Goal. The goal of this lesson is to educate pharmacists on common and trending substances and medications associated with accidental or intentional poisoning and substance abuse. The lesson will also extensively review incidence reporting for exposures, along with poison prevention tips and resources that pharmacists may utilize to increase awareness and educate the public.

Objectives. At the completion of this activity, the participant will be able to:

1. identify common substances or medications associated with accidental or intentional poisoning and abuse;
2. demonstrate an understanding of poison prevention initiatives, and their past and potential impact on poison prevention;
3. recognize the patient populations most at risk for accidental and intentional poisonings based on national reporting; and
4. demonstrate an understanding of the poison prevention resources that are available to the public.

Introduction

In March 2013, our country celebrated its 51st National Poison Prevention Week, an annual event organized by the Poison Prevention Week Council to educate the public on poisoning awareness and prevention. The first event was observed in March 1962, following passage of a joint resolution by the U.S. Congress and President John F. Kennedy proclaiming the third week of March as National Poison Prevention Week.

While this initiative began 51 years ago, today poisoning is the leading cause of death from injuries in the United States as reported by the Centers for Disease Control and Prevention (CDC), National Center for Health Statistics. This report stated that in 2008, the number of poisoning deaths exceeded the number of motor vehicle traffic deaths for the first time since 1980.

At the time of writing this lesson, there are 57 poison control centers throughout the United States working to prevent and treat poison exposures. These centers offer free, confidential medical advice 24 hours a day, seven days a week through a toll-free poison help line (1.800.222.1222). Translation is available in over 150 languages. Parents, caregivers, and health care professionals are encouraged to have this number programmed in their phones and posted in their homes.

The Poison Prevention Week Council is made up of representatives from industry, government, non-profit, and health organizations working to educate the public about the prevention of unintentional poisonings and accidental exposures in and around the home. They provide educational tips and create materials that may be reproduced and shared with others. The Council manages www.poisonprevention.org, one of the many websites with poison exposure information. Table 1 lists additional online references, many referred to during this lesson, for parents, caregivers, educators, and health care professionals.

Poisons come in various forms which include: solids (such as medicine tablets), liquids or sprays (such as household cleaners including bleach), and gases (such as carbon monoxide). Specific examples of potential poisons which may be found in or near homes include: prescription medications, over-the-counter medicines, and illegal drugs; vitamins, minerals, or herbal products; personal care products including nail polish remover, mouthwash, contact lens solution, and makeup; laundry detergent (liquids, solids, and pod formulations), furniture polish, toilet bowl cleaner, antifreeze, paint, bug and weed killers; and other household items like batteries or lighter fluid. Some indoor and outdoor plants, such as mushrooms and poinsettias, may be harmful as well. Bites or stings from bees, scorpions, wasps, snakes, or spiders are also classified as poisons.

Poisoning Exposure Reporting

The American Association of Poison Control Centers (AAPCC) collects data on the number and severity of exposures that occur, in order to determine which medicines and products pose a health risk for the public. AAPCC owns and manages the National Poison Data System (NPDS), a database holding information from all human poison exposure cases phoned into one of
Table 1
Online Poison Prevention Resources

- American Association of Poison Control Centers: aapcc.org
- Poison Prevention Week Council: poisonprevention.org
- Up and Away and Out of Sight - medication safety tip sheet: upandaway.org/pdf/Up_and_Away_Tip_Sheet.pdf
- Up and Away Downloadable Coloring Book: upandaway.org/pdf/Up_and_Away Downloadable Coloring Pages 508.pdf
- CDC’s Tips to Prevent Poisonings: cdc.gov/HomeandRecreationalSafety/Poisoning/preventiontips.htm
- EPA Poison Proof Your Home: epa.gov/pesticides/health/poisonprevention.htm
- DrugFree - information for parents dealing with teen drug and alcohol abuse: www.drugfree.org
- National Take-Back Initiative: deadiversion.usdoj.gov/drug_disposal/takeback/index.html
- Generation Rx Initiative: pharma-cy.osu.edu/outreach/generation-rx

The poison control centers across the country. Each year, a detailed report is released and published in the Clinical Toxicology journal and available free of charge. The majority of the exposure statistics published in this lesson are taken directly from this report.

Using this data, AAPCC has the ability to detect emerging public health risks, as information from each call is uploaded to NPDS every 19 minutes, allowing for real-time tracking. The AAPCC and local poison centers are able to detect new threats and quickly notify authorities at the local, state, and federal levels. Recent evidence of this includes the alerts issued regarding synthetic drugs such as cathinones, often referred to as “bath salts” and cannabimimetics or “synthetic marijuana,” both of which are new substances of abuse.

