Keeping Current With Ever-Changing NPS Landscapes – Evaluating Trends and Connecting Case Histories

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Disclosure

- I have nothing to disclose.

Background

Our NPS Discovery Program

Forensic Toxicology Investigations

Clinical Intoxications

Seized Drug Analysis

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1. **Intelligence**
   - What is out there?
2. **Surveillance**
   - Have we seen it?
3. **Monitoring**
   - How often?
4. **Response**
   - What do we do?
5. **Forecasting**
   - What's next?

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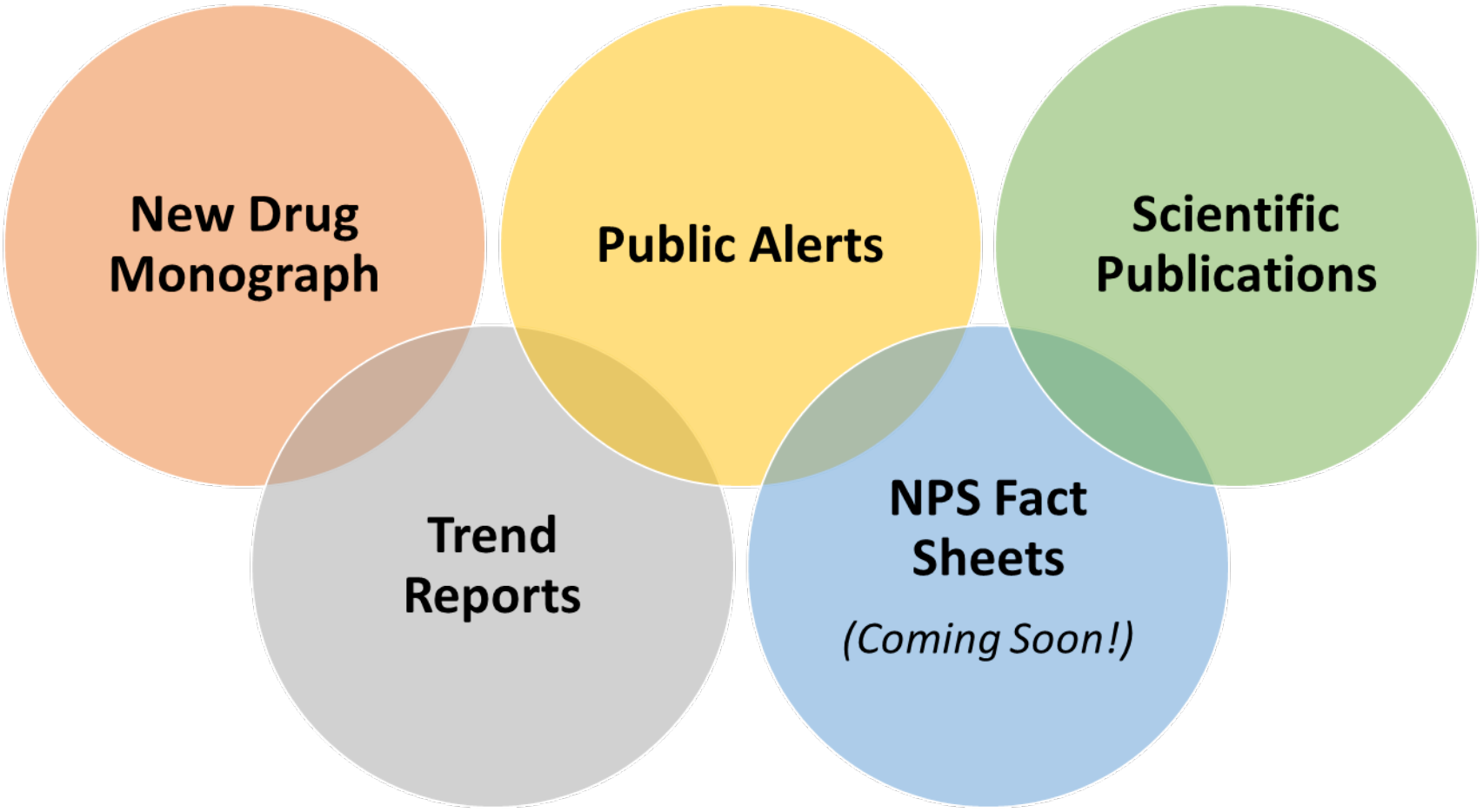

