PEDIATRIC REVIEW

CHILDREN'S HOSPITAL • NEW ORLEANS JUNE 2013 • VOL. XXVII, ISSUE 4

Fake Drugs, Real Trouble: The Emergence of Synthetic Drug Abuse Among Adolescents and Young Adults

By **Yen Van D. Vo,** *M.D., pathology department, Children's Hospital and Tulane University School of Medicine.* *This issue of Pediatric Review is intended for pediatricians, family physicians and all other interested medical professionals. For CME purposes, the author has no relevant financial relationships to disclose.*

Objectives

At the end of this activity, the participant should be able to:

1. Define synthetic cannabinoid and synthetic cathinone
2. Describe the adverse effects of synthetic cannabinoids and synthetic cathinone
3. Outline treatment of acute intoxication of both drugs

Introduction

Over the last three years there have been increased media reports of individuals performing violent, disturbing acts while under the effects of "incense" and "bath salts." This may prompt one to ask why or how anyone can inject "bath salts" or smoke "incense." However, these substances are not the same as scented crystals used in baths, nor are they the same incense used for aromatherapy. In reality, the benign-sounding labels hide the fact that these chemicals are dangerous synthetic drugs with effects similar to common drugs of abuse, specifically, marijuana and amphetamines. These synthetic drugs are marketed under various names, such as "bath salts" and "incense," and are labeled "not for human consumption" to evade regulation by the Food and Drug Administration. As such, they can be easily and legally purchased at smoke shops, convenience stores and online. This accessibility contributes to the rapid rise of synthetic drug use among adolescents and young adults. According to the American Association of Poison Control Centers (AAPCC), 60 percent of cases relating to synthetic drug use involve individuals aged 25 and younger. Additionally, recent studies show that synthetic drugs are the emerging drugs of abuse for college students. As such, it is important for physicians, especially pediatricians, to be aware of these substances in order to identify, treat and counsel patients. Here we will discuss synthetic cannabinoids and cathinone, the two most common synthetic drugs of abuse among adolescents and young adults.

Synthetic Cannabinoids

Synthetic cannabinoids, marketed as legal marijuana and herbal incense, are not derived from the plant Cannabis sativa. Rather, they are a group of laboratory-synthesized, structurally diverse molecules that are functionally similar to delta-9-tetrahydrocannabinol (THC), the psychoactive ingredient in marijuana. Synthetic cannabinoid was developed for research purposes and its effects on humans are not well documented. Its use as a drug of abuse was first noted in Europe in the early 2000s. The drug then appeared in the United States by 2008. They were marketed as herbal and plant materials; however, further investigations found that these herbal mixtures were sprayed with synthetic cannabinoids. These mixtures were sold in packets on the internet and in smoke shops under trade names such as K2, Spice and Black Mamba. They are typically smoked as a cigarette or in a pipe. A quick search of the Internet shows that a packet of synthetic cannabinoid can be easily purchased for as low as $11.99.

Synthetic cannabiboids can be divided into seven different structural groups, and like THC, they are agonists of cannabinoid receptors 1 and 2 (CB1 and CB2). These receptors are G-protein coupled receptors present mainly in the central nervous system (basal ganglia, cerebellum, hippocampus and cortex). CB1 receptor is responsible for the psychoactive effects of cannabinoids such as euphoria, altered consciousness, perceptual disturbances, intense sensory experiences and cognitive impairment. The tissue distribution and function of CB2 receptors are not well understood. While the psychoactive effects of THC and synthetic cannabinoids are similar, there are two major differences with significant clinical relevance. One is that synthetic cannabinoids have a higher binding affinity to CB1 receptors. The other is that while THC is a partial agonist of CB1, synthetic cannabinoids are full agonists. These differences lead to synthetic cannabinoids having greater potency and higher potential for overdose and toxicity than THC. The greater potency and easy accessibility of synthetic cannabinoids contribute to its emergence as a major drug of abuse among young adults and adolescents.

