The Importance of Recognizing and Reporting Index Cases

by Karen C. Thomas, PharmD

Introduction

Sentinel events are index cases that serve as a warning of a larger health issue or potential outbreak. These cases represent unique opportunities to prevent or minimize adverse events and improve patient care. The purpose of this article is to provide guidance on how to identify and report sentinel events and discuss the role of poison centers in sentinel event surveillance and follow-up.

Recognition of Sentinel Events

An index case, or sentinel event, is the first recognized manifestation of a serious health issue that will likely affect more than one person. The event may involve foodborne illnesses, reportable communicable diseases, medication errors, occupational hazards, poisonings, or any signal of what may become a larger health problem. Sentinel patients are often first seen by emergency physicians and primary health care providers, and it is important to know the importance of recognizing and reporting sentinel events. Poison control centers are often consulted for guidance in managing patients with unusual presentations, and can detect illness outbreaks. Consumers and health care professionals are encouraged to report potential sentinel events. The following are examples of sentinel events. Seven healthy young patients suddenly developed Parkinsonism during the spring and summer of 1982. These patients presented in Northern California after IV use of synthetic heroin. A chemist was attempting to make a meperidine analog, but mistakenly synthesized the toxic chemical, 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP), instead. These cases were identified because of the similarity in geography, symptoms, and drug-abuse history of the patients. This was an important sentinel event because the identification of this problem prevented other heroin users from falling victim. MPTP is currently used for research into Parkinson's disease and has greatly improved treatment for this disease. Early and rapid identification of the problem prevented a larger population from becoming ill.

Other sentinel events have presented with less severe symptoms. In early September 2006, Wisconsin state health officials identified a cluster of Escherichia coli O157:H7 food poisonings. Information about this cluster of illnesses was submitted to the Centers for Disease Control and Prevention (CDC) via PulseNet (www.cdc.gov/pulsenet), a group of laboratories that identify DNA fingerprints of foodborne illnesses, and an investigation was initiated into the source of these infections. Within a week, many more reports of E. coli infection occurred and were thought to be associated with fresh spinach consumption. This outbreak included 199 patients across 26 states, including three deaths. The source was localized and the products responsible were removed from the market. This outbreak would not have been so quickly recognized and mitigated had it not been found by practitioners in Wisconsin, and reported to the CDC.

Often, sentinel events are red flags that lead to product recalls for safety concerns or other health issues. In November of 2005, a 2-year old boy died of bowel perforation and sepsis after several magnets he had swallowed joined across a segment of his intestines. This event and other serious sequelae from swallowed magnets led to the voluntary recall of some toys containing magnets.

(cont. on pg. 2)
2008 UPDATE CONFERENCE

2008 Presenters

- Poison Education Tools – Marty Malheiro, MS, CHES and Sherrie Pace, BS, CHES
- The Deadly Epidemic of Prescription Drug Abuse – Martin Caravati, MD, MPH
- Poisons in the News: FDA Alerts – Martin Caravati, MD, MPH and Scott Marshall, PharmD
- Poison Potpourri: Caffeine, Food Poisoning, and Hand Sanitizers – Barbara Crouch, PharmD, MSPH
- Over-the-Counter Drug Abuse – Scott Marshall, PharmD

Continuing education credit was offered for pharmacists, nurses, and health educators. The evaluations were extremely positive and we received many suggestions of topics for future conferences. We look forward to our next Update Conference in 2010.

Sentinel Events

small magnets. Other sentinel events may be indicative of the need for increased vigilance for preventing medication errors or other adverse events in a health organization. The Joint Commission tracks sentinel health events that occur at Joint Commission-accredited facilities, including hospitals and assisted care facilities. This regulatory agency pursues information regarding sentinel events, the event setting, how it was identified, outcomes and how the health care organization responded.