In 2011, over three million closed encounters (cases where no further follow-up or recommendations are required) were logged, which included over two million human exposures and 1.2 million informational calls. In comparison to 2010, human exposures with less serious outcomes decreased by 3.4 percent, while those with more serious outcomes (moderate, major, or death) increased by 6.8 percent. It is important to note that the data provided by NPDS only represents those that are reported to the poison centers, and does not reflect the actual percentages for which these incidents occur in the population.

There were 1,158 exposure-related fatalities in 2011 (including only cases with relative contribution to fatality and directly related). Among these fatalities were 70 (6 percent) children less than 20 years of age. The majority (72.3 percent) occurred in adults aged 20 to 59 years. Unintentional exposures outnumbered intentional exposures in all age groups, with the exception of ages 13 to 19. In terms of fatalities, the reported reason for exposure in children ≤5 years of age was unintentional, while most fatalities in adults >20 years of age were intentional.

Unintentional/Accidental Exposures: Awareness and Prevention

Most human exposures being categorized as unintentional (80.3 percent) were due to general unintentional, therapeutic error, and unintentional misuse. The most common scenarios associated with therapeutic errors were inadvertent double-dosing, wrong medication taken or given, other incorrect dose, doses given/taken too close together, and inadvertent exposure to someone else’s medication.

Children younger than three years of age were involved in 36.2 percent of exposures, and children younger than six years of age accounted for about half of all human exposures (48.9 percent). Although children ≤5 years old were involved in the majority of exposures, only 20 cases (1.7 percent) resulted in death. In cases involving humans less than 13 years of age, a male predominance was found, but this was reversed in teenagers and adults with females comprising the majority of reported exposures.

The top five substance classes frequently involved in human exposures were analgesics (11.7 percent), cosmetic/personal care products (8 percent), household cleaning substances (7 percent), sedatives/hypnotics/antipsychotics (6.1 percent), and foreign bodies/toys/miscellaneous (4.1 percent). The top five most common exposures in children aged five years or less were cosmetic/personal care products (14 percent), analgesics (9.9 percent), household cleaning substances (9.2 percent), foreign bodies/toys/miscellaneous (6.9 percent), and topical preparations (6.6 percent). Table 2 lists the top 25 substance categories reported in human exposures according to 2011 data. The majority of the categories associated with the largest number of fatalities were pharmaceuticals, such as sedatives/hypnotics/antipsychotics, cardiovascular drugs, opioids, antidepressants, and acetaminophen combinations.
On May 17, 2012, the AAPCC issued an alert regarding child exposure to newly concentrated single dose packets of laundry detergent, commonly referred to as “pods.” These new laundry packets, designed to dissolve in washing machines, are colorful and squishy, making them attractive to children. In 2012, there were 6,258 reports of children aged five years and younger who were exposed. Symptoms have included excessive vomiting, wheezing, and gasping; serious breathing problems; and corneal abrasions when the detergent gets into eyes.

Accidental exposure reporting has directed us to aim poison prevention tactics toward protecting children younger than five years of age. Children in this age group are in an exploratory stage of development and often investigate new items by placing them in their mouths. While exploration is a normal characteristic which should not be discouraged, parents must be attentive.

As children grow from infants to toddlers to pre-schoolers, their mobility and capabilities increase, allowing them to reach household products or medications. Parents, grandparents, and caregivers who have young children in their home or visiting the home must store these products out of sight and out of reach; locked up if possible.

Product Packaging. The introduction of the Poison Prevention Packaging Act in 1970 has somewhat been effective in reducing the number of childhood ingestions. In fact, the legislation is estimated to have saved the lives of 900 children since it went into effect. However, it is recognized that it’s not possible to create a packaging or closure that would prevent every single child from getting into the contents under all circumstances. Therefore, the Act requires that packaging be difficult enough for children under five years of age to open or otherwise obtain a toxic amount within a reasonable time. The U.S. Consumer Product Safety Commission regulation requires that products be packaged in a manner that would prevent a container being opened within 10 minutes. In addition, the Environmental Protection Agency requires that most pesticides be in child-resistant packaging as well.