Synthetic Cathinones

"Bath Salts" or "plant food" are synthetic forms of cathinone. Cathinone is a naturally occurring amphetamine analogue found in the leaves of the Catha edulis or Khat plant. The leaves of this plant are traditionally chewed for its sympathomimetic and psychoactive effects. Two synthetic cathinones, methcathinone and mephedrone, were first synthesized in the 1920s. They were used in Russia for the treatment of depression, lethargy and obesity. However, medical use of these compounds was

Pg. 4: The Travel Clinic | Pg. 6: Specialty Clinics | Pg. 7: CME Quiz & Offerings

Table 1: Adverse Effects of Synthetic Cannabinoids	
Central Nervous System	Seizures, agitation, irritation, loss of consciousness, anxiety, confusion, paranoia, hallucinations
Cardiovascular	Tachycardia, hypertension, chest pain, myocardial ischemia
Metabolic	Hypokalemia, hyperglycemia
Gastrointestinal	Nausea, vomiting
Autonomic	Hyperthermia, mydriasis
Other	Conjunctivitis

Assorted "incense" is easily and legally purchased at smoke shops, convenience stores and online.

stopped due to severe side effects, abuse and dependency. Thereafter, recreational use was reported in the Soviet Union. It also gained brief popularity as recreational in the United States in 1990s but remained obscure until it reappeared on internet forums in 2007. Due to its crystal-like and colorful appearance, these drugs were marketed as "bath salts" under beguiling names like Ivory Snow, Vanilla Sky and Blue Silk. They are also available in powder and liquid forms. The drugs are typically snorted, smoked, ingested or inhaled. There have also been reports of injection. Synthetic cathinones, like synthetic cannabinoids, are easily and cheaply purchased online, at convenience stores and smoke shops.

The category of synthetic cathinones includes a number of drugs but the most common are 3,4-methylenedioxypyrovalerone (MDPV), and mephedrone. MDPV is a dopamine and norepinephrine reuptake inhibitor, leading to its powerful stimultant effect. Currently, MDPV is the most common ingredient in "bath salts" in the United States. Mephedrone is a monoamine reuptake inhibitor and induces presynaptic release of monoamines. The actions result in an increase in serotonin and norepinephrine. While these are the most common synthetic cathinones, there are many others on the market, with new compounds emerging almost daily.

Trend in Use

Synthetic cathinone and synthetic cannabinoid use and abuse were not reported in the United States until recently. Synthetic marijuana abuse was reported in 2009 and synthetic cathinone intoxication was first reported in 2010.

According to the American Association of Poison Control Centers (AAPCC), there were 303 cases of reported synthetic cathinone use in 2010, with 165 cases from Louisiana. In 2011, there were 6,072 cases, with 160 cases from Louisiana. There were 2,655 cases with 58 cases from Louisiana in 2012.

The AAPCC also reported 2,906 cases of synthetic marijuana use in 2010, 6,968 cases in 2011, and 5,202 cases in 2012.

While synthetic cathinone is used by a geographically and demographically diverse population, there is a high rate of use among male adolescents and young adults. Most "bath salt" users are between 20 to 29 years of age, with a mean age of 24 years. It was reported that in 2011, 1.3 percent of high school seniors have used bath salts. Similarly, synthetic marijuana users are teenagers or are in their mid 20s, with 49 percent occurring in those 13 to 19 years old. A survey performed in 2012 found that 1 in 9 high school seniors has tried synthetic marijuana.

Adverse Effects

Due to greater potency of synthetic marijuana, users are seeking medical attention at a higher rate than typically associated with natural marijuana use. Patient complaints include agitation, anxiety, dysphoria, tachycardia and elevated blood pressure. Psychotic symptoms, such as hallucinations and paranoia, are commonly documented. This effect is particularly emphasized in patients with a history of psychotic illness as psychotic relapse and recurrent psychosis developed after use. It has been postulated that psychotic symptoms are more prominent in synthetic cannabinoids, not only because of its full agonist effect, but also because it lacks cannabinol, which may have antipsychotic effect. Seizures and acute kidney injury have also been reported. In habitual users, there is evidence of addiction syndrome and withdrawal symptoms.

The increased calls to U.S. poison control centers regarding synthetic cathinones were related to cardiac symptoms, agitation, hallucinations, extreme paranoia and delusions. The most common symptom reported was agitation.

