



DPICTIONS

Drug & Poison Information Center's Newsletter

Winter 2019

In this issue

- * National Poison Prevention Week
- * Black Tar Heroin: Wound Botulism Outbreak
- * Heavy Metals Found in Kratom Products
- * Health Alert Network
- * Highlights of the 2017 Annual Report: American Association of Poison Control Centers
- * CBD Oil: What's the Harm?
- * Not Your Grandma's Marijuana: Medical Marijuana in Ohio Part 2 of 3
- * Khat and Associated Adverse Effects

March 17 - 23, 2019

NATIONAL POISON PREVENTION WEEK

Use [#NPPW19](#) to follow along on social media

National Poison Prevention Week

March 17 – 23, 2019

On September 26, 1961, the 87th United States Congress passed a joint resolution ([Public Law 87-319](#)) requesting that the President of the United States proclaim the third week of March National Poison Prevention Week. On February 7, 1962, President John F. Kennedy responded to this request and proclaimed the third week of March as National Poison Prevention Week. The first National Poison Prevention Week was therefore observed in March 1962.

We invite you to celebrate National Poison Prevention week in your community by promoting poison prevention tips and the free emergency services provide by poison control centers.

How to Celebrate

- Join the conversation online using the hashtags [#NPPW19](#), [#PreventPoison](#) or [#PoisonHelp](#)
- Contact your local poison control center to request educational materials and find out about poison prevention campaigns in your area.
- Encourage your friends, family, or constituents to take the steps below to prevent poisonings.

Tips to Prevent Poisonings

- **Be prepared for an emergency.** Keep the national, free Poison Helpline number at your fingertips by saving the number in your mobile phone: 1-800-222-1222. Text POISON to 797979 to save the number in your smartphone.
- **Practice safe storage habits.** Always store medicines and hazardous substances up, away, and out of sight of children. Keep these substances in their original, child resistant containers.
- **Read and follow all labels and directions.** Review medicine and product labels before you use them, especially before giving medicine to children.
- **Detect invisible threats.** Install a carbon monoxide detector in your home.



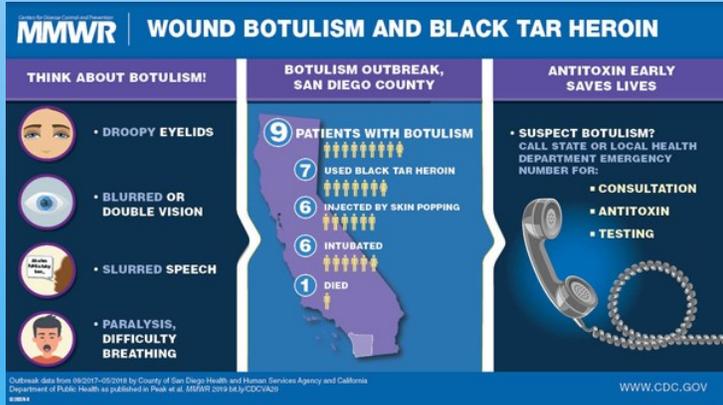
Black Tar Heroin: Wound Botulism Outbreak

Tyler Mack, PharmD Candidate, James L. Winkle College of Pharmacy

Botulism is a potentially fatal illness caused by *Clostridium botulinum*, an anaerobic, gram-positive bacteria. The organism produces the most potent biological neurotoxin known, the botulinum toxin, which has the potential to cause inadvertent paralysis among patients who become infected (Botulism, 2016). Infant botulism is the most common type of botulism reported in the US, but botulism can also be contracted via improperly preserved foods and injectable drug use. Because of this, drug users, particularly those who administer heroin using a method called “skin popping”, or injecting the drug subcutaneously, are of particularly higher risk for developing botulism. While a diagnosis of clinical botulism is rare with an average of fewer than 6 cases of wound botulism reported yearly, an outbreak of 9 suspected cases, 7 of which the patient admitted to using black tar heroin, were reported in San Diego County, California between September 2017 and May 2018 (Peak, Rosen, Kamali, et al., 2019). It is believed that contamination of one or more black tar heroin batches may have been the cause of the outbreak (Peak, Rosen, Kamali, et al., 2019). Black tar heroin is a dark-colored heroin formulation primarily produced in Mexico. It often contains adulterants intended to increase bulk or mitigate contaminants introduced during the illegal transport of the drug to the United States, such as inside car tires where it may be exposed to soil containing *C. botulinum* spores. While cooking black tar heroin as a means for injection eliminates most microbes, *C. botulinum* spores are heat resistant. The process of skin popping creates an anaerobic environment, which allows *C. botulinum* to synthesize its neurotoxin, causing local tissue necrosis and eventual systemic effects. Although incubation of the bacteria is highly variable, initial symptoms may not be present until up to 96 hours following exposure (Botulism, 2016).