The Poison Prevention Packaging Act recognizes that elderly or handicapped people may have difficulty with such packaging, and allows the manufacturer to offer a non-prescription product in one size or container that does not comply with the safety packaging standard if it bears the label statement: “this package for households without young children.” This same manufacturer must, in turn, offer the same product in popular-sized child-resistant packages. Purchasers or prescribers of prescription medications can request non-child-resistant packaging; however, these should be kept to a minimum.

A study conducted for the U.S. Consumer Product Safety Commission by the American Association of Poison Control Centers found that 23 percent of the oral prescription drugs that were ingested by children under five years of age belonged to someone who did not live with the child. Overall, 17 percent of the medications ingested belonged to a grandparent. Hence, data suggests that all adults need to use child-resistant packaging, and medications must be properly secured away from young children. In order for child-resistant packaging to be effective, consumers are reminded of the following: (1) packaging should be re-secured after products are used; (2) the contents should not be transferred to other containers and (3) loose pills should not be left out.

Pediatric Issues. Following the 2008 FDA recommendation that all over-the-counter cough and cold medicines be avoided in children under two years of age, the estimated number of emergency department visits for associated adverse events in this population was reduced by 50 percent. While the ingredients contained in cough and cold medication are safe in most children, the unintentional misuse led to serious events and even death.

Unintentional overdose or misuse in pediatric patients can occur for a number of reasons. First, problems may occur when multiple combination products are used that may contain the same ingredients. Pseudoephedrine, a decongestant found in many cough and cold products, can lead to tachycardia, left ventricular dysfunction, and even death if a child receives two to three times the recommended dose. In some cases, multiple caregivers may be administering medication and may not be aware of what the child has already received.

Additional reasons for unintentional overdosing are administering the wrong formulation and calculating an incorrect dose based on dosing information for older children or adults. Acetaminophen is

Table 2 Top 25 substance categories most frequently involved in human exposures

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<thead>
<tr>
<th>Category</th>
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<tbody>
<tr>
<td>analgesics</td>
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<tr>
<td>cosmetics/personal care products</td>
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<tr>
<td>cleaning substances (household)</td>
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<tr>
<td>sedatives/hypnotics/antipsychotics</td>
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<tr>
<td>foreign bodies/toys/miscellaneous</td>
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<tr>
<td>antidepressants</td>
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<td>cardiovascular drugs</td>
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<td>topical preparations</td>
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<td>antihistamines</td>
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<tr>
<td>pesticides</td>
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<tr>
<td>cold and cough preparations</td>
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<tr>
<td>alcohols</td>
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<tr>
<td>vitamins</td>
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<tr>
<td>bites and envenomations</td>
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<tr>
<td>stimulants and street drugs</td>
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<tr>
<td>antimicrobials</td>
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<tr>
<td>hormones and hormone antagonists</td>
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<tr>
<td>gastrointestinal preparations</td>
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<td>anticonvulsants</td>
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<tr>
<td>plants</td>
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<tr>
<td>chemicals</td>
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<tr>
<td>hydrocarbons</td>
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<td>dietary supplements/herbals/homeopathic</td>
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<td>fumes/gases/vapors</td>
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<td>electrolytes and minerals</td>
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probably the best known example of this. In 2011, FDA made changes to both the formulations and labeling for acetaminophen for infants in order to improve the safety of its use. Prior to this change, pediatric acetaminophen was widely available as 80mg/0.8ml for infants and 160mg/5ml for children. For children less than two years of age, the label referred parents and caregivers to a physician for dosing guidance which often resulted in parents estimating the dose based on older children. Currently, the 80mg/0.8ml concentration is being phased out and dosing for children as young as six months of age will now appear on children’s products with doses listed by age and weight.

Intentional Exposures: Awareness and Prevention

Intentional exposures accounted for 15.8 percent of human exposures in 2011. More than half of these were linked with suicidal intent, while the other cases reported intentional misuse or abuse. Data also shows that the number of suicides in the U.S. has increased every year since 2000, with 865 in 2011. This has almost doubled since 2000 (448).

In the age range 13 to 19 years, there were 44 reported fatalities, including 40 intentional and one unintentional. Pharmaceuticals associated with these fatalities include: methadone (9 cases), heroin (5 cases), oxymorphone, acetaminophen/hydrocodone, alphazolam, methamphetamine (meth, ice, crystal), oxycodone, colchicine, methylenedioxymethamphetamine (MDMA, ecstasy), THC homolog (spice), and tramadol. The top-ranked non-pharmaceuticals included freon, ethanol, and smoke. NPDS regression analyses indicate that all analgesic exposures, including opioids and sedatives, are increasing year after year, which mirrors CDC data.

