

Is your patient high on

“bath salts”



By Mark M. McGraw, BSN, RN, CCRN, CEN, CTRN

THESE BATH SALTS have nothing to do with bathing. Instead, they're new designer drugs with a name that sounds deceptively harmless. This new synthetic stimulant, which until recently had been marketed as a legal novelty item in convenience stores, in “head shops” (where drug paraphernalia and legal products that produce a “high” are sold) and on the Internet, may be labeled “bath salts,” “plant food,” or “insect repellent.”¹ They include a prominent warning: “not for human consumption.”² In stark contrast to its labeling, this easily obtained alternative to ecstasy, cocaine, and amphetamines is actually intended for human consumption. (See *Defining “bath salts.”*) Samples of bath salts seized from different regions vary greatly even when they have the same label and have been developed by the same producers.³

In October 2011, the Drug Enforcement Administration made it illegal (except as authorized by law) to possess or sell the chemicals in bath salts or products containing them in the United States for at least 1 year while further studies are done to weigh whether they should be permanently banned.⁴ Bath salts had already joined the ranks of MDMA (3,4-methylenedioxymethamphetamine), the active ingredient in ecstasy, psilocybin (4-phosphoryloxy-*N,N*-dimethyltryptamine) obtained from certain types of mushrooms, LSD (D-lysergic acid diethylamide), and mescaline (the active ingredient in peyote)

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as a U.S. Drug Enforcement Administration Schedule I substance.⁵ A Schedule I compound is a chemical with a high potential for abuse and no safe approved medical use.⁶

This article will explain the dangerous effects of bath salts and appropriate nursing interventions to help promote safe, competent care to patients who've been using them. First, consider the extreme behavior that's indicative of bath salt use.

Unearthing the facts

Graphic media reports demonstrate the extreme danger that people who are high on bath salts present to themselves and others. (See *Startling cases from the popular media.*) Even without provocation, these people often lash out or injure themselves without warning. These accounts also emphasize the need for legislation, public education, and information for healthcare workers and first responders.

Bath salts' popularity skyrocketed with members of the club scene in Europe. A survey in 2010 of over 2,000 clubbers reported over 40% had used some form of bath salts, and more than 30% had used them within the last month.⁷ The use of bath salts containing the synthetic



Bath salts, a Schedule I compound, have a high potential for abuse and no safe approved medical use.

cathinone mephedrone has increased as rates of ecstasy use have declined.⁸ This is partially attributed to the instability of the ecstasy market and unavailability of MDMA.⁹

Because bath salts, a new product, hadn't yet been banned by formal legislation, it became more widely available. In December 2009, about 30 English-language online Internet

sites offered bath salts for purchase. By March 2010, 70 sites offered it, and new sites were being created every few weeks.¹⁰

Little scientific evidence or information is available about these products due to their recent emergence. According to the American Association of Poison Control Centers, in 2009 U.S. poison control centers received no calls reporting the ingestion of bath salts. In 2010, they received 303 calls. But as of July 31, 2011, they'd received more than 4,100 calls about the ingestion of bath salts in the United States.¹¹

The increased availability has contributed to more users coming to the ED for treatment. The use of these designer drugs has become an increasing cause of concern for many parents, healthcare workers, and government officials.

Understanding the pharmacology

Bath salts are manufactured differently in each region of the world as the producers develop their own recipes. The pharmacologic effects depend on the substance's purity, concentration, and filler compounds.^{12,13} The limited information about bath salts is based on animal studies, accounts of users, and accounts of those who've observed people using the drug.

Supplied as a white, tan, or brown clumpy powder, bath salts may be encapsulated or compressed into crystal to resemble actual bath salts. They're sold in packages containing 50 to 200 mg of the synthetic cathinone or in larger vials containing up to 500 mg.¹⁴ The powder can be consumed orally or rectally, snorted (insufflated), injected, or smoked. As with most drugs, the route of administration determines the onset, peak, and duration of the effects. Many

Defining "bath salts"

Bath salts consist of a powder that's inhaled, ingested, injected, or smoked because it produces an effect similar to that of amphetamine or cocaine. These drugs are synthetic derivatives of cathinone, a substance that comes from an African plant called "khat." Cathinone is a Schedule I controlled substance under the Federal Controlled Substances Act. Although the contents of packets of bath salts vary, they usually include one or more of these six chemicals:

- 3,4-methylenedioxypyrovalerone (MDPV)
- 4-methylmethcathinone (mephedrone, 4-MMC)
- 3,4-methylenedioxymethcathinone (methydone, MDMC)
- 4-fluoromethcathinone (flephedrone, 4-FMC)
- 3-fluoromethcathinone (3-FMC)
- 4-methoxymethcathinone (methedrone, BK-PMMA, PMMC).