There is an antidote for wound botulism, an antitoxin that can be used to treat *C. botulinum* exposures. However, wound botulism is underdiagnosed because of its rarity and its signs and symptoms similar to opioid intoxication, and neurological pathologies including Guillain-Barré syndrome and myasthenia gravis (Peak, Rosen, Kamali, et al., 2019).

In this outbreak of 9 patients, one patient died as a result of exposure to botulism. With the increased use of heroin during the opioid crisis, a heightened awareness and recognition of wound botulism resulting from skin popping can improve morbidity and mortality outcomes and lower the financial burdens of patients and the health care system (Peak, Rosen, Kamali, et al., 2019).



References:

Botulism. (2016). In Micromedex (Columbia Basin College Library ed.) [Electronic version]. Greenwood Village, CO: Truven Health Analytics. Retrieved January 19, 2019, from <http://www.micromedexsolutions.com/>

Peak C.M., Rosen H., Kamali A., et al. (2019). Wound botulism outbreak among persons who use black tar heroin: San Diego County, California, 2017–2018. *MMWR Morb Mortal Wkly Rep*, 67, 1415–1418. DOI: <http://dx.doi.org/10.15585/mmwr.mm675152a3>





Heavy Metals found in Kratom Products

Hannah Vormohr, PharmD Candidate, James L. Winkle College of Pharmacy

Over the past several years, the Food and Drug Administration (FDA) has issued numerous warnings regarding the dangers associated with kratom, an herb indigenous to Southeast Asia. Kratom is marketed in the US as a botanical dietary/herbal supplement and is used as an alternative to opioids for pain, and in the management of opioid addiction and withdrawal. Kratom products are legally and easily obtained online. However, recent studies have indicated a growing problem with the abuse of kratom. FDA scientists have concluded that the chemical structure of the compound is structurally similar to other controlled opioid analgesics (Food and Drug Administration [FDA], February 6, 2018). These findings prompted the FDA to issue stronger warnings against the use of kratom and remind consumers that there are no studies indicating it is safe or effective.

In addition to abuse and potential addiction concerns with kratom, the FDA has also found evidence of contamination of several kratom products. In 2017, the FDA identified 44 kratom-related deaths, many of which were determined to be a result of adulterated or mislabeled products. Multiple manufacturers have recalled their products containing kratom after an FDA investigation revealed 199 confirmed cases of salmonella poisoning linked to kratom products (FDA, July 2, 2018). More recently, additional studies have indicated that certain products may contain heavy metals including nickel and lead in amounts unsafe for human consumption (FDA, November 27, 2018). The contamination likely occurs before importation into the US due to a lack of safety regulations. The FDA indicates that the levels of nickel and lead may not be substantial enough to cause acute poisoning from a single use of contaminated kratom products, but heavy metal poisoning could occur with chronic use. Heavy metal exposure can have a number of detrimental effects including cognitive impairment, multi-organ failure, and even death. This evidence reinforces the FDA's strong discouragement of kratom-containing products, and consumers should be aware of the potential for harm with its use.



References:

Food and Drug Administration (Office of the Commissioner). (2018, February 6). *Press Announcements: The agency's scientific evidence on the presence of opioid compounds in kratom, underscoring its potential for abuse*. Retrieved February 6, 2019, from <https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm595622.htm>

Food and Drug Administration (Office of the Commissioner). (2018, July 2). *Press Announcements: Ongoing risk of salmonella in kratom products*. Retrieved from <https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm612420.htm>

Food and Drug Administration (Office of the Commissioner). (2018, November 27). *Press Announcements: Risk of heavy metals, including nickel and lead, found in some kratom products*. Retrieved February 6, 2019, from <https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm626738.htm>

Kratom. Retrieved from https://upload.wikimedia.org/wikipedia/commons/thumb/b/bd/Mitragyna_speciosa111.JPG/1200px-Mitragyna_speciosa111.JPG

National Institute on Drug Abuse. (2016, February 25). *Kratom*. Retrieved from February 6, 2019, from <https://www.drugabuse.gov/publications/drugfacts/kratom>