According to CDC, overdoses of prescription pain medication have more than tripled in the past 20 years, killing more than 15,500 people in the U.S. in 2009. In addition, emergency department visits for prescription painkiller abuse or misuse have doubled in the past five years, to nearly a half million. In 2010, an alarming 12 million American teens and adults have reported using prescription pain medication to “get high” or for other non-medical reasons. This abuse costs more than $72.5 billion each year in health care costs. Based on 2008 data, the highest drug overdose death rates per 100,000 people occurred in Ohio, Nevada, Utah, New Mexico, Oklahoma, Louisiana, Florida, Kentucky, West Virginia, Pennsylvania, and Rhode Island.

Certain groups are more likely to abuse or overdose on prescription pain medication. For instance, more men than women die of associated overdoses. Middle-aged adults have the highest rates, and people in rural counties are about two times more likely to overdose on these agents than people living in big cities. Caucasian and American Indian or Alaska Natives are also more likely to overdose on prescription pain medication.

Hence, prevention of these overdoses is one of the CDC Injury Center’s focus areas. The Injury Center’s initiatives include: (1) improving systems to track prescriptions and identify misuse; (2) identifying prevention policies and programs that work; (3) increasing health care provider accountability; and (4) educating health care providers, policy makers, and the public. The Injury Center has two Vital Signs packages, Prescription Painkiller Overdoses in the U.S. and Use and Abuse of Methadone as a Painkiller that spotlight these issues. Both documents are available on the CDC’s website as printable fact sheets for distribution. See Table 1 for website links.

While the U.S. and state governments continue to work on prevention from a policy standpoint, health care providers and professionals also have a vital role. Prescribers are urged to follow guidelines for responsible prescribing which includes: (1) screening and monitoring for substance abuse and mental health problems; (2) attempting other treatments for pain treatment; (3) prescribing only the quantity of medication needed for the expected length of pain; and (4) using patient-provider agreements along with urine drug tests when treating long-term pain. Educating patients on how to safely use, store, and dispose of prescription pain medication is extremely important.

Synthetic Drug Abuse

Reports of abuse for two new agents, “synthetic marijuana” (e.g., Spice, K2, No More Mr. Nice Guy) and “bath salts” (e.g., Cloud 9 and Bliss) were received by the poison centers in 2009 and 2010 respectively. In 2010, poison centers received 3,200 related calls, which jumped to 13,000 in 2011. Sixty percent of these cases involved patients 25 years of age and younger. These agents are powerful illegal drugs that have not been tested for safety and may include unknown chemicals. Poison experts state that these substances are among the worst seen. They are associated with paranoia, violent behavior, hallucinations, delusions, suicidal thoughts, seizures, panic attacks, increased blood pressure and heart rate, chest pain, and nausea and vomiting.

In July 2012, U.S. Congress passed the Synthetic Drug Abuse Prevention Act, legislation banning these substances. Prior to this Act, certain states had banned various compounds in synthetic drugs. This law provides law enforcement with the tools needed to crack down on these agents, and outlaws the sale of these drugs by retail stores and online retailers.

Methadone

Methadone, an opioid that has been widely used to treat heroin addiction since the 1960s, has become increasingly used to treat chronic pain since the mid-1990s. The advantages of using methadone over other opioids for pain management are its long duration of action, low cost, and availability in liquid formulation for oral use.
However, disadvantages include its long and unpredictable half-life, risk for accumulating toxic levels leading to respiratory depression, multiple drug-drug interactions especially with other drugs that are frequently abused, and its ability to cause disturbances with cardiac rhythm. With its increased use and prescribing, incidences of misuse and overdoses began trending in 2003. Studies have suggested that more than 75 percent of the methadone overdoses involved persons who were not enrolled in opioid addiction programs utilizing methadone, or were using the medication without a prescription. Data was collected from 13 states associated with the Drug Abuse Warning Network (DAWN) in 2009 which analyzed deaths involving one or more opioid. The study revealed that methadone was involved in 31.4 percent of the 3,294 deaths involving these opioids, more than any other opioid other than oxycodone. Among the 748 single-drug deaths, methadone was involved in 39.8 percent, twice as many as any other opioid. This difference between methadone and other opioids is significant.