A report from the Centers for Disease Control and Prevention (CDC) described 35 cases of people who used bath salts and who visited Michigan emergency departments from November 2010 to March 2011. In this report, agitation was present in 66%, seizure in 29%, and hypertension in 23%. One was dead on arrival.

In a much-publicized incident, a 21-year-old Louisiana man committed suicide after snorting a white powdery substance looking for a brief high. Instead of a brief high, he experienced five days of insomnia, anxiety and severe paranoia. Convinced that 25 police cars were outside his home, the man slit his throat. After being released from the hospital later that day, he committed suicide using a .22 caliber rifle. The postmortem toxicology report confirmed the presence of MDPV in specimens from the decedent.

In another case, a man shot and killed his wife and himself after the police pulled him over for speeding. The couple's 5-year-old son was later found dead at home. Bath salts packaging was discovered on the adult male decedent and at his home. Postmortem toxicology reports also showed the presence of MDPV.

Detection

Caring for adolescents and young adults with synthetic marijuana and bath salt intoxication can be challenging, as routine toxicology screenings are unable to detect all of the chemical substances that constitute the various synthetic drugs.

Table 2: Adverse Effects of Synthetic Cathinones	
Central Nervous System	Agitation, irritation, insomnia, delirium
Psychiatric	Paranoia, anxiety, hallucinations
Metabolic	Acne vulgaris
Gastrointestinal	Nausea, vomiting, loss of appetite
Cardiovascular	Hypertension, tachycardia, dysrhythmia, myocardial ischemia
Respiratory	Tachypnea

Unlike natural marijuana, synthetic cannabinoids lack the THC molecule and therefore will not be detected in rapid urine immunoassays designed for natural marijuana. However, independent companies including NMS Labs are offering immunoassays and gas/liquid chromatography-mass spectrophotometry, which detect up to 25 synthetic cannabinoid metabolites. Specimen requirement for these test include 2-3mL of blood or urine and costs range from $60 to $200.

Similarly, synthetic cathinones are not detected in rapid urine immunoassays, although they can falsely test positive for amphetamine. NMS Labs offers panels performed by gas/liquid chromatography-mass spectrophotometry for detection and quantification. These panels can be performed using blood, urine and tissue samples. However, while hundreds of bath salt compounds are available, toxicologists are only able to identify around 40. As new tests are developed, closet chemists are slightly modifying existing compounds or introducing new ones to avoid detection.

Treatment

Treatment of overdose or any adverse effects from synthetic cannabinoids primarily consists of supportive care, long-acting benzodiazepines for agitation and intravenous diphenhydramine for dystonia. The duration of acute synthetic cannabinoid toxicity depends upon the exposure dose, but can range from 4 to less than 24 hours.

Likewise, patients presenting with acute synthetic cathinone intoxication should be given supportive care and benzodiazepines to treat the agitation and seizures. Restraints may be needed if the patient's agitation cannot be controlled.

Because antipsychotic agents have the potential to lower the seizure threshold, they should be administered with caution in patients suspected of having used bath salts.

After recovery, bath salts abusers should be referred for psychiatric consultation. Many of these individuals have a history of polysubstance abuse.

Legal Status

On July 9, 2012, President Barack Obama signed the Synthetic Drug Abuse Prevention Act of 2012. This law increases the time, from 18 months to 36 months, that a substance may be temporarily assigned to Schedule I. It also made 31 synthetic drugs illegal as of 2013. Most of the permanently banned substances under this act are synthetic cannabinoid agents. The only permanently banned bath salts substances are MDPV and mephedrone. The main feature of this law is that it is not only a list of banned chemicals. Rather it made classes of synthetic drugs illegal; for example, all new chemicals that act as CB1 receptor agonists will fall under Schedule I classification. Even so, new formulations and designer drugs have already begun to surface to circumvent the law.

Conclusion

Physicians and healthcare providers can play an important role in increasing public awareness of the dangers of synthetic cannabinoids and cathinone through patient counseling and community outreach. Healthcare professionals may also benefit from continuing education programs on synthetic drug abuse. With increased awareness, physicians can better identify and manage the intoxication symptoms associated with these drugs when encountered in clinical setting, especially in patients showing signs of intoxication with negative urine toxicology screen.