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Methods

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Methods

- **Identification**
  - SCIEX TripleTOF® 5600+ LC-QTOF-MS
  - >875 drug panel

- **Quantitation**
  - Waters Xevo TQ-S micro LC-MS/MS
  - Standard addition

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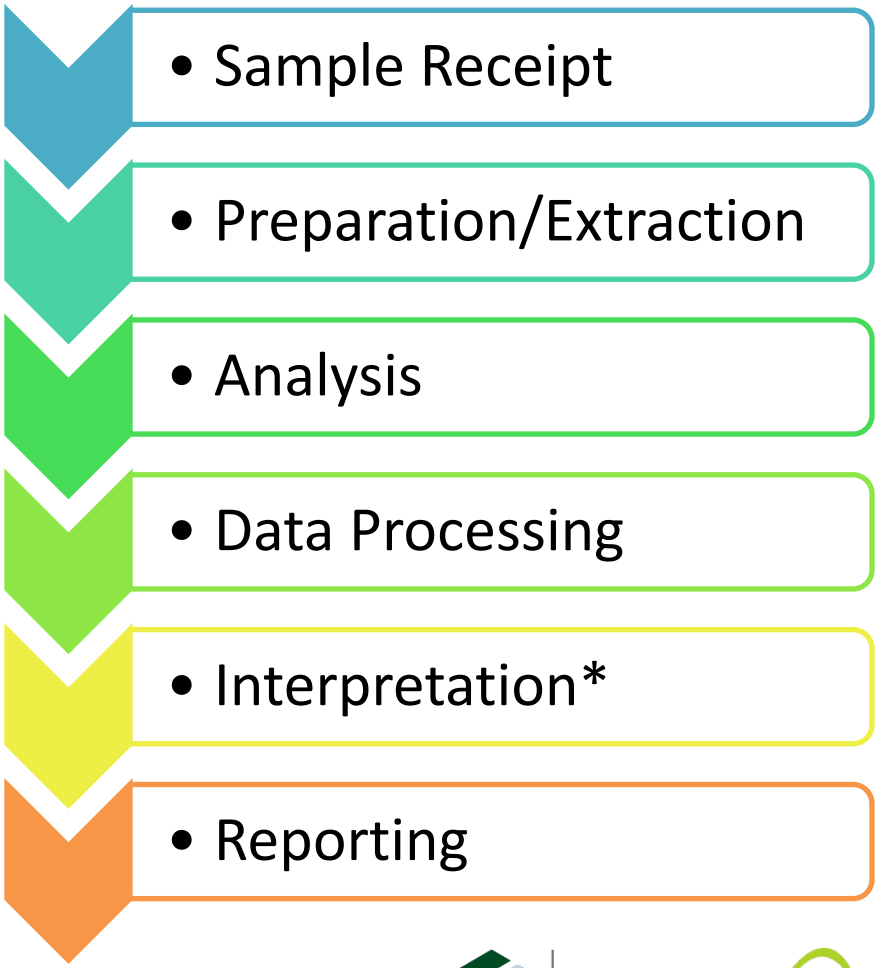
Toxicology Workflow



Sample Sources

- NMS Labs
- Medical Examiner
- Coroner
- Hospitals
- Poison Centers
- Other*

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Toxicology Workflow

- Sample Receipt
- Preparation/Extraction
- Analysis
- Data Processing
- Interpretation*
- Reporting