In 2006, FDA issued a warning cautioning prescribers about ordering methadone, due to the sharp rise in overdose deaths in patients receiving methadone. Dosing recommendations were revised increasing the dosing interval from every three to four hours, to every eight to 12 hours. In January 2008, methadone manufacturers voluntarily limited the sale of the 40mg tablet formulation to hospitals and drug addiction treatment programs only, because this high dose was not approved for the treatment of pain. An FDA analysis also found that some inappropriate prescribing was occurring.

Methadone is an extended release opioid and should not be prescribed for “as needed” or breakthrough pain. It should also not be utilized for mild or acute pain. It is generally not appropriate as a first-line agent for non-cancer chronic pain, nor should it be prescribed in opioid-naïve patients. Additionally, evidence to support the use of opioids in treating headache or low back pain is limited. CDC suggests that insurers and health care systems require authorization for starting doses for pain that exceed 30mg per day, and refrain from listing methadone as a preferred drug for the treatment of chronic non-cancer pain. While all medicines should be secured and disposed of properly, this practice is pertinent with methadone and other opioids to ensure that these powerful and potentially dangerous medications are not diverted.

Proper Disposal of Medications
Prior to 2007, little uniform guidance was available for the proper disposal of unused medication. Hence, FDA and the White House Office of National Drug Control Policy (ONDCP) jointly developed federal guidelines for consumers. These guidelines call for consumers to first follow specific disposal instructions on the drug label or accompanying patient information. Furthermore, it states that only a few drugs should be flushed down the toilet, and only if the information specifically instructs the patient to do so.

Consumers are also encouraged to take advantage of community drug take-back programs that allow the public to bring unused drugs to a central location for proper disposal. The Drug Enforcement Administration (DEA) has held four National Prescription Drug Take-Back Day programs, which have collectively removed two million pounds of prescription medication from circulation. Specific information about the National Take-Back Initiative, including local collection sites, can be found at: www.deadiversion.usdoj.gov/drug_disposal/takeback/index.html. Local police departments and household trash and recycling services may also provide details. Additionally, Congress passed the Secure and Responsible Drug Disposal Act of 2010 which amended the Controlled Substance Act allowing DEA to develop permanent, ongoing and responsible methods for disposal. In December 2012, DEA proposed regulations to implement the 2010 disposal Act. However, until these regulations become permanent (which include take-back events, mail-back programs, and collection receptacle locations), DEA will continue to hold Take-Back Days.

State guidelines vary, but the Ohio Department of Health (ODH) has created guidelines that outline the process for organizing a take-back program for communities of all sizes. This document provides logistical and legal matters that must be considered including needed supplies, suggested partners, and required permits. Law enforcement personnel must be present to take custody of controlled medications. If controlled and non-controlled medications will not be segregated, then all collected medications will be treated as controlled substances. A pharmacist must be present if it is determined that controlled and non-controlled medications will be segregated. Information can be found on the ODH Healthy Ohio website (www.odh.ohio.gov).

If community take-back programs are not in place and specific disposal information is not available, medications may be discarded in household trash after adhering to the following steps outlined by FDA. First, remove medications from the original container and mix with an undesirable substance such as coffee grounds or kitty litter, making them less appealing to children or pets and unrecognizable to people intentionally sifting through trash. Second, place them in a sealed bag or empty container to prevent leakage or exposure into garbage bag. Consumers are advised to scratch out identifying information on the prescription label of the original bottle in order to protect their identity and privacy of personal health information.

Narcotic pain relievers and
other controlled substances do carry disposal instructions that call for them to be flushed down the toilet, in order to reduce the danger of unintentional use or overdose and illegal abuse. A list of medications recommended for disposal by flushing can be found on FDA’s website (www.fda.gov). FDA has also prepared a consumer document that health care professionals can distribute to patients discussing proper disposal, as well as environmental concerns that may arise from pharmaceutical disposal. Links to these websites are found in Table 1.

Unquestionable Answers Campaign
On April 10, 2012, the AAPCC and poison control centers launched the “Unquestionable Answers” e-poster campaign throughout various social media channels, including Facebook and Twitter. The goal of the campaign is to encourage young adults to call their local poison center when they have a question or a poison emergency. The theme is “Stop searching. Just call.” AAPCC recognizes that people aged 18 to 24 years of age are much more likely to search the Internet for information about a potential poisoning, rather than making a call to the hotline. According to a national survey of adults by the U.S. Health Resources and Services Administration, this age group is less likely to be familiar with the Poison Help number, less likely to be aware that the hotline is a free service and available 24 hours a day, and less likely to know that poison centers take calls about adult medication mistakes. Experts question the quality and reliability of the information that is easily accessible on the Internet, and are concerned that valuable time may be lost searching for answers in urgent situations. The campaign was created in part with the University of Miami.