These "bath salts" are not the same as the scented crystals used in baths.

References

1. American Association of Poison Control Centers (2013) Bath Salts. http://www.aapcc.org/alerts/bath-salts/. Accessed December 2012. American Association of Poison Control Centers (2013) Synthetic Marijuana. http://www.aapcc.org/alerts/synthetic-marijuana/. Accessed March 2013.

2. Prosser J, Lewis S. The Toxicology of Bath Salts: A Review of Synthetic Cathinones. J. Med. Toxicol. 2012: 8: 33-42.

3. Jerry J, Collins G, Streem D. Synthetic legal intoxicating drugs: The emerging 'incense' and 'bath salt' phenomenon. Cleve Clin J Med. 2012;79:258–264.

4. Wood K. Exposure to bath Salts and Synthetic Tetrahydrocannabinol from 2009 to 2012 in the United States. The Journal of Pediatrics. 2013: In press.

5. Rosenbaum C, Carreiro S. Here Today, Gone Tomorrow…and Back Again? A Review of Herbal Marijuana Alternatives (K2, Spice), Synthetic Cathinones (Bath Salts), Kratom, Salvia divinorum, Methoxetamine, and Piperazine. J. Med. Toxicol. 2012: 8: 15-32.

The Travel Clinic at Children's Hospital

June is traditionally the beginning of the summer vacation season in the United States. As international transportation has become more and more convenient, more children are able to enjoy seeing different countries around the world. While international trips are a time for great excitement, they also present potential dangers.

According to the Centers for Disease Control and Prevention (CDC), an estimated 1.9 million children travel internationally each year. Although data about the incidence of pediatric illnesses associated with international travel are limited, the risks that children face while traveling are likely similar to the risks that their parents face. The most commonly reported health problems among children are:

- Diarrheal illnesses
- Dermatologic conditions
- Systemic febrile illnesses, especially malaria
- Respiratory disorders

The Travel Clinic at Children's Hospital provides consultation to persons traveling internationally who need evaluation for potential travel-related illnesses. The physicians providing care – Rodolfo E. Bégué, M.D., Chief Infectious Diseases, and Lorna M. Seybolt, M.D. – are board certified in pediatric infectious diseases. In addition, Dr. Seybolt holds the Certificate in Travel Health from the International Society of Travel Medicine.

Travel Clinic services include pre-travel consultation which provides an extensive evaluation of the planned itinerary as well as any existing medical problems. Vaccine records are reviewed and routine immunizations are updated and travel related immunizations are provided as needed. Other non-vaccine preventable diseases are also discussed and medications are prescribed as indicated. The Travel Clinic at Children's Hospital is an Official Yellow Fever Vaccine Center. In the event of illness, post-travel consultation is available.

CDC guidelines for traveling safely with infants and children

Food & Water

Water served to young children, including water used to prepare infant formula, should be disinfected. In some parts of the world, bottled water may also harbor germs and should be disinfected before consumption. Similarly, food precautions should be followed diligently. Foods served to children should be thoroughly cooked and eaten while still hot; fruits eaten raw should

Travel Clinic

CHILDREN'S HOSPITAL

Appointments
(504) 896-9820

Office Hours
8 a.m. – 4:30 p.m.
Monday – Friday

Location
Children's Hospital Main Campus

Physicians

Rodolfo E Bégué, MD
Chief, Infectious Diseases

Lorna M. Seybolt, MD
Infectious Diseases

be peeled immediately before consumption. Additionally, caution should be used with fresh dairy products, which may not be pasteurized and may be diluted with untreated water. For short trips, parents may want to bring a supply of safe snacks from home for times when the children are hungry and the available food may not be appealing or safe.

Hand hygiene

Scrupulous attention should be paid to hand washing and cleaning bottles, pacifiers, teething rings, and toys that fall to the floor or are handled by others; water used to clean these items should be potable. Parents should be particularly careful to wash hands well after diaper changes, especially for infants with diarrhea, to avoid spreading infection to themselves and other family members. When proper hand washing facilities are not available, an alcohol-based hand cleaner can be used as a disinfecting agent.