Discussion

Food borne illness due to a restaurant source or to commercially available processed food should be reported to local health departments. Several communicable diseases are reportable to the CDC. The Food and Drug Administration (FDA) monitors drug safety and adverse events with the MedWatch program, and Occupational Safety and Health Administration (OSHA) maintains standards for workplace safety. Pesticide-related injuries may be reported to the Sentinel Event Notification System for Occupational Risks – Pesticides (SENSOR) program, run by the National Institute of Occupational Safety and Health at the CDC. There are many other agencies interested in providing health surveillance for different kinds of sentinel events. Fortunately, sentinel event identification reporting is fairly uniform across disciplines. All poison centers contribute data in near real time to the American Association of Poison Control Centers’ (AAPCC) National Poisoning Data System (NPDS). This database is monitored for public health dangers related to poison exposures. The data is used for outbreak detection by examining call volume, clinical effects and substance-specific data. Detected anomalies are investigated to determine exposure causation. The use of poison center data to identify possible public health threats is termed “toxicosurveillance”. In addition to surveillance, the Utah Poison Control Center submits MedWatch reports to the FDA for unexpected or unusual adverse drug

WARNING

National research shows that for every dollar spent funding poison control centers, $7 is saved in medical care spending.

FACT

Every 30 seconds a child is poisoned in the united states.

FACT

Prescription and non-illicit drug related deaths have surpassed motor vehicle crashes as a leading cause of unintentional deaths in Utah.
Sentinel Events

The occurrence of sentinel events presents an opportunity to improve health outcomes for large populations. Identifying and reporting sentinel events is the first step and clinicians play an important role in recognizing and reporting the event. Poison control center toxicosurveillance provides timely information on possible outbreaks and is an important tool for ensuring that public health is maintained. Clinicians are encouraged to report all toxic exposures to their regional poison center in order to aid in this surveillance effort.

Conclusions

Toxicosesurveillance provides timely information on possible outbreaks and is an important tool for ensuring that public health is maintained. Clinicians are encouraged to report all toxic exposures to their regional poison center in order to aid in this surveillance effort. The occurrence of sentinel events presents an opportunity to improve health outcomes for large populations. Identifying and reporting sentinel events is the first step and clinicians play an important role in recognizing and reporting the event. Poison control center toxicosurveillance provides timely information on possible outbreaks and is an important tool for ensuring that public health is maintained. Clinicians are encouraged to report all toxic exposures to their regional poison center in order to aid in this surveillance effort.

References


The UPCC works closely with doctors, hospitals and public officials on prevention and treatment of public health issues including:

- West Nile Virus
- Food Poisoning
- Bioterrorism threats
- Disaster preparedness

Specialists answer calls about the following types of substances and much more!

- Medications
  - Adverse reactions
  - Drug Interactions
  - Accidental Overdoses
  - Combining medications
- Chemicals in the home, workplace or environment
- Cosmetics and personal care products
- Bites and Stings
- Foreign bodies
- Plant and mushrooms
- Automotive products
- Dietary supplements
- Pesticides
**Toxins in the News**

**Fluoroquinolones:** increase the risk of tendonitis and tendon rupture and the FDA has required a black box warning. Patients > 60 years old, kidney, heart, and lung transplant recipients, and those with concurrent use of steroids are particularly vulnerable.

**Fluorescents Bulbs:** (compact fluorescent lamps, CFLs) contain elemental mercury and if broken can pose a small risk of mercury poisoning to infants, young children, and pregnant women. Clean-up instructions can be found at www.epa.gov/mercury/spills.

**Meet the UPCC Staff**

**Micah Redmond RN, BSN, CEN** joined the UPCC in April 2007. He graduated from Weber State University Nursing program in 2002. Micah gained most of his emergency nursing experience in the US Army Reserves and Cottonwood Hospital in Murray, Utah. Micah also continues to work as an Emergency nurse at the University of Utah and as a Firefighter/Paramedic. Micah comes to the UPCC team with great excitement for understanding toxicology and sharing that knowledge with others. In his free time he enjoys experiencing life with his family, cycling, attending baseball and soccer games, cooking, and wood working. Favorite Poisoning topics: Occupational exposures to all substances, inhalants, beta blockers and antidotes.

**Employment**

The UPCC has one position available: A Specialist in Poison Information-Pharmacist or Nurse. You can find out more about this position on our website at www.utahpoisoncontrol.org/employment or apply on the University of Utah Human Resource page at http://www.hr.utah.edu/careers/ (Use key-word “poison” to easily find the job postings).

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*CSPI denotes Certified Specialist in Poison Information.

**Thank you**

The Utah Poison Control Center expresses its sincere thanks to the health care professionals, public health officials and toxicology colleagues that work together to treat and prevent poisonings.

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