

Canadian Paediatric Surveillance Program 2009 quiz

The purpose of this quiz is to disseminate information gathered through the Canadian Paediatric Surveillance Program studies to guide physicians in their clinical practice.

1. Describe how an international surveillance unit that monitors rare diseases and conditions, such as the Canadian Paediatric Surveillance Program, can be mobilized quickly to conduct enhanced surveillance in the event of an emerging public health concern.
2. Identify measures important in reducing injuries among children and youth.
3. In cases of suspected abusive head injury, which investigations better delineate subdural hematomas?
4. Why is newborn metabolic screening important in the diagnosis of medium-chain acyl-coenzyme A dehydrogenase deficiency?
5. Is there a risk of poliomyelitis in certified polio-free countries?
6. What risk factors have been associated with community-acquired methicillin-resistant *Staphylococcus aureus* infections in Canada?
7. Why should paediatric pretravel care be an integral part of health care providers' routine?
8. What important management issues were identified in the Canadian Paediatric Surveillance Program study of congenital cytomegalovirus infection?
9. What adverse reaction has been associated with the use of minocycline?
10. Describe the behaviours encountered in bulimia nervosa.

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The Canadian Paediatric Surveillance Program (CPSP) is a joint project of the Canadian Paediatric Society and the Public Health Agency of Canada, which undertakes the surveillance of rare diseases and conditions in children and youth. For more information, visit our Web site at <www.cps.ca/cpsp>.

Canadian Paediatric Surveillance Program

2009 quiz – Answers

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1. During an emerging public health concern in children, enhanced surveillance is the process by which an active surveillance system, such as the Canadian Paediatric Surveillance Program (CPSP), can be mobilized quickly to respond to such a concern and provide focused, detailed and timely epidemiological data that supplement information from other ongoing surveillance systems, eg, mortality and hospitalization databases. The 2008 outbreak of renal stones and renal failure among very young children in China, associated with melamine-contaminated milk products, is a good example. The Public Health Agency of Canada made a request to the CPSP to conduct a one-time emergency survey to determine whether children in Canada were being similarly affected. Considering the program's high response rate and dedication of participants to regular surveillance activities, the CPSP was able to initiate the survey within 10 working days of the request and results were available within three weeks. There were no cases of melamine-associated renal diseases. Enhanced surveillance is an essential tool to inform public health response to disease management and prevention.
2. The 2008 "World report on child injury prevention", published by the World Health Organization and the United Nations Children's Fund, highlights that legislation, regulation and enforcement are powerful tools to reduce injury among the paediatric population. The 2004 total ban on manufacturing, sales and importation of wheeled baby walkers in Canada is a good illustration of this principle. This decision was upheld in the 2008 federal board review. Other measures to reduce injuries include modification of products and/or the environment, home visits, safety devices, skills development, behaviour changes, community-based approaches and emergency response, and trauma care.
3. In infants with suspected abusive head injury, cranial imaging is essential for clinical reasons and to document the location, type and extent of the injury. The most common radiological study used initially is a computed tomography (CT) scan of the head without contrast. Bone windows should be included to look for skull fractures, and three-dimensional reconstructions are often helpful in infants. CT is readily available, frequently performed without sedation and remains the best study to evaluate suspected acute head injuries. However, concern has recently arisen regarding radiation exposure. Magnetic resonance imaging (MRI) is the most sensitive study for detecting subdural hematomas (SDHs), providing the best visualization of intracranial bleeding and areas of brain injury. Although less sensitive in the acute period, this test is best completed five to seven days after the injury; sedation or general anesthesia is frequently required. Head ultrasounds are readily available and inexpensive, and typically do not require sedation; however, they lack sensitivity in the detection of SDHs. They should only be used in combination with a CT or MRI. The CPSP study on head injury secondary to suspected child maltreatment, from March 2006 to February 2008, revealed 220 confirmed cases; 27 died as a result of injuries. An SDH was reported in 71% of cases, and cranial imaging included a CT scan in 94.5% of cases, an MRI in 55.9% and both in 53.6%; another 3.2% did not have any cranial imaging.
4. Medium-chain acyl-coenzyme A dehydrogenase (MCAD) deficiency is the most common fatty acid oxidation disorder. The incidence is approximately one in 10,000 to 20,000 live births. An infant with MCAD deficiency is usually well and decompensates during an acute illness, with 25% dying at the time of the initial presentation. The CPSP MCAD study from September 2005 to August 2008 confirmed 46 cases. Newborn metabolic screening programs detected 74% of cases; all were asymptomatic. Two cases were diagnosed after death and none were diagnosed from provinces with newborn screening programs. MCAD deficiency has an excellent prognosis once the diagnosis is made, because treatment involves avoidance of fasting and ensuring adequate glucose intake during acute illnesses.
5. Yes. Even though elimination of indigenous wild poliovirus transmission was certified in Canada and the rest of the Americas in September 1994, there remains an ongoing risk for importation of wild poliovirus until global eradication of poliomyelitis is achieved. For polio-free countries (such as Canada), the reported 2007 case of an imported vaccine-associated paralytic poliomyelitis and Australia's 2007 case of wild-type poliomyelitis in a 22-year-old student returning from a visit to Pakistan serve as important reminders of the possibility of importation. In 2008,