Health Alert Network

Sheila Goertmoeller PharmD, DABAT, ICPS

The Centers for Disease Control and Prevention (CDC) is our nation's leading health protection agency, and is a major operating component of the Department of Health and Human Services. The CDC offers a multitude of resources for emergency responders, clinicians, and health officials to protect the public from health threats. One such vital program is the Health Alert Network (HAN), which provides the framework to disseminate public health information at the local and state levels rapidly. The HAN is the primary method the CDC uses to share urgent public health incidents. Those caring for the public may sign up to receive HAN Update Alerts via email by following the link: <https://service.govdelivery.com/accounts/USCDC/subscriber/new>

HAN alerts have 4 different classifications based on the level of urgency to the public:

- **Health Alert:** provides vital, time-sensitive information for a specific incident or situation; warrants immediate action or attention by health officials, laboratorians, clinicians, and members of the public; and conveys the highest level of importance.
- **Health Advisory:** provides important information for a specific incident or situation; contains recommendations or actionable items to be performed by public health officials, laboratorians, and/or clinicians; may not require immediate action.
- **Health Update:** provides updated information regarding an incident or situation; unlikely to require immediate action.
- **Info Service:** provides general public health information; unlikely to require immediate action.

Recent HAN alerts include the outbreak of life-threatening coagulopathy associated with synthetic cannabinoid use, and a Brucella outbreak from consuming raw milk. HAN alerts are archived by year and can also be searched by state on the CDC's website: <https://emergency.cdc.gov/han/dir.asp>

Reference: Centers for Disease Control. (n.d.). Retrieved from <https://emergency.cdc.gov/han/index.asp>

Be Prepared: TEXT. SAVE. SHARE.

STEP 1

Text POISON to 797979



STEP 2

Save the poison control vCard to your phone



STEP 3

Share the poison control vCard w/ 3 of your friends



 BE PREPARED ANYTIME & ANYWHERE WITH #POISONHELP

 Cincinnati Children's
changing the outcome together



Highlights of the 2017 Annual Report: American Association of Poison Control Centers'

Brittany Bennett, PharmD candidate, James L. Winkle College of Pharmacy

Jan Scaglione, PharmD, D.ABAT

The 35th Annual Report of the American Association of Poison Control Centers' National Poison Data System (NPDS) compiled data from the fifty-five regional poison centers serving the population of the United States and its territories. The data included medical information and exposure cases collected from poison centers serving the public, health care professionals, and public health agencies in the US throughout the year 2017. Data was uploaded to NPDS on average every 8.07 minutes, making the database virtually real-time. US poison centers completed 2,607,413 closed encounters in 2017, and made 2,680,625 follow-up calls. Notably, there was a 3.79% decline in total encounters from 2016, but there was a 30.6% increase in health care facility exposures. This means that more medical professionals are relying on poison centers to help guide treatment. Overall, this report supports the continued value of poison centers and the need for specialized medical toxicology information when managing more serious exposures. Poison centers are essential in managing the morbidity and mortality from both unintentional and intentional exposures, and the NPDS continues to serve as a model system for real-time surveillance of local, regional and national public health.

Additional highlights:

- Human exposures with less serious outcomes decreased by 2.48% since 2008, while those with more serious outcomes increased 4.44% since 2000
- There was a 30.2% decrease in medication identification requests from 2016
- Top 5 substance classes most frequently involved in all human exposures: Analgesics (11.08%), household cleaning substances (7.43%), cosmetics/personal care products (6.76%), sedatives/hypnotics/antipsychotics (5.74%), and antidepressants (5.02%)
- Top 5 common exposures in children age 5 or less: Cosmetics/personal care products (12.59%), household cleaning substances (10.96%), analgesics (9.8%), foreign bodies/toys/miscellaneous (6.39%), and topical preparations (4.84%)
- Sedatives/hypnotics/antipsychotics increased most rapidly for cases with more serious outcomes
- Cocaine, methamphetamine, and other stimulant-related mortality is increasing in the US

Reference:

American Association of Poison Control Centers. (2018). 2017 Annual report. *Journal of Clinical Toxicology*, 56(5), 557-1415. doi: 10.1080/15563650.2018.1533727.



CBD Oil: What's the Harm?

Meghan McMahon, PharmD Candidate, James L. Winkle College of Pharmacy
Jan Scaglione, PharmD, D.ABAT

The use of cannabidiol (CBD) oil is on the rise, along with claims of being useful in many different disease states including anxiety, depression, seizures, pain, and many more. Unlike dietary supplements and vitamins, the FDA does not regulate the extraction or processing of CBD oils. CBD is extracted from the hemp plant and is considered legal on a federal level in the U.S., however some states, like Ohio, may try to regulate its use as part of their medical marijuana program.