Discarded Extracts

NPS

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NPS Trends

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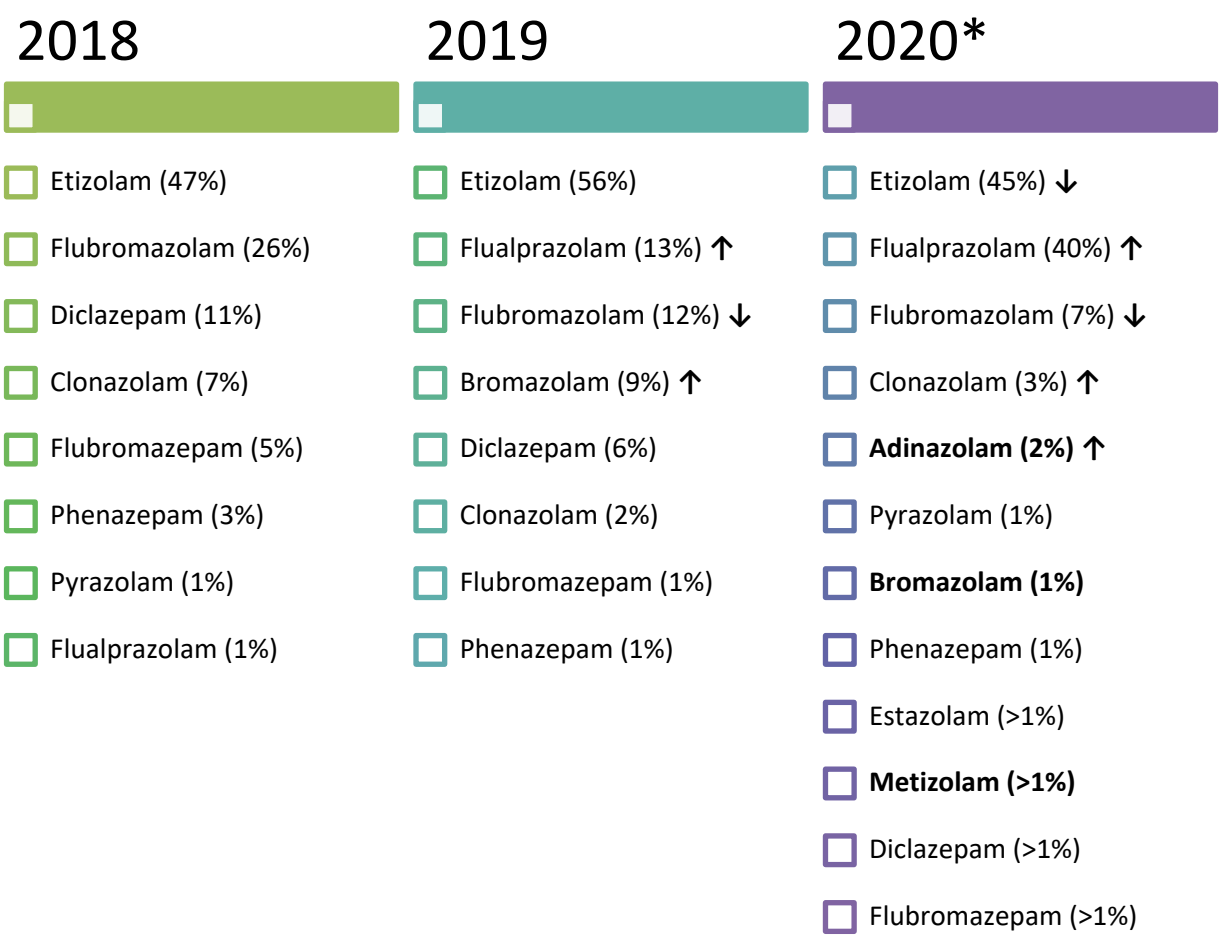
NPS Benzodiazepines