endemic circulation of wild poliovirus continued in four countries: Afghanistan, India, Nigeria and Pakistan. Rapid diagnosis and management (including stool cultures to detect poliovirus) of all acute flaccid paralysis cases remain essential.

6. Methicillin-resistant *Staphylococcus aureus* (MRSA) infections include hospital-associated MRSA and community-associated MRSA (CA-MRSA) infections. CA-MRSA strains are genetically different from hospital-associated MRSA strains. Although many children have no known risk factors, paediatric CA-MRSA infections are seen more often in patients who participate in contact sports, use intravenous drugs or live in overcrowded conditions. The CPSP MRSA study, which began in September 2008, has identified 29 children hospitalized with MRSA infections. Of the confirmed cases, 76% were community-acquired and 62% involved children 12 months of age or younger. Other risk factors, such as young age, daycare or the number of persons living in a household, may play an important role.
7. The number of Canadians travelling internationally is steadily growing from more than 6.2 million in 2005 to more than 7.4 million in 2007, with fewer than 10% seeking pretravel advice. Also, an estimated 4% of the travellers are children; consequently, almost 300,000 Canadian children travel internationally each year. Pretravel care should therefore be an integral part of a health care provider's routine, given this high number of paediatric travellers. A February 2008 survey question on paediatric pretravel care revealed that 70% of 650 respondents referred patients to travel health clinics, public health units or to an infectious disease specialist. Of the 452 paediatricians who made referrals, 64% also provided pretravel care to their patients. Pretravel care should include details on destinations, type of accommodations, medical history, vaccinations, general preventive measures (such as bed nets, anti-malaria medications, prevention of mosquito bites, and sun and water safety) and injury prevention measures, such as car seat safety and bike helmets.
8. Congenital cytomegalovirus (cCMV) infection is the most common congenital infection. The CPSP cCMV study, from March 2005 to February 2008, confirmed 49 cases. Presently, paediatricians are detecting severely affected infants in the prenatal or neonatal period. Of note, although there is evidence that infants with neurological involvement benefit from antiviral therapy in the newborn period, only one-half of the infants with neurological disease in the study were being treated with antiviral therapy. Additionally, many infants presenting with milder symptoms are not identified and consequently cannot benefit from appropriate therapy and follow-up. To optimize outcomes for infants with cCMV, routine screening may need to be considered as a public health policy.
9. Minocycline is among the top four oral antibiotics most commonly prescribed for the treatment of acne. Pseudotumour cerebri or idiopathic intracranial hypertension has been associated with the use of minocycline. Physicians should watch for symptoms of nausea, headache, dizziness and blurred vision, confirm the presence of papilledema, stop the use of minocycline, and prevent visual loss with lumbar puncture (serial if necessary), acetazolamide and/or corticosteroids and/or surgery when visual loss is severe or unresponsive to medical therapy. In 2008, the CPSP study on suspected serious paediatric adverse drug reactions confirmed 48 cases. Product groups most commonly involved were anti-infective agents, anticonvulsants and immunosuppressants. By reporting serious adverse events following drug administration, paediatricians are key players in postmarketing surveillance of product safety signals in the paediatric population.
10. Bulimia nervosa (BN) is a common condition and is believed to occur in 1% of the adolescent population, with partial symptoms in 3% to 6%. BN is a cycle of eating dysfunction. Patients initially start with food restriction, which triggers an eating binge resulting in the need to compensate, often (but not exclusively) in the form of vomiting. Binging is characterized by eating, in a 2 h period or less, an amount larger than what most people would eat under similar circumstances and a sense of loss of control over eating during the episode. Purging can include self-induced vomiting, misuse of laxatives, diuretics and other medications and/or other inappropriate compensatory behaviours, such as fasting or excessive exercising. In the first 10 months of surveillance, the CPSP bulimic eating disorders study has confirmed 77 cases. Serious complications are associated with BN, such as muscular weakness, dehydration, hypokalemia and cardiac arrhythmias. Early recognition and prompt treatment with a multidisciplinary intervention improves prognosis.