Malaria

Malaria is among the most serious and life-threatening diseases that can be acquired by pediatric international travelers. Children who are visiting friends and relatives are at particularly high risk for acquiring malaria if they do not receive chemoprophylaxis. Children with malaria can rapidly develop a high level of parasitemia. Clinicians should counsel adults traveling with children in malarious areas to use the appropriate preventive measures, be aware of the signs and symptoms of malaria, and seek prompt medical attention if they develop.

Children should sleep in rooms with air conditioning and screened windows, or under bed nets, when available. Mosquito netting should be used over infant carriers.

The CDC recommends the use of DEET, picaridin, OLE or PMD, and IR3535, which are repellents containing active ingredients registered with the US Environmental Protection Agency, according to the product labels. Most repellents can be used on children aged >2 months.

Infection and infestation from soil contact

Children are more likely than adults to have contact with soil or sand, and therefore, they may be exposed to diseases caused by infectious stages of parasites present in soil. Children and infants should wear protective footwear and play on a sheet or towel rather than directly on the ground. Clothing should not be dried on the ground. When traveling in countries with a tropical climate, clothing or diapers dried in the open air should be ironed before use to prevent infestation with fly larvae.

Air travel

Although air travel is safe for healthy newborns, infants, and children, a few issues should be considered in preparation for travel. Children with chronic heart or lung problems may be at risk for hypoxia during flight, and a physician should be consulted before travel. Making sure that children can be safely restrained during a flight is a safety consideration. Severe turbulence or crash can create enough momentum that a parent cannot hold onto a child:

- Children should be placed in a rear-facing Federal Aviation Authority-approved child-safety seat until they are aged ≥1 year and weigh ≥20 lb.
- Children aged ≥1 year and 20–40 lb should use a forward-facing Federal Aviation Authority-approved child-safety seat.
- Children who weigh >40 lb can be secured in the aircraft seat belt.
- Ear pain can be troublesome for infants and children during descent. Pressure in the middle ear can be equalized by swallowing or chewing:
  Infants should nurse or suck on a bottle.
  Older children can try chewing gum.
  Antihistamines and decongestants have not been shown to be of benefit.

There is no evidence that air travel exacerbates the symptoms or complications associated with otitis media. Travel to different time zones, "jet lag," and schedule disruptions can disturb sleep patterns in infants and children, as well as adults.

Travel stress

Changes in schedule, activities, and environment can be stressful for children. Including children in planning for the trip and bringing along familiar toys or other objects can decrease these stresses. For children with chronic illnesses, decisions regarding timing and itinerary should be made in consultation with the child's healthcare providers.

In assessing a child who is planning international travel, clinicians should:

- Review routine childhood and travel-related vaccinations. The pre-travel visit is an opportunity to ensure that children are up to date on routine vaccinations.
- Assess all travel-related activities.
- Provide preventive counseling and interventions tailored to specific risks, including special travel preparations and treatment that may be required for children with underlying conditions, chronic diseases, or immunocompromising conditions.
- Give special consideration to the risks of children who are visiting friends and relatives in developing countries. These conditions may include increased risk of malaria, intestinal parasites and tuberculosis.
- Consider counseling adults and older children to take a course in basic first aid before travel.

Children's Hospital Specialty Clinics & Therapies

CLINICS IN NEW ORLEANS, METAIRIE, BATON ROUGE AND LAFAYETTE

Allergy/Immunology
Dimitriades, Victoria (M,BR)	(504) 896-9589
Ochoa, Augusto	(504) 896-9589
Paris, Ken (M,L)	(504) 896-9589
Sorensen, Ricardo (M)	(504) 896-9589

Amputee Clinic
Gonzales, Tony	(504) 896-9569

Cardiology
Ascuitto, Robert	(504) 896-9751
Gajewski, Kelly	(504) 896-9751
Lilje, Christian	(504) 896-9751
Ross-Ascuitto, Nancy	(504) 896-9751
Sernich, Steffan	(504) 896-9751
Siwik, Ernest	(504) 896-9571
Stopa, Aluizio	(504) 896-9571

Cardiothoracic Surgery
Caspi, Joseph	(504) 896-3928
Dorotan, Jaime	(504) 896-3928
Pettitt, Timothy	(504) 896-3928