**Only 8 months*
% of class

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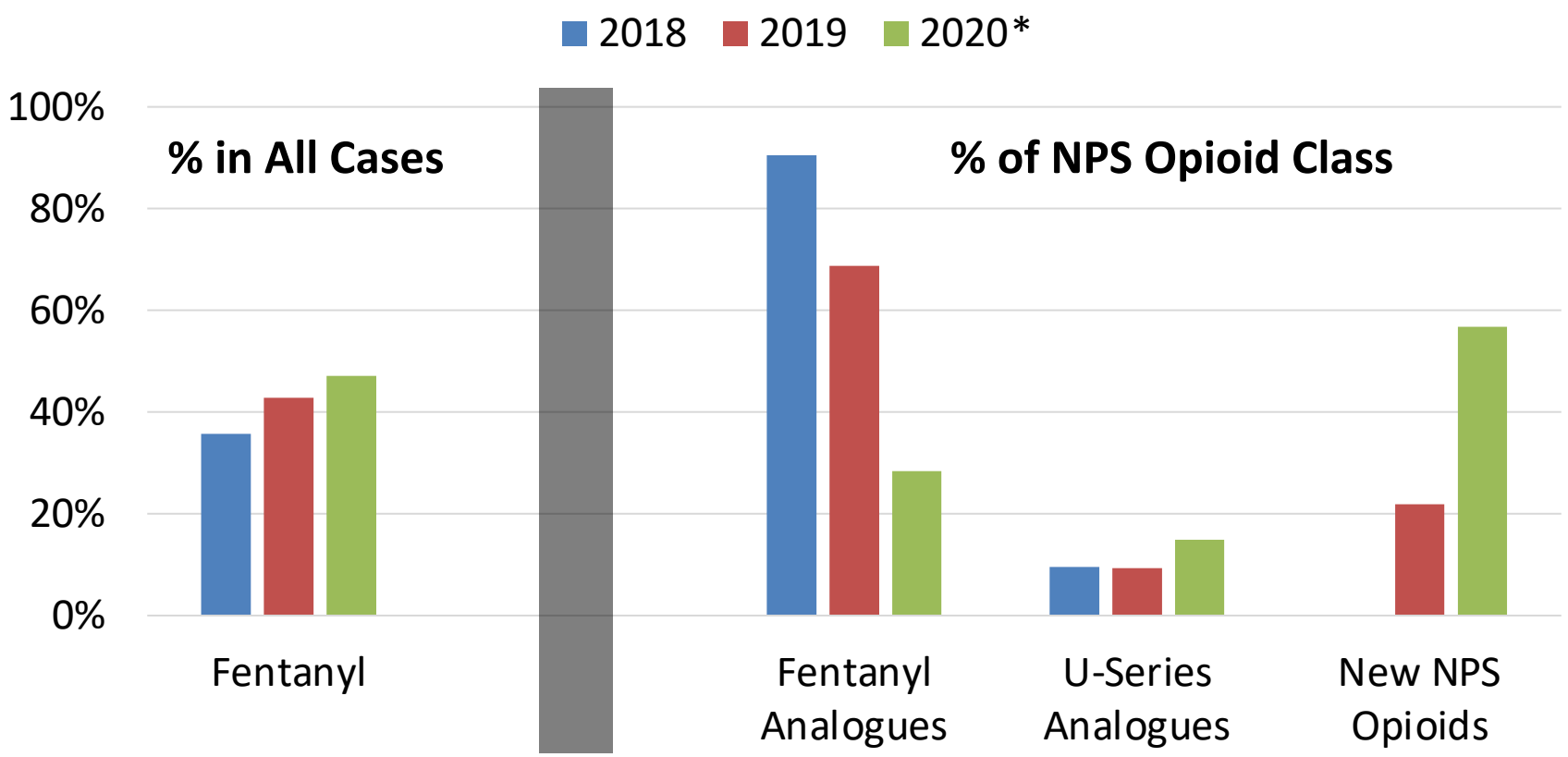
NPS Opioids