The use of CBD oil products is not without potential harm to the human user. In the U.S. there have been over 200 reports of hospitalizations related to adulteration of CBD products. The concern over contamination of these products, with psychoactive ingredients or drugs of abuse, has led to research in the field to analyze the purity of these products.

A study done at the Virginia Commonwealth University investigated 7 flavors of one manufacturer's CBD oil products, with 2 samples submitted by an outside source who suspected adulteration, and 7 samples purchased from the manufacturer, including the same flavor as the samples provided by the outside source. This resulted in analysis of 7 different products with 2 duplications. Upon analysis, it was discovered all 9 samples did contain CBD but 6 of the 9 samples were adulterated with Tetrahydrocannabinol (THC), Dextromethorphan, or 5F-ABD, a synthetic cannabinoid that has been linked to overdose deaths, aggressive behavior, hallucinations, loss of consciousness, and psychosis. Additionally, one of the duplicated samples contained different adulterated products after analysis. This calls into question the integrity of the manufacturer's process as they cannot guarantee that identical products will contain the same ingredients. While CBD oil alone has not been considered a drug of abuse and is generally safe, if adulteration has occurred, then the safety of these products is compromised. CBD is non-psychoactive but reports of adulteration with THC and 5F-ABD may result in psychoactive effects. The need for regulation and standardization is clear as the popularity of these products continues to rise. Until the uncertainty of what is really in these products is cleared, the risk of using these products outweighs potential benefits.



References:

Hume, Christin. (2019). Photo retrieved: March 14, 2019 from <https://unsplash.com/>

Poklis, L., Mulder, J., Peace, M. (2018). The unexpected identification of the cannabimimetic, 5F-ADB, and dextromethorphan in commercially available cannabidiol e-liquids. *Forensic Science International*. 10.1016/j.forsciint.2018.10.019.



Not Your Grandma's Marijuana: Medical Marijuana in Ohio- Part 2 of 3

Jan Scaglione, PharmD, D.ABAT

The law in Ohio that allowed citizens to gain access to medical marijuana, HB 523, became operational September 8, 2018. At the time of writing Part 1 of this topic (October 2018), there were no open dispensaries in the state. Dispensaries opened up mid-January 2019, and reported sales of nearly \$1 million in the first month. As of February 15, 2019, 8 dispensaries across 3 Ohio districts are open and selling medical marijuana. This article goes over authorized forms of medical marijuana available now or soon to be available in the dispensaries, and Part 3 will examine known pharmacology and reported side effects from concentrated forms of marijuana.

Authorized forms available in the medical marijuana program of Ohio include the following:

- Oils, tinctures, capsules, or edible forms for oral administration
- Metered oils or solid preparations for vaporization
- Patches for transdermal administration
- Lotions, creams, or ointments for topical application
- Plant material for use with a vaporizing device

The Ohio State Board of Pharmacy can authorize new forms of marijuana as well, through a petition process. Information regarding petitions for new forms can be found here: <http://codes.ohio.gov/oac/3796%3A8-2>

The different forms of medical marijuana authorized through Ohio's Medical Marijuana Program are delivered to the body by various routes of administration. While it may seem as though they are all equal, marijuana that is ingested does not produce the same effect as marijuana that has been applied to the skin or vaped. More will be discussed on this topic in Part 3 of this series.

The concentration of marijuana available in products sold in the medical marijuana program will be variable, but all should have THC content within 5% of the stated label amount. Analysis of all products sold through the medical marijuana program will occur prior to the dispensary receiving product for sale. The state of Ohio will allow up to a 90-day supply to be sold to someone coming to a dispensary, and the lowest amount available for sale will be the equivalent of a 1-day supply of medical marijuana. The table below illustrates a 90-day supply for a non-terminal patient.

Type of Marijuana Product	THC content (%) allowable	90-day supply equivalent
Tier I plant material	Up to 23 %	8 ounces
Tier II plant material	23.1-35%	5.3 ounces
Extracts used for other forms, not plant material	Up to 70%	- 9.9 grams of an edible form - 26.55 grams in lotion, patches, creams, & other topical forms - 53.1 g. in oil for vaporization

Reference

Ohio Medical Marijuana Control Program. (2019). Retrieved from: <https://www.medicalmarijuana.ohio.gov/>



Khat (*Catha edulis*) Associated Adverse Effects

Nick Collins, PharmD Candidate 2019, James L. Winkle College of Pharmacy

Khat is an evergreen plant of the family Celastraceae, found in areas of East Africa and the Arabian Peninsula. Khat leaves are used by many people around the world due to its amphetamine-like effects. Fresh leaves from the plant are put into one side of the mouth and chewed, allowing the user to swallow juices from the leaves. Over 20 million people worldwide use Khat habitually (Kassim & Al'absi, 2016). The plant is often chewed during special events, but is also used by people for its stimulant effects. The use of Khat has been increasing in Europe, Australia, and the United States, as people from areas of traditionally high use immigrate.

