

Killer or Filler; what happens to patients when illicit substances are cut for profit?

Nancy Balch, PharmD, BCCCP



Disclosure Statement

I have no personal or financial conflicts of interest relating to this presentation



Objectives

- Identify possible harmful agents used as fillers for illicit drugs
- Describe potential harmful reactions or adverse events that might occur due to illicit substance fillers
- Summarize the added risks of using illicit substances that have been altered with potentially harmful fillers.



Adulterants or Diluents

- Potentially in all illicit substances
- May mimic illicit substances
- May mimic other disease states



Adulterants

- Potentially add effect
- Make up for loss of effect, due to dilution of active ingredient
- Assist user in administration of illicit substances



Buffers

- Also considered 'cutting agents', diluents
- Increase profit
- 2017: more buffers seized in Canada, than illicit substances
- Example is phenacetin, which may have serious adverse effects:
 - Carcinogen
 - Hemolytic anemia
 - Methemoglobinemia
 - Renal damage



Heroin: Adulterants and Diluents

- Procaine, lidocaine
- Fentanyl, sufentanyl, chemicals similar to fentanyl
- Acetaminophen, tramadol, codeine, morphine, caffeine
- Clostridial spores, anthrax
- Quinine, diphenhydramine
- Phenobarbital, diazepam
- Lactose, dextrose, mannitol, sucrose
- Strychnine (rat poison), papaverine, lead, chalk, brick dust, starch, laundry detergent, pesticides



Methamphetamine: Adulterants and Diluents

- Acetaminophen
- Ketamine
- Caffeine, ephedrine, pseudoephedrine
- Talc, starch, sugars
- Lead, phosphine gas, dimethyl sulfone (industrial solvent)



Cocaine: Adulterants and Diluents

- Phenacetin (removed from US market, carcinogen)
- Amphetamine, methamphetamine, caffeine
- Procaine, lidocaine, benzocaine, tetracaine
- Diltiazem
- Acetaminophen, fentanyl, hydroxyzine, cetirizine
- Dextrose, sucrose, lactose, vinegar
- Cornstarch, flour, talcum powder, lead, creatine, kerosene, hydrochloric acid, boric acid, strychnine (rat poison), Dimethyl terephthalate (real use: plastic manufacturing)



Ketamine: Adulterants and Diluents

- Paracetamol
- Caffeine
- Lactose, inositol, mannitol
- Cornstarch, talcum powder, glass, detergent, baking soda



Ecstasy: Adulterants and Diluents

- Dextromethorphan, acetaminophen
- Amphetamine, methamphetamine, pseudoephedrine
- Ketamine, phencyclidine
- Methyl salicylate
- Paramethoxymethamphetamine, paramethoxyamphetamine (illegal in US)
- Any other psychoactive drug, including prescription meds



Molly (3,4-methylenedioxy-methamphetamine) Adulterants and Diluents

- Easily purchased on-line
- Often promoted as 'pure'
- Less than 20% tested actually contains Molly (3,4-methylenedioxy-methamphetamine)
- Synthetic: may be anything, even compounds not yet known
- Illicit labs create new chemical structures to sell as Molly (3,4-methylenedioxy-methamphetamine)



Cannabis/ Marijuana: Adulterants and Diluents

- Nicotine: tobacco
- Common: fungi, bacteria, mold
- Pesticides: naphthalene, and others
- Plain household herbs
- Psychoactive drugs
- Aluminum, lead, other heavy metals
- Glass, butane, rubbing alcohol, heptane



Pulmonary Emboli

- Patients who inject illicit substances are at risk
- Highest risk: injection of non-IV substances such as oral medications
- Cotton: when cotton balls are used as a filter
- Bulking materials: talc, cellulose, starch, etc
- Emboli may occur anywhere in vasculature, not just lungs



Levamisole

- What is it?
 - Veterinary medication
 - Withdrawn from human market
- Contaminant since at least 2002, primarily cocaine
- Why is it used?
 - Profit
 - Adulterated cocaine appears pure



Levamisole Complications

- Potentially
 - Neutropenia, agranulocytosis
 - Arthralgias
 - Retiform purpura
 - Skin necrosis
- Usually reversible
- Not reversible in some patients, unknown percentage



Levamisole Skin Necrosis

- Usually reversible
- Supportive care
- Recurrence with continued cocaine abuse
- Increased severity with continued cocaine abuse
- Incidence expected to increase



Fentanyl

- Is it truly fentanyl?
 - Often made in underground labs
 - Chemical structure may be altered
- Why is it used?
 - PROFIT
 - Usual profit on heroin \$100's to \$1000's
 - Fentanyl increases profit to MILLIONS of \$\$
 - Not used to cause death
 - Unintentional outcome
 - Not profitable to kill users



Fentanyl

- Of what is it potentially a contaminant
 - Heroin
 - Alprazolam (Xanax)
 - Hydrocodone
 - Potentially any other CNS depressant
 - Cocaine (recent contaminant)



False Rumors

- Marijuana has not yet been found with fentanyl in it, in the US
- Krokodil (desomorphine) has NOT been seen in the US, but has been seen in Russia
- Licking needles cleans them
 - must use either clean needles or bleach and water
 - Most users lick needles for other purposes



Questions?

Thank you for having me speak!

Nancy Balch, PharmD, BCCCP

nbalch@mgh.harvard.edu



References

- <https://www.cdc.gov/botulism/wound-botulism.html>
- <http://www.rheumatologynetwork.com/arthritis/recognizing-rheumatologic-aspects-cocaine-abuse>
- <https://luxury.rehabs.com/iv-drug-use/infections/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3603736/>
- <https://www.cnbc.com/2018/08/02/antianxiety-drugs-fuel-the-next-deadly-drug-crisis-in-us.html>
- <https://www.fda.gov/newsevents/newsroom/pressannouncements/ucm614027.htm>
- <https://arstechnica.com/science/2016/05/medical-mystery-how-tainted-drugs-froze-young-people-but-kickstarted-parkinsons-research/>
- <https://substanceabusepolicy.biomedcentral.com/articles/10.1186/s13011-017-0088-3>
- https://psychonautwiki.org/wiki/Isopropyl_alcohol_extraction_for_purification,_recrystallization,_or_blotting
- <https://www.telegraph.co.uk/news/uknews/law-and-order/6521793/Drugs-slang-what-police-must-learn-R-to-Z.html>
- <https://americanaddictioncenters.org/heroin-treatment/cut-with>
- <https://drugabuse.com/featured/cutting-agents/>



References

- <https://sunrisehouse.com/cause-effect/cutting-agents-drug-manufacturing/>
- <https://clinicalservicesri.com/dangerous-cutting-agents/>
- <https://www.cincinnati.com/story/opinion/contributors/2018/01/31/opinion-ohios-entire-supply-illegal-drugs-contaminated/1074766001/>
- <https://www.affirmhealth.com/blog/word-on-the-street-fentanyl/>
- <https://www.cnn.com/2013/11/22/health/9-things-molly-drug/index.html>
- <https://edmontonsun.com/2017/03/11/buffing-agent-leads-to-fears-of-high-level-drug-dealers-in-edmonton/wcm/b03f0237-9c47-45e1-b6d9-fba163c716cf>
- <http://www.who.int/publications/cra/chapters/volume1/1109-1176.pdf>
- <https://www.sciencedirect.com/topics/medicine-and-dentistry/illegal-drug>
- <https://www.verywellmind.com/what-is-in-cocaine>
- <https://www.bbc.com/news/uk-45083167>