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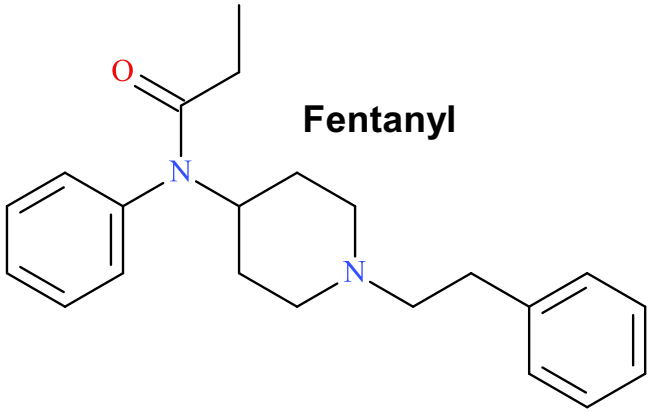
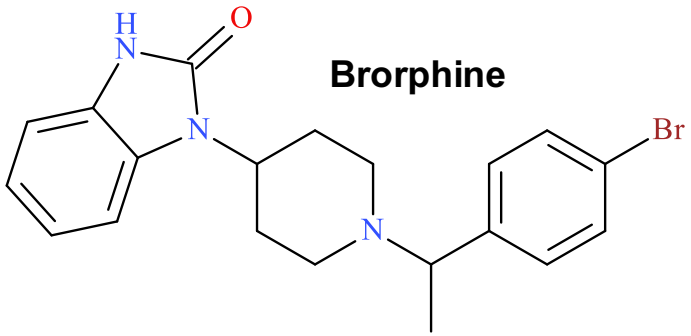
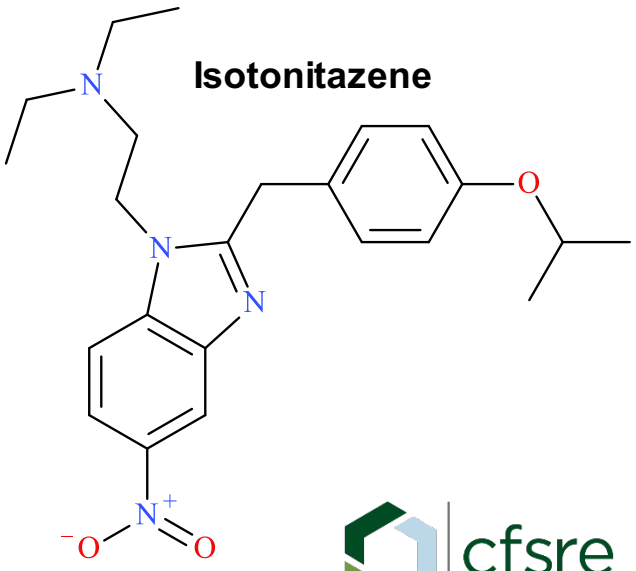
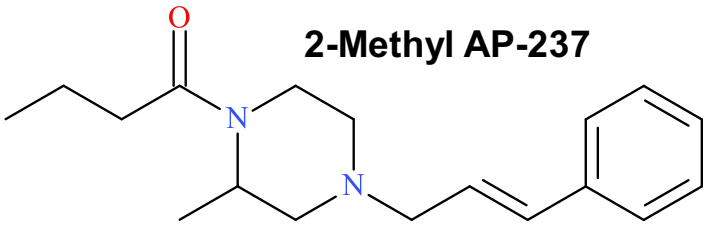
NPS Opioids