Children at Risk Evaluation (CARE) Center
Jackson, Jamie	(504) 896-9237
Mehta, Neha	(504) 896-9237
Wetsman, Ellie	(504) 896-9237

Cleft/Craniofacial
McBride, Lori	(504) 896-9568
Moses, Michael	(504) 896-9857
St. Hilaire, Hugo	(504) 896-9857

Clinical Trials
(504) 894-5377

Cochlear Implants
Arriaga, Moises	(504) 896-2141
Jeyakumar, Anita	(504) 896-9254

Craniofacial/Genetics
Lacassie, Yves (M)	(504) 896-9857
Marble, Michael	(504) 896-9857
Zambrano, Regina	(504) 896-9857

Cystic Fibrosis
Levine, Stephen	(504) 896-9436
Pepiak, Derek	(504) 896-9436

Dental
Mobile Dental Program	34-BRUSH
Ritwik, Priyanshi	(504) 896-9580

Dermatology
Poole, Jeffrey	(504) 896-2888
Wiltz, Katy	(504) 896-2888

Developmental/High Risk
Wong, Joaquin	(504) 896-9458

Diabetes
Chalew, Stuart	(504) 896-9441
Genet, Michelle (BR)	(504) 896-9441
Gomez, Ricardo	(504) 896-9441
Stender, Sara	(504) 896-9441
Vargas, Alfonso	(504) 896-9441

Down Syndrome
Lacassie, Yves (M)	(504) 896-9254
Marble, Michael	(504) 896-9254
Zambrano, Regina	(504) 896-9254

Endocrinology
Chalew, Stuart	(504) 896-2888
Felipe, Dania	(504) 896-2888
Genet, Michelle (BR)	(504) 896-2888
Gomez, Ricardo (M, BR)	(504) 896-2888
Stender, Sara	(504) 896-2888
Vargas, Alfonso (M, BR)	(504) 896-2888

Epilepsy Surgery
McGuire, Shannon	(504) 896-9458

Feeding Clinic
Hyman, Paul	(504) 896-9534

Gastroenterology
Brown, Raynorda (M, BR)	(504) 896-2888
Hyman, Paul	(504) 896-2888
Keith, Brent	(504) 896-2888
Monagas, Javier (M)	(504) 896-2888
Noel, Adam (M)	(504) 896-2888
Rosenberg, Allan (M, BR)	(504) 896-2888

Genetics
Lacassie, Yves (M)	(504) 896-9254
Marble, Michael (BR, L)	(504) 896-9254
Zambrano, Regina (M, BR)	(504) 896-9254

Gynecology
Holman, Stacey	(504) 896-2888
Wells, Lindsay	(504) 896-2888

Hematology/Oncology
Gardner, Renee	(504) 896-9740
Morales, Jaime (BR,L)	(504) 896-9740
Morrison, Cori	(504) 896-9740
Prasad, Pinki (L)	(504) 896-9740
Ramos, Ofelia	(504) 896-9740
Velez, Maria (BR)	(504) 896-9740
Yu, Lolie (L)	(504) 896-9740

Hemophilia Clinic
Morales, Jaime	(504) 896-9740
Velez, Maria	(504) 896-9740

HIV Clinic/FACES
Wilcox, Ronald	(504) 896-9583

Hospitalists
Referrals	(504) 896-3924
English, Robin	(504) 896-3924
Hescock, Jay	(504) 896-3924
Roy, Melissa	(504) 896-3924
Sulton-Villavasso, Carmen	(504) 896-3924

Infectious Disease
Bégué, Rodolfo	(504) 896-9583
Seybolt, Lorna	(504) 896-9583
Wilcox, Ronald	(504) 896-9583

International Adoption Clinic
Bégué, Rodolfo	(504) 896-9583

Kidney Transplant
Buell, Joseph	(504) 896-9238
Killackey, Mary	(504) 896-9238
Paramesh, Anil	(504) 896-9238
Slakey, Douglas	(504) 896-9238

Kidney Transplant Clinic
Vehaskari, Matti	(504) 896-9238

Metabolic
Marble, Michael	(504) 896-9254
Zambrano, Regina	(504) 896-9254

Muscular Dystrophy
Tilton, Ann	(504) 896-9283
Weimer, Maria	(504) 896-9283
Wong, Joaquin	(504) 896-9283