The psychoactive compounds in Khat are cathinone and cathine, which are sympathomimetic amines with similar chemical structure and pharmacologic activity to amphetamines. Cathinone works by causing the release of catecholamines and inhibiting their uptake. Cathinone is also one of the building blocks for the numerous stimulant designer drugs commonly sold as bath salts.

Chewing Khat leads to a state of euphoria, excited mood, and increased alertness. Chewing large amounts can lead to the inability to sleep as well as problems with psychosis. Chewing the leaves also leads to an increase in blood pressure and heart rate, and can cause arrhythmias and palpitations. The long-term use of Khat has been associated with many adverse health effects, including gastrointestinal disorders, damage to the liver and kidneys, respiratory problems and cardiovascular problems. It also has many detrimental effects on dental health, and can cause reproductive problems (Engidawork, 2017).

Khat use has been associated with many oral diseases. In a study done on 115 Khat users, 52.6% had tooth loss and 82.8% had tooth discoloration. (30) There are also studies on the increase in temporomandibular joint pain (TMJ) as well as a study that showed 67.4% of khat users complained of mouth dryness for long periods of time after use (Almashraqi, Ahmed, Mohamed, & Halboub, 2018). The main dental issue involved in Khat users is keratotic white lesions. Khat chewing causing chemical irritation as well as mechanical friction that leads to white lesions on the chewing side of the user's mouth.

With the increase in use in the United States it is important to understand the risks of short and long term use of the plant. The potential habit should be taken into consideration when providing care to patients from regions with high khat use, especially when providing dental care.

References:

- Al-Sharabi, A. (2002). Oral and para-oral lesions caused by Takhzeen Al-qat (chewing). [PhD Thesis]. Khartoum: University of Khartoum.
- Al-Maweri, S.A., Warnakulasuriya, S., & Samran, A. (2018). Khat. *Journal Investig Clin Dent*, 5.
- Almashraqi, A.A., Ahmed, E.A., Mohamed, N.S., & Halboub, E.S. (2018). An MRI evaluation of the effects of qat chewing habit on the temporomandibular joint. *Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology*, 126, 3, (272-282.e2).
- Engidawork E. (2017). Pharmacologic and toxicologic effects of *Catha Edulis* (Khat). *Phyther Res*, # (7), 1019-1028.
- Kassim S, Al'absi M. (2016). Khat use is a neglected addictive behaviour. *Addiction*, 111, 179-180.



Drug and Poison Information Center

Visit our website <https://www.cincinnatichildrens.org/service/d/dpic>

Visit our blog <https://www.cincinnatichildrens.org/service/d/dpic/dpic-blog>

The Cincinnati Drug and Poison Information Center (DPIC) at Cincinnati Children’s Hospital Medical Center is a 24-hour emergency and information telephone service for anyone with concerns about poison or drugs.

The center’s specially trained staff of medical toxicologists, pharmacists, nurses and poison information providers answer questions about poisonings, drug abuse, product contents, substance identification, interactions and adverse reactions.

The Drug and Poison Information Center also works to provide you with important prevention information, educational materials, first-aid information, common household hazards and references to national helpline organizations and agencies.

The phone number for the Cincinnati Drug and Poison Information Center is **1-800-222-1222**.

The center also offers contract services to businesses looking for pharmacovigilance and safety surveillance for post-marketing and clinical trials.



© 2019 By the Cincinnati Drug & Poison Information Center (DPIC)

Editors: Alysha Behrman RN, MSN, CSPI, ICPS; Sheila Goertemoeller PharmD, D.ABAT, ICPS ; Robert Goetz PharmD, D.ABAT; Marsha A. Polk HPT, OCPS; Jan Scaglione MT, PharmD, D.ABAT; Jonathan Colvin, RN, MS; Shan Yin, MD, MPH.

The opinions expressed herein are those of the contributing authors and do not necessarily reflect the views of the editor, publisher or supporting institutions. DPIC is a service of the Cincinnati Children’s Hospital Medical Center and Children’s Hospital Research Foundation. Services are also supported by: the US Department of Health and Human Services (HRSA), the Ohio Department of Health, Hamilton County Mental Health and Recovery Services Board, and the Ohio Department of Alcohol and Drug Addiction Services (ODADAS). Additional support for DPIC services is provided by Cuyahoga Department of Health and Human Services and additional member hospitals.