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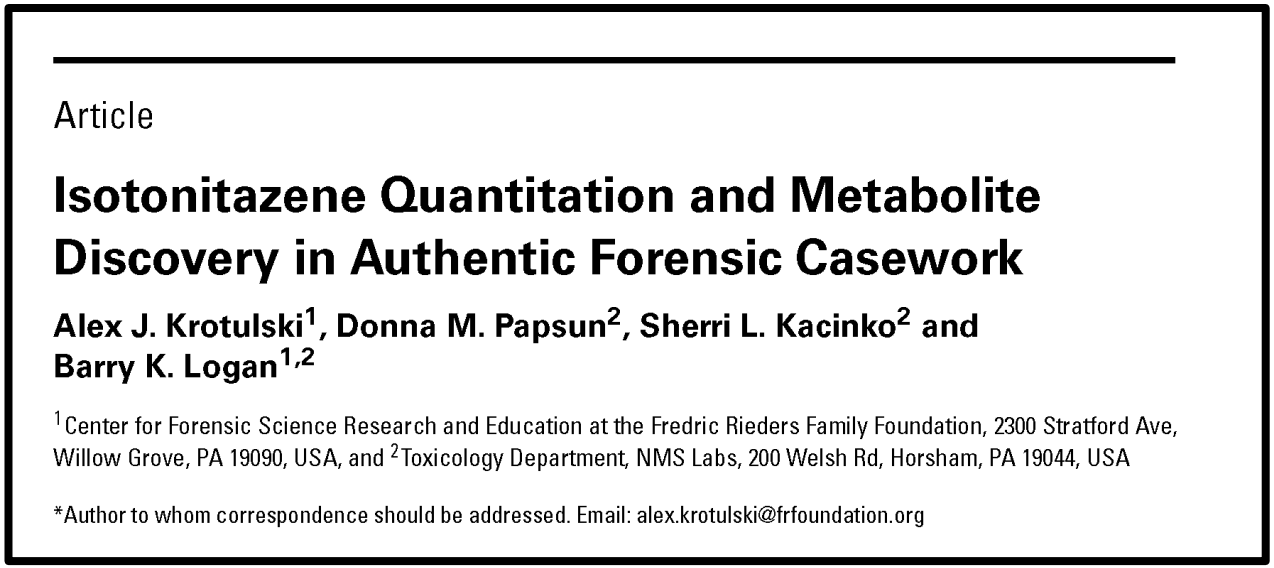
Isotonitazene → Brorphine

- More information on isotonitazene cases:
  - Session 6: Analytical Toxicology
  - Wednesday, September 23rd
  - 10:45 – 11:00am PT (1:45PM – 2:00PM ET)
  - Isotonitazene: A Novel Benzimidazole μ-Opioid Agonist as the Latest Novel Opioid
  - Barry K. Logan, Donna M. Papsun, Alex J. Krotulski, Sherri L. Kacinko



Article

Isotonitazene Quantitation and Metabolite Discovery in Authentic Forensic Casework

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Isotonitazene → Brorphine

- "Linking case histories"
- Isotonitazene first emerged in the Midwest in mid-to-late 2019
- Received a powder to test
  - Positive for isotonitazene, flualprazolam, and heroin →
- An "autopsy" of the cases
  - 89% of samples were positive for isotonitazene + flualp./etizolam

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Isotonitazene → Brorphine

- Fast-forward to mid 2020
- DEA North Central Lab reports a gray powder (sold as heroin/fentanyl) containing flualprazolam and brorphine
- Drug forums began suggesting that manufacturers are moving away from isotonitazene
- Brorphine has become the replacement for isotonitazene
  - To date: ~40 cases

make this logistically if not impossible at least tremendously difficult. As such intramuscular tend to be my route of choice. That said I now find myself at something of an impasse. The supplier from whom I have been procuring my isotonitazene has run out and has no plans to restock. As such, I am in search of a replacement what are the similar range of potency. I have tried 2-methyl-AP-237 and while I

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2-Methyl AP-237

- To date, three cases with histories
- Death investigation in California
  - 29 y/o M; Discovered deceased in sober living facility
  - Blood concentration: 5,800 ng/mL (No other DoA or NPS)
- Clinical non-fatal overdose scenario in Georgia
  - Ingested 1g of 2MAP; Presented to ED; Administered naloxone, treated, and released; Returned with different drug overdose
  - Blood concentrations: 2.9 to 35 ng/mL
- Death investigation in Tennessee
  - 35 y/o M; Hx drug use; Drove car into ditch; Found deceased in home
  - Blood concentration: 1,100 ng/mL
  - 3-HO-PCP (11 ng/mL) and 2F-Deschloroketamine (3.9 ng/mL)