Source: New Jersey Office of the Attorney General. Designer drugs labeled as "bath salts": facts about synthetic cathinones. <http://www.nj.gov/oag/ca/bathsalts/SyntheticCathinonesFacts.pdf>.

frequent users prefer snorting bath salts combined with oral dosing because that provides a more rapid onset with a substantially longer duration of effect.¹⁵

Clinical effects

The cathinones in bath salts are reported to cause effects similar to those of amphetamines, cocaine, and ecstasy without causing the hangover, comedown, or depression that normally follows the next day with these drugs.¹³ Some users have reported that the drug produces an elevated mood, decreased hostility, higher energy levels, and an overall sense of well-being. Some report an increased attention span and attention to detail, similar to the effect of amphetamines.⁹

Reports of euphoria, empathy, increased alertness, and improved concentration and focus are frequently reported by recreational users.^{9,13}

Although several people have reported a diminished desire for sexual activity, most report increased sexual stimulation.¹⁶

Psychosis and other adverse reactions

Many users present to the ED with severe anxiety and paranoia, agitation, bizarre behavior, tremors, and persecutory hallucinations.¹¹ Signs and symptoms can last for several days after the initial ingestion of bath salts. Most people without acute psychosis present with palpitations, shortness of breath, diaphoresis, hot flashes, headaches, hyperthermia, overwhelming thirst with polydipsia, and other signs and symptoms associated with sympathetic nervous system stimulation. These signs and symptoms are consistent with those of amphetamine and cocaine intoxication.^{16,17} Many users report bilateral jaw pain after using bath salts

Startling cases from the popular media

These accounts from the United States tell of the effects experienced by users of bath salts:

- A man, 25, broke into a monastery and assaulted a sleeping priest with a knife and wooden club after using bath salts.²⁸
- After consuming bath salts, a woman attacked her mother with a machete while she slept.²⁸
- After a 4-day binge on bath salts, a father, 45, was found dead by his young son.²⁹
- After experimenting with bath salts, a man, 31, committed suicide because of the paranoia he was experiencing.³⁰
- A man, 23, was taken to the hospital because he was acting irrationally. His body temperature was over 106° F; he developed cerebral edema and multiple-organ system failure and died the next day.³¹

because it can cause bruxism like that experienced by users of ecstasy and amphetamines.⁷

Unfortunately, many patients who come to the ED are combative, self-destructive, suicidal, or homicidal. After they receive several doses of sedatives and antipsychotic medications, their psychosis, delusions, and hallucinations begin to resolve, only to be replaced with depression, sadness, and suicidal thoughts.¹⁸

Patients with underlying neurologic or psychiatric conditions are at greatest risk for these adverse psychiatric reactions.¹⁹ The long-term effects and the potential for recurrence of signs and symptoms (flashbacks) aren't known.

Suicidal patients should have an emergency psychiatric evaluation as soon as possible. After being searched for objects of potential harm, patients should have a "safety sitter" remain with them to ensure their continued safety. No information has been published about potential increased risk for suicide on a long-term basis following ingestion of bath salts.

Is your patient on bath salts?

As discussed, the patient who's high on bath salts has signs and symptoms similar to those who

are high on other drugs, including PCP (phencyclidine), LSD, cocaine, amphetamines, and alcohol. Specifically identifying bath salts as the causative agent of the patient's psychosis isn't as important as delivering effective evidence-based care to help the patient.

Because bath salts have come into widespread use only recently, most hospitals haven't yet developed the capability to test for their metabolites, which involves sending a urine specimen to a specified lab for analysis. This process can take several hours to days. Unless the patient admits to taking bath salts or someone with the patient can confirm the ingestion, determining that the patient has consumed bath salts requires healthcare professionals to rule out the use of other substances as well as medical conditions that can cause a change in mental status. (See *Many names for bath salts.*)

Urine toxicology can rule out use of PCP, cocaine, and amphetamines. Blood chemistries can rule out serum electrolyte imbalances, abnormal glucose levels, and a metabolic acidosis seen in sympathomimetic toxicity; a complete blood cell count will help to rule out an infection or severe anemias.²⁰ A computed tomography scan of the head rules out

a subarachnoid hemorrhage or other intracranial pathology, such as hydrocephalus. A 12-lead ECG will likely demonstrate tachycardia. Ischemic changes are possible with extreme increases in heart rate or myocardial oxygen demands.

Symptomatic treatment

No antidote for bath salt toxicity is currently available. Treatment is supportive and directed at the signs and symptoms.²¹ The adverse reactions experienced, which are typical of sympathomimetic agents, include tachycardia, hypertension, palpitations, anxiety, tremors, sweating, and headaches. They can be attributed to alpha- and beta-adrenergic receptor stimulation and a sustained release of endogenous norepinephrine, dopamine, and serotonin.¹⁶ Although beta-adrenergic blocking agents such as propranolol aren't contraindicated (as they are with cocaine intoxication), they should be used with caution. Because bath salts cause a strong adrenergic response, inhibiting one of the adrenergic receptors could lead to an overwhelming stimulation of the other receptors.²²

The same hepatic pathways that metabolize ecstasy are used to metabolize some forms of bath salts.²³ Patients are also at risk for hepatic injury or insufficiency due to the overwhelming burden that impurities in bath salts place on the liver.²³ N-Acetylcysteine may help to curb some of the hepatotoxic effects experienced by those showing signs of liver injury following the use of bath salts.²³