Generation Rx Initiative
The Generation Rx Initiative was developed by The Ohio State University College of Pharmacy to provide medication safety and prescription drug abuse prevention resources to health professionals and the public. These resources are located within the OSU College of Pharmacy website (pharmacy.osu.edu/outreach/generation-rx). Their goal is to enhance the public’s understanding of medication safety issues in general, and those relating to prescription drug abuse in particular. The website contains various toolkits, consisting of presentation slides, interactive activities, and handouts. The Generation Rx Initiative encourages the use of these toolkits, as well as other resources and materials available on the website to educate various target audiences including the general public, teens, college students, and older adults. With support from Cardinal Health Foundation, Generation Rx resources are being used by student pharmacists in Ohio’s colleges of pharmacy, as well as pharmacy schools and colleges around the county. Generation Rx Initiative developers are interested in partnering with other groups to further their goal, and may be contacted at: generationrx@pharmacy.osu.edu.

Summary
Poison exposure reporting has provided poison centers and government agencies with the ability to track exposures, alert the public, and place prevention measures in place. However, this valuable reporting validates that poison exposures continue to be a significant cause of morbidity and mortality in the U.S., despite the efforts over the last 50 years. It also verifies the need for year-round poison prevention advocacy from all health care professionals. Easy accessibility to the public allows pharmacists the opportunity to disseminate poison prevention materials and promote the use of the poison centers for poisoning emergencies or informational calls.

The author, the Ohio Pharmacists Foundation and the Ohio Pharmacists Association disclaim any liability to you or your patients resulting from reliance solely upon the information contained herein. Bibliography for additional reading and inquiry is available upon request.

This lesson is a knowledge-based CE activity and is targeted to pharmacists in all practice settings.

Program 0129-0000-13-003-H05-P
Release date: 3-15-13
Expiration date: 3-15-16
CE Hours: 1.5 (0.15 CEU)
continuing education quiz

Accidental and Intentional Poisoning and Prevention

1. According to CDC, poisoning is the leading cause of death from injuries in the U.S.
   a. True  b. False

2. The toll-free poison help line (800.222.1222) offers all of the following services EXCEPT:
   a. free, confidential advice on poison exposures.
   b. access 24 hours a day/7 days a week.
   c. access to consumers only.
   d. translation available in over 150 languages.

3. Unintentional exposures outnumbered intentional exposures in all age groups EXCEPT:
   a. children ≤5 years of age.
   b. teenagers 13 to 19 years of age.
   c. adults 20 to 59 years of age.
   d. adults over the age of 65.

4. The majority of reported poison exposures in individuals under 13 years of age were predominately:
   a. male.  b. female.

5. The substance category most frequently involved in human exposures is:
   a. household cleaners.  c. cosmetics/personal care.
   b. sedatives/hypnotics.  d. analgesics.

6. In the under age five category, the most common exposure is:
   a. household cleaners.  c. cosmetics/personal care.
   b. sedatives/hypnotics.  d. analgesics.

7. The Poison Prevention Packaging Act allows containers that do not comply with the safety packaging standard if the label bears the statement, “this package for households without young children.”
   a. True  b. False

Completely fill in the lettered box corresponding to your answer.

1. [a] [b]  6. [a] [b] [c] [d]  11. [a] [b] [c]  
2. [a] [b] [c] [d]  7. [a] [b]  12. [a] [b] [c] [d]  
3. [a] [b] [c] [d]  8. [a] [b] [c] [d]  13. [a] [b] [c] [d]  
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5. [a] [b] [c] [d]  10. [a] [b]  15. [a] [b] [c]  

I am enclosing $5 for this month’s quiz made payable to: Ohio Pharmacists Association.

1. Rate this lesson:  (Excellent)  5 4 3 2 1  (Poor)
2. Did it meet each of its objectives?  □ yes  □ no
   If no, list any unmet_____________________________
3. Was the content balanced and without commercial bias?
   □ yes  □ no
4. Did the program meet your educational/practice needs?
   □ yes  □ no
5. How long did it take you to read this lesson and complete the quiz? ________________
6. Comments/future topics welcome.

To receive CE credit, your quiz must be received no later than March 15, 2016. A passing grade of 80% must be attained. All quizzes received after July 1, 2012 will be uploaded to the CPE Monitor and a statement of credit will not be mailed. Send inquiries to opa@ohiopharmacists.org.

march 2013