Nephrology
Aviles, Diego (BR)	(504) 896-9238
Bamgbola, Oluwatoyin (L)	(504) 896-9238
Iorember, Franca	(504) 896-9238
Vehaskari, Matti (BR, L)	(504) 896-9238

Neurofibromatosis
Lacassie, Yves	(504) 896-9254
Marble, Michael	(504) 896-9254
Zambrano, Regina	(504) 896-9254

Neurology
Conravey, Allison (M)	(504) 896-2888
Deputy, Stephen	(504) 896-2888
Gautreaux, Jessica (M)	(504) 896-2888
Luke, Wendi NP	(504) 896-2888
McGuire, Shannon	(504) 896-2888
Tilton, Ann	(504) 896-2888
Weimer, Maria	(504) 896-2888
Wong, Joaquin	(504) 896-2888

Neuromuscular
Gonzales, Tony	(504) 896-9569
Levine, Stephen	(504) 896-9436
Tilton, Ann	(504) 896-9319
Weimer, Maria	(504) 896-9859
Wong, Joaquin	(504) 896-9283

Neurosurgery
Greene, Clarence (L)	(504) 896-9568
McBride, Lori	(504) 896-9568
Nadell, Joseph (L)	(504) 896-9568

Occupational Therapy
(504) 896-9540

Ophthalmology
Ellis, George, Jr. (M)	(504) 896-9426
Eustis, Sprague	(504) 896-9426
Leon, Alejandro (M)	(504) 896-9426
Vives, Tere (M)	(504) 896-2134

Orthopaedics
Accousti, William (M, L)	(504) 896-9569
Chavez, Manuel, PA	(504) 896-9569
Faust, Donald	(504) 896-2888
Gonzales, Tony (BR)	(504) 896-9569
Heinrich, Stephen	(504) 896-9569
King, Andrew	(504) 896-9569
Lago, Theresa, PA	(504) 896-9569
Lee, Raven, PA	(504) 896-9569
Nguyen, Jessica, PA	(504) 896-9569
Patel, Prerana	(504) 896-9569
Southern, Edward	(504) 896-9569

Otolaryngology (ENT)
Arriaga, Moises	(504) 896-9254
Hagmann, Michael (M)	(504) 896-9254
Jeyakumar, Anita	(504) 896-9254
Simon, Lawrence	(504) 896-9254

Physical Therapy
(504) 896-9557

Plastic Surgery
Moses, Michael	(504) 895-7200
St. Hilaire, Hugo	(504) 412-1240

Psychology
Boggs, Koren	(504) 896-7272
Franz, Diane	(504) 896-9484
Gentile, Steven	(504) 896-7272
Henke, Amy	(504) 896-7272
Heslet, Lynette	(504) 896-7272
Jackson, David	(504) 896-7272
Kamps, Jodi	(504) 896-7272
Kiracofe, Catherine	(504) 896-7272
Rothbaum, Rebecca	(504) 896-9484

Pulmonology
Edell, Dean	(504) 896-9436
Levine, Stephen	(504) 896-9438
Pepiak, Derek	(504) 896-9438

Rheumatology
Brown, Amanda (BR, L)	(504) 896-9385
Dimitriades, Victoria	(504) 896-9385
Gedalia, Abraham (M, BR, L)	(504) 896-9385

Scoliosis/Pediatric Spine
Accousti, William (M, L)	(504) 896-9569
Gonzales, Tony (BR)	(504) 896-9569
King, Andrew	(504) 896-9569
Patel, Prerana	(504) 896-9569

Spasticity
Nadell, Joseph	(504) 896-9568
Tilton, Ann	(504) 896-9283
Wong, Joaquin	(504) 896-9283

Speech & Hearing
(504) 896-9551

Surgery
Hill, Charles	(504) 896-3977
Steiner, Rodney	(504) 896-9756
Valerie, Evans	(504) 896-9756

Travel Clinic
Bégué, Rodolfo	(504) 896-9583
Seybolt, Lorna	(504) 896-9583
Wilcox, Ronald	(504) 896-9583