Although the rate of bath salt addiction is reported to be low, several users and former users have admitted to developing a strong, constant urge to use bath salts every day.¹² Addiction potential is more commonly reported by those who prefer to "mini-dose," meaning they initially

Many names for bath salts^{1,2,4}

Some of the many names for bath salts include:

- Bliss
- Blue Silk
- Down2Earth White Horse
- Energizing Aromatherapy
- Ivory Wave
- Kamikaze
- Purple Wave
- Red Dove
- Vanilla Sky
- White Lightning.

consume a large dose, then continue to take smaller doses every 1 to 2 hours to sustain their high, sometimes for several days.¹³

To decrease the patient's anxiety, agitation, tremors, and psychosis, a sedative is typically required. It's usually a drug from the benzodiazepine class, such as diazepam or lorazepam, or a first- or second-generation antipsychotic such as haloperidol or ziprasidone, respectively.²⁴ When the patient is hyperthermic, sedation helps decrease muscle hyperactivity and decrease the metabolic demands on the body.

According to the American College of Emergency Physicians, benzodiazepines are the preferred first-line agent because they have a quick onset and short duration, and can be given I.M.²⁵ Because several doses may be required to achieve the desired clinical effect, the patient may also experience respiratory depression. Monitor patients' sedation level and respiratory status, and assess neurologic, psychiatric, and cardiopulmonary status.

Nursing considerations

Nurses should focus first on ensuring their own safety while addressing the immediate needs of the patient.

Assess and support the patient's airway, breathing, and circulation first. Assessing the patient's neurologic status will provide clues about the degree of impairment the patient's experiencing from the bath salts. Obtain a full set of vital signs and monitor the patient frequently, observing for a trend of abnormalities that show the patient is beginning to decompensate from the overwhelming sympathetic stimulation.

Monitor the patient's temperature to aid in early identification of potentially fatal hyperthermia. An elevated body temperature after use of methedrone, a common component of bath salts, can suggest a serotonin syndrome-induced hyperthermia.²⁶ Hyperthermia increases the risk for rhabdomyolysis, renal failure, metabolic acidosis, disseminated intravascular coagulation, coma, and death.²⁶

Nurses and other healthcare professionals, first responders, and police should be sure appropriate policies and procedures are in place to protect caregivers. Before engaging any potentially violent patient, keep in mind that over 50% of ED staff become victims of patient violence, and over 5% of violent patients possess a concealed weapon.²⁴ Following facility policies and procedures, immediately contact hospital security or the appropriate officials to search the patient for concealed weapons.

Healthcare professionals must first ensure their own safety before they approach the patient. Make sure that the exit is accessible; never let the patient block your route to the exit.

Patients with the highest risk for engaging in healthcare-directed violence are male and have a history of violent behavior, psychiatric illness, and/or drug or alcohol abuse.¹⁶ Because of the spectrum of bath salts' effects, violent behavior can appear without warning. Remaining alert for

subtle clinical indicators may give an early warning that your patient is at high risk for acting out. Be especially cautious around patients who speak increasingly loudly and abusively; have clenched fists; avoid eye contact; have tense posturing; and are pacing.^{20,24,27}

These behaviors have all been observed in acutely psychotic patients using bath salts, but be aware that bath salts are usually ingested with other substances, such as alcohol, marijuana, opioids, amphetamines, or cocaine. Every substance that patients have in their system will affect their behavior and influence the appropriate course of treatment.¹¹

Verbal deescalating techniques, such as using a calm, steady voice, may not be successful in abusers of bath salts who are psychotic. For hostile, combative patients who don't respond to verbal interventions and who meet the indications for emergency restraints, use sedation and nonrestrictive methods of restraint first. Keep in mind that physical restraints will probably be needed for the safety of everyone involved in their care. These patients include those who are an imminent danger to themselves, other patients, or staff, and those who need restraints so that the staff can provide care.²⁰ Refer to your institution's policies and procedures to guide appropriate and safe restraint use.

Determining the patient's disposition

The patient may require several hours of ED care and monitoring before a final disposition can be made. Due to the unpredictable duration and half-life of many illicit substances, determining when psychiatric symptoms will resolve



Many patients who come to the ED after using bath salts are combative, self-destructive, suicidal, or homicidal.

isn't always possible. Assuming the patient was oriented before consuming bath salts, the care team should begin to plan for disposition when the patient is once again oriented and no longer an imminent threat to self or others. Prior to discharge, as appropriate, a comprehensive psychiatric evaluation should be completed. Some patients are discharged to home, some released to police custody, and others admitted to psychiatric units.

Be prepared

Because the Drug Enforcement Administration has designated bath salts as Schedule I substances, the most restrictive category under the Controlled Substances Act, and several states have passed legislation to ban the drug, bath salts' popularity may decline as they become less accessible. Unfortunately, despite

legislation and bans, bath salts are still being used quite frequently. Caregivers need a safe environment to provide patient care and protect everyone from injury. ■

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Mark M. McGraw is a staff nurse in the ED and a mobile intensive care nurse on the critical care transport team at Christiana Care Health Systems in Wilmington, Del.

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