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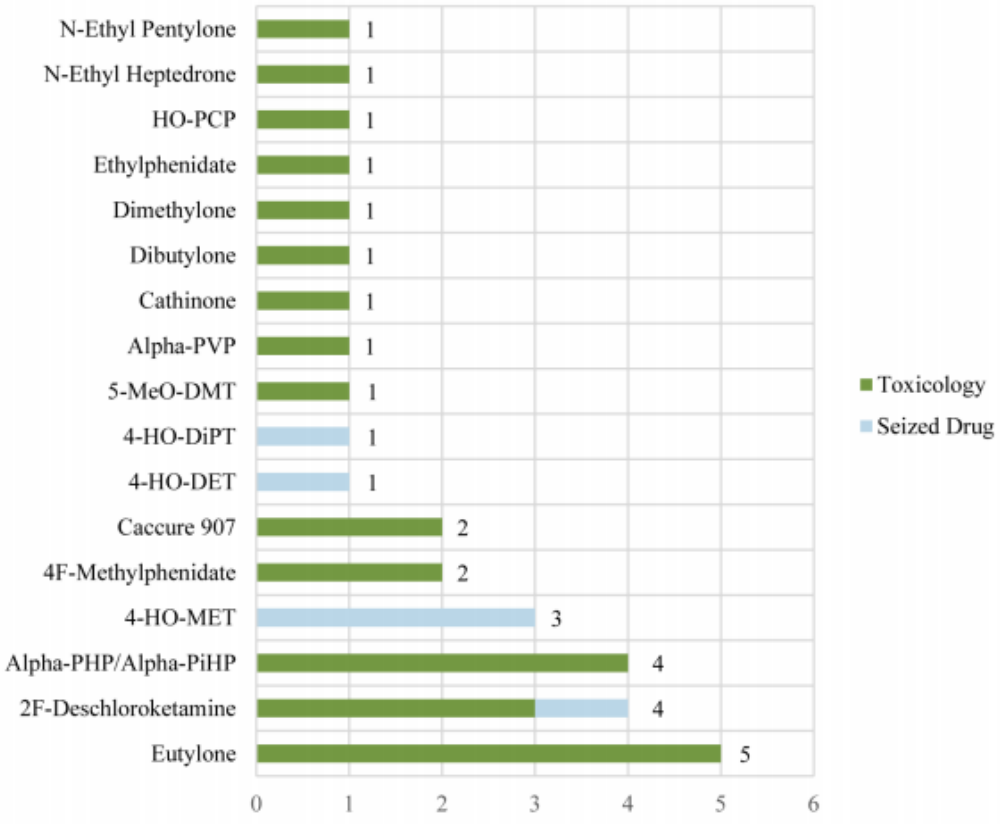
NPS Stimulants / Hallucinogens

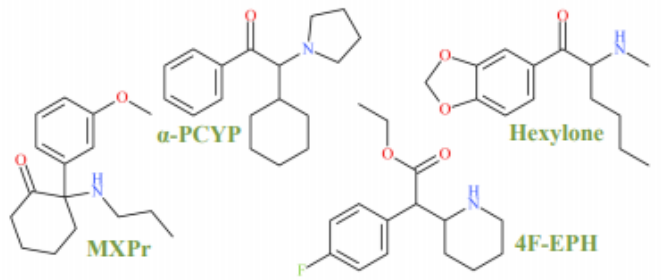
NPS Stimulant & Hallucinogen Positivity



NPS Stimulant Combinations

Combination	Frequency
Eutylone + Etizolam + Fentanyl + Cocaine	1
Eutylone + Etizolam + Cocaine	1
Eutylone + Fentanyl + Cocaine	1
Eutylone + Fentanyl	1

