeping patients safe
- Drug monitoring
  - A clinical drug test is an objective tool to monitor substance use
  - Identifying a metabolite that is unique to a substance can determine if the medication has passed through the patient's system
  - Look for multiple substances to help tell the story of substance misuse
- Marijuana is a gateway drug but with increasing popularity and acceptance
  - Clinical philosophy of marijuana is evolving
    - For example: Marijuana alone is maybe not concerning but in conjunction with use of another drug such as unreported Xanax or you add alcohol into that mix, and you have a patient at risk for a drug interaction and excessive sedation

## Other concerns:

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- What if that person is operating a vehicle or machinery?
- A drug test result can show combinations of substances that have been consumed. And it provides an opportunity for both the provider and patient to communicate with each other the risks
- There is a popular line in toxicology that says:
  - “The dose makes the poison”
- We now understand, there is more to it:
  - “The combination also makes the poison”
- Treating patient for chronic pain
  - Difficult enough to find a clinician to treat chronic pain
  - Especially if the patient is on opioids

# Quest Diagnostics Health Trends™ Report<sup>3</sup>

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- Spoke to 500 PCPs
- Greater than 80% of them were reluctant to take on patients on opioids
- Physicians don't learn a lot about opioid risk mitigation in medical school
- Not comfortable with:
  - Checking the PDMP
  - Performing drug testing looking for drug mixing—but it is standard of care
- Prescribers need:
  - Basic knowledge of drug testing
  - Result interpretation in order to appropriately care for these often-challenging patients
- **Drug testing is really the only objective tool to determine what substance/drug a patient has consumed**

# Summary: Quest Diagnostics

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- The abuse and misuse of prescription drugs remains epidemic in the US
- Quest serves 1 in 3 adult Americans and half the physicians and hospitals in the United States
  - Quest Diagnostics has the world's largest database of clinical lab results; our diagnostic insights help improve healthcare management
- A properly implemented drug testing program is an important step in tackling drug misuse and abuse
- By performing more than 10 million drug tests annually, Quest Diagnostics has the experience to help you implement a successful PDM program—one that helps protect your practice, safeguards your patients, and keeps your community safe
  - Rx Tox Line available to help clinicians with test ordering or result interpretation
    - 1.877.40.RXTOX (1.877.407.9869)
  - Visit [QuestDrugTesting.com](https://www.questdiagnostics.com/drug-testing) or subscribe through your favorite podcast venue

# References

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2. Jones CM, Einstein EB, Compton WM. Changes in synthetic opioid Involvement in drug overdose deaths in the United States, 2010-2016, *JAMA*. 2018. 319(17):1819-1821
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