Treatment after Cancer & Late Effects Center
Prasad, Pinki	(504) 896-9740

Urology
Langston, Sherry, CNP	(504) 896-2888
Ortenberg, Joseph (BR, L)	(504) 896-2888
Roth, Christopher	(504) 896-2888

Vascular Anomalies
Poole, Jeffrey	(504) 896-9857
Shehan, Claudia	(504) 896-9857
Simon, Lawrence	(504) 896-9857
St. Hilaire, Hugo	(504) 896-9857

Wound Clinic
Valerie, Evans	(504) 896-3977

TRANSPORT/TRANSFER
1-855-CHNOLA1

200 Henry Clay Ave., New Orleans, LA 70118
(504) 899-9511 · www.chnola.org

In addition to Children's Hospital Main Campus, some physicians also hold clinics at other centers.

Children's Hospital	**(504) 899-9511**
Ambulatory Care Center	**(504) 896-9532**
Metairie Center (M)	**(504) 832-4033**
Baton Rouge Center (BR)	**(225) 216-3047**
Lafayette Center (L)	**(337) 289-8289**

Updated 5/13

ARTICLE EVALUATION

You must complete the following evaluation in order to receive your CME credit.

I enhanced my knowledge of the topic:

Very much				Very little
5	4	3	2	1

The author met the stated objectives:

Greatly				Not at all
5	4	3	2	1

The overall evaluation of the article:

Excellent				Poor
5	4	3	2	1

Did you receive any commercial bias in the material presented in this activity?

☐ Yes ☐ No

How long did it take to read the issue and complete the quiz:

30 minutes 1 hour

Continuing Medical Education

CHILDREN'S HOSPITAL

LSMS Louisiana State Medical Society

Children's Hospital is accredited by the Louisiana State Medical Society to provide continuing medical education for physicians. Children's Hospital designates this enduring material educational activity for a maximum of **1.0 AMA PRA Category 1 Credit.™** Physicians should only claim credit commensurate with the extent of their participation in the activity. Please PRINT your personal information.

Name: _____

Physician ID number or last four SSN digits: _____

Mailing address: _____

_____

Topics that you would like to see in future issues: _____

_____

_____

CME Offerings

Pediatric Grand Rounds
1st, 3rd and 5th Wednesday
of each month, 8 – 9 a.m.
Children's Hospital Auditorium

Child Neurology Case Conference
1st, 2nd and 4th Wednesday
of each month, 2 – 3 p.m.
ACC Room 3302

Tumor Board
Wednesdays, 4 – 5 p.m.
Children's Hospital Auditorium

Weekly Pathology Conference
Thursdays, 8 – 9 a.m.
Research Center, Room 4222

Neonatology Conference
Thursdays, 12:30 – 1:30 p.m.
NICU Conference Room

Cath Conference
Fridays, 8 – 9 a.m.
ACC Room 3302

Please call the CME office at (504) 896-9264 for more information.

Please record your responses to the questions on the form below. Please circle the best possible answer. CME offer is good until August 31, 2013.

1. According to a 2012 survey, _____ high school seniors have tried synthetic marijuana.
   a. 1 in 10
   b. 1 in 9
   c. 1 in 8
   d. 1 in 4

2. Synthetic marijuana's potency is _____ natural marijuana.
   a. less than
   b. equal to
   c. greater than

3. NMS Labs are offering tests for synthetic cannabinoids and cathinones using _____.
   a. blood samples
   b. urine samples
   c. tissue samples
   d. blood, urine and tissue samples

4. True or false, many bath salts abusers have a history of polysubstance abuse.
   a. true
   b. false

To receive CME credit, participants must score 100%.

To receive CME credit, mail, e-mail or fax your completed form to:
CME Office • Children's Hospital • 200 Henry Clay Avenue • New Orleans, LA 70118
E-mail: cmooney@chnola.org • Fax: (504) 896-3932

Marketing Department
Children's Hospital
200 Henry Clay Avenue
New Orleans, LA 70118

Change Service Requested

STAFF

Pediatric Review is published monthly for the medical staff of Children's Hospital by the Public Affairs Department. For information about *Pediatric Review*, call (504) 896-9373.

website: www.chnola.org