LOUISIANA ADDICTION RESEARCH CENTER, GUIDANCE FOR POLICYMAKERS

DETERMINING WHETHER CORONAVIRUS IS INCREASING THE RATE OF SYNTHETIC CATHINONE ABUSE: JULY 30, 2020

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Synthetic Cathinones

As described by National Institute on Drug Abuse (NIDA):

- Synthetic cathinones are human-made stimulants chemically related to cathinone.
- These substances are sold under the street name "bath salts".
- They are derivatives of Khat, which is a shrub grown in East Africa and southern Arabia.
- The "bath salts" are human-made versions of cathinone that can be much stronger than Khat.
- These synthetic drugs may be dangerous in unique ways compared to other stimulants such as cocaine or methamphetamine.[1,2]

Coronavirus may be increasing substance abuse

- As the Louisiana Addiction Research Center recently described, the emergence of coronavirus may make individuals much more vulnerable to illicit substance abuse through increased stress and lack of social support.[3,4]
- Coronavirus will very likely increase the rates of illicit substance abuse, and the terrible consequences, including fatal overdoses.
- There are already early reports of increased drug misuse and overdoses.[5]
- The emergency of coronavirus may also be diverting precious resources away from other endemic crises, including substance abuse.[6]

Coronavirus may also alter which drugs show the most prevalent abuse

- As the Louisiana Addiction Research Center recently described, the emergence of coronavirus has disrupted the global supply of opioids and stimuants.[7]
- Many of these drugs come from international producers and cross international sea lanes or overland routes to reach the United States
- Coronavirus has disrupted the international trade of all goods, including illicit substances.[8]
- This disruption in the global supply chain could increase the prevalence of synthetic cathinone abuse as synthetic cathinones can be produced cheaply and locally.
- This may be especially dangerous as synthetic cathinones are highly addictive and can potentially produce very deleterious effects on impulsive behavior and learning and memory[9,10] among other changes that may predispose individuals to more substance abuse.
- These deleterious effects may be worse when synthetic cathinones are produced in unclean and unsafe environments.

Wastewater analysis may provide clues for emerging trends in the prevalence of drugs of abuse

- It is important that we learn whether substance abuse patterns and the prevalence of specific drugs is changing with coronavirus.
- This is a first step in assessing the impact of these drugs on individuals and communities, as well as designing effective therapeutic and interdiction programs to reduce harm.
- The analysis of wastewater from municipal treatment facilities has recently been put forward as a "leading indicator" of the prevalence of coronavirus in communities. [11]
- Drugs of abuse are also commonly discarded into drains and so wastewater sampling may also be used to produce a community-based estimate of the prevalence of specific drugs of abuse, and whether coronavirus is changing their prevalence. [12-14]

NEEDED NOW

Development of new research programs to use wastewater to assess community-based changes in coronavirus

Development of new research programs to use wastewater to assess community-based changes in patterns of substance abuse

Development of interventions that use wastewater-based early warning systems to protect vulnerable and underserved communities, who bear the disproportionate impact of both coronavirus and substance abuse

Direct all questions, comments and other response to Dr. Nicholas Goeders, Head of Pharmacology, Toxicology & Neuroscience (LSU Health Shreveport) and Executive Director Louisiana Addiction Research Center: NGoede@lsuhsc.edu or 318-675-7850

Reference List

1. Baumann MH. Awash in a sea of "bath salts": implications for biomedical research and public health. Addict Abingdon Engl. 2014;109(10):1577-1579. PMID: 24984975 https://pubmed.ncbi.nlm.nih.gov/24984975/

2. Baumann MH, Partilla JS, Lehner KR, et al. Powerful Cocaine-Like Actions of 3,4-Methylenedioxypyrovalerone (MDPV), a Principal Constituent of Psychoactive "Bath Salts" Products. Neuropsychopharmacology. 2013;38(4):552-562. PMID: 23072836 https://pubmed.ncbi.nlm.nih.gov/23072836/

3. https://resources.finalsite.net/images/v1595360853/lsuhscshreveportedu/rdtu1rv2ikx9ykfakeh7/LARCpolicyreport7May2020.pdf

4. Volkow ND. Collision of the COVID-19 and Addiction Epidemics. Ann Intern Med. 2020 Apr 2. PMID: 32240293. https://pubmed.ncbi.nlm.nih.gov/32240293/

5. https://www.ama-assn.org/press-center/press-releases/ama-report-shows-evolving-deadlier-overdose-epidemic

6. https://newrepublic.com/article/158645/coronavirus-blowing-best-response-opioid-crisis

7. https://resources.finalsite.net/images/v1595360853/lsuhscshreveportedu/rdtu1rv2ikx9ykfakeh7/LARCpolicyreport7May2020.pdf

8. https://www.latimes.com/world-nation/story/2020-04-24/wuhan-china-coronavirus-fentanyl-global-drug-trade

9. Hyatt WS, Hirsh CE, Russell LN, Chitre NM, Murnane KS, Rice KC, and Fantegrossi WE (2020) The synthetic cathinone 3,4-methylenedioxypyrovalerone (MDPV) increases impulsive action in rats. Behavioral Pharmacology PMID: 32101987 https://pubmed.ncbi.nlm.nih.gov/32101987/

10. Ray A, Chitre NH, Daphney CM, Blough BE, Canal CE, and Murnane KS (2019) Effects of the second generation "bath salt" cathinone alpha-pyrrolidinopropiophenone (?-PPP) on behavior and neurochemistry in male mice. Psychopharmacology 236(3):1107-1117 PMID:30276421 https://pubmed.ncbi.nlm.nih.gov/30276421/

11. https://www.msn.com/en-us/health/medical/there-were-no-reports-of-coronavirus-in-yosemite-then-they-tested-the-parks-sewage/ar-BB16RBsr

12. https://www.sciencedirect.com/science/article/pii/S0165993618301444

13. Salvatore S, Bramness JG, Reid MJ, Thomas KV, Harman C, Røislien J. Wastewater-Based Epidemiology of Stimulant Drugs: Functional Data Analysis Compared to Traditional Statistical Methods. PLoS One. 2015 Sep 22;10(9):e0138669. doi: 10.1371/journal.pone.0138669. PMID: 26394227; PMCID: PMC4578919. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4578919/

14. https://www.sciencedirect.com/science/article/pii/S0304389418306034