New Discoveries in Q2 2020



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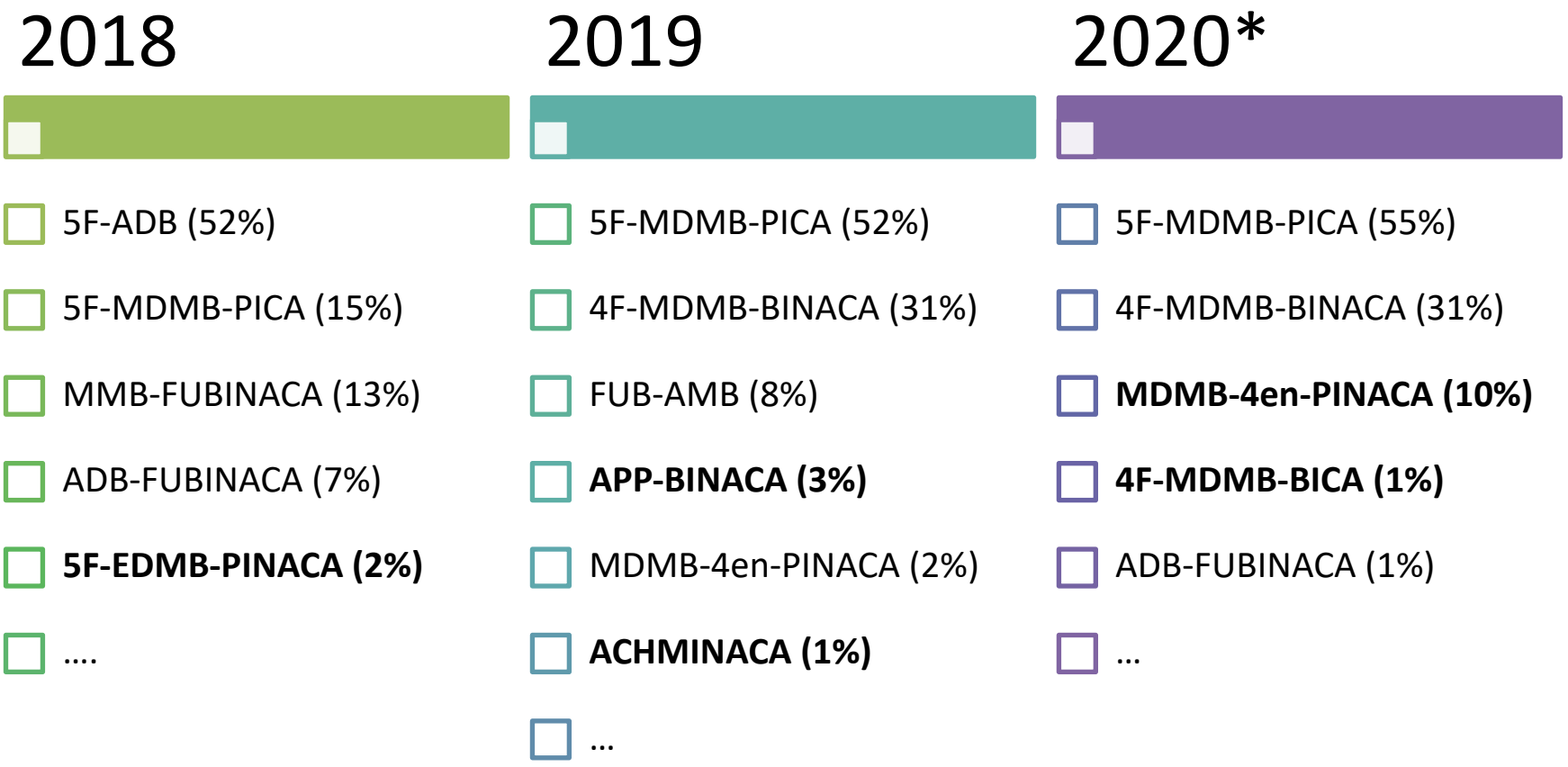
Synthetic Cannabinoids



**Only 8 months*
% of class
Not comprehensive lists

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Conclusions

Conclusions

- The NPS landscape in the U.S. remains dynamic and fluid

- **NPS Benzodiazepines**
  - Expansion and diversification of the class
  - Primary drug dominates market

- **NPS Opioids**
  - Fentanyl analogues are gone; New opioids are here
  - Rate of turnover appears to be 6-9 months or less

- **NPS Stimulants / Hallucinogens**
  - Comparatively lower prevalence → May depend on sample population

- **Synthetic Cannabinoids**
  - Primary drug dominates market; International differences
  - Turnover more common among second tier compounds

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Questions?

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