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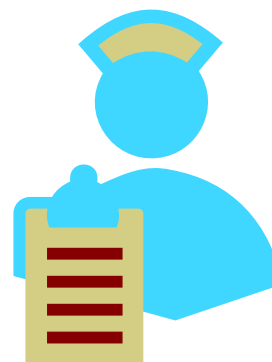
IMPACT

Canadian Immunization Monitoring Program, ACTive
Programme canadien de surveillance active de l'immunisation

ISSUE # 25

SPRING 2008

This IMPACT newsletter is intended to share IMPACT surveillance updates as well as various immunization resources, with many health professionals and the general public across Canada who work to promote and improve the health of our communities. You can subscribe to this newsletter at www.cps.ca/English/surveillance/impact/impact.htm#newsletter or by sending an e-mail to heather.samson@iwk.nshealth.ca.



Surveillance update

In describing the work that is done by the IMPACT monitors, it can be stated that the nurse monitors wear two hats in their surveillance activities. The first hat, and the one that IMPACT was primarily set up for, is to provide reassurance that vaccines are safe. The nurse monitors actively report adverse events following immunization as part of the Canadian Adverse Events Following Immunization Surveillance System (CAEFISS). These reports are shared with the local and provincial/territorial departments where applicable.

The second hat involves vaccine-preventable disease surveillance. Some of these surveillance targets require collaboration with the hospital laboratories to save and ship isolates to national laboratories for serotyping. New targets typically involve large numbers of cases (e.g. rotavirus admissions) whereas those influenced by vaccination programs decline progressively, sometimes nearly disappearing (e.g. Hib admissions). Seeing case numbers decline is part of the joy of being a nurse monitor.

IMPACT is currently pilot testing the online reporting of admissions for influenza and related complications to participating hospitals. This is speeding up the real time reporting and assembly of data, which will be important in the event of an influenza pandemic.



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Spring & Summer

A wonderful time for gardening. However did you know that tetanus bacteria can never be eradicated from the environment? The tetanus spores are actually tough survival pods. They are covered with a special coating that allows them to survive outside of the body. The spores are able to stay alive in the soil and dust (even the dust inside hospitals) for many years. So remember to update your immunization against tetanus every 10 years and don't forget to ask to receive the new combined diphtheria, tetanus, and acellular pertussis (dTaP) vaccine to also protect you against pertussis in adulthood. Adults and adolescents have become the source of pertussis infections for the very young.



IMPACT continues to report cases of adult as well as paediatric meningococcal invasive infections occurring within defined populations and catchment areas surrounding IMPACT centers. This is the only truly population-based surveillance that is conducted by the IMPACT network, with funding provided by sanofi pasteur.

To sum it up, the nurse monitors are keeping very busy!

Case Examples (from IMPACT data center monthly reports sent to centers)

Adverse events following immunization

The case examples of adverse events following immunization reported by the IMPACT surveillance team reflect temporal associations (meaning events are reported within standardized timelines, but could be purely coincidental). These events are not to be confused with causality, (the event being caused by the vaccine). It is important to keep in mind that the benefits of protection offered by vaccines should always far exceed the small risk of a true reaction. The following cases have been reported to the IMPACT data center from some of the 12 IMPACT centers.

A one-year-old developed Kawasaki syndrome 26 days after MMR, DTaP-IPV-Hib and pneumococcal conjugate vaccinations. Symptoms include fever, conjunctivitis, rash and cervical adenopathy. Complications included myocarditis. The child spent 20 days in hospital and improved. (Kawasaki syndrome is not known to be vaccine-related but its' cause remains uncertain.)

A ten-year-old child developed Guillain-Barré syndrome (GBS) four days after influenza and meningococcal vaccinations. Weakness mainly involved the legs. The child spent six days in hospital and required rehabilitation care post-discharge. No cerebrospinal fluid or stool exams were done. Etiology is uncertain. Only mild gluteal muscle weakness remained on follow-up two months later. (Influenza vaccination has been shown to increase the risk of GBS among adults by about one case per million doses of vaccine, but the risk for children is unknown and impossible to assess in individual cases.)

A 12-year-old was admitted to hospital for four days with extensive inflammation at the site of hepatitis B vaccination which developed three weeks afterward, limiting arm motion. The child was afebrile and treated for possible cellulitis. A blood culture was negative. The child initially had a red lump at the injection site a few days post-vaccination and underwent a sudden change on day 22 post vaccination. An ultrasound showed an abscess, which was later aspirated for 10 ml of sterile pus. (The aluminum adjuvant in hepatitis B vaccines can occasionally cause a sterile abscess, particularly if the vaccine is inadvertently deposited in fatty tissue rather than muscle.)

Vaccine-preventable (or future-preventable) diseases

The case examples of vaccine-preventable diseases reported by IMPACT surveillance illustrate that the diseases have not disappeared and can reappear or spread to the unprotected. Also, in the case of newer vaccines, some of the diseases that are designed to protect against can be very serious requiring hospitalization and resulting in several complications as evidenced below:

Rotavirus infections

The following rotavirus case examples are from the years prior to vaccine licensure. IMPACT is currently reporting retrospective (from years 2005-2006) and prospective (2007 onwards) cases of rotavirus illness in the paediatric age group.

An eight-month-old infant with a medical history of chronic renal insufficiency was hospitalized for 20 days with rotavirus infection.

A five-month-old infant was admitted from the emergency room for one day with a complication of otitis media (an often overlooked complication of rotavirus infection).

A month-old infant had *Streptococcus bovis* meningitis complicated by nosocomial rotavirus infection (an all too frequent risk of care in hospital during rotavirus season).

A five-year-old child had a positive throat culture for group A streptococcus and co-infection with rotavirus and spent 11 hours in the emergency room and three days in the hospital.



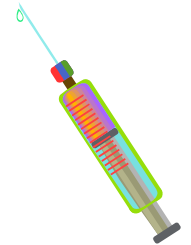
***Streptococcus pneumoniae* infections**

A four-year-old child was hospitalized with pneumonia, empyema and bacteremia, complicated by hemolytic-uremic syndrome and hemophagocytic lymphohistiocytosis. The child spent 31 days in hospital. The had not received pneumococcal immunization.

A five-year-old child was admitted with meningitis and seizures. The child was later found to have cerebellar swelling and infarctions requiring decompression craniotomy. The child spent 25 days in hospital, including nine days in the intensive care unit. The child had not received pneumococcal immunization.

***Neisseria meningitidis* infections**

A previously healthy teenager was admitted to hospital with septic shock and pneumonia. The blood isolate was typed as serogroup Y. The teenager spent 36 days in the hospital, including five days in the intensive care unit. Complications included hypertension, renal dysfunction, Candida urinary tract infection and candidemia.



Highlighting immunization initiatives and research

We are very fortunate in Canada to have some very important education and innovative research initiatives in progress. Highlighted below are two such important areas:

- 1) *Conquering Pain: The Hidden Cost of Immunization (Article contributed by Dr. Anna Taddio, Associate Professor, Leslie Dan Faculty of Pharmacy, University of Toronto)*

Did you know that the most commonly asked question from a child upon entering the doctor's office is "Am I getting a needle today?" Why are children pre-occupied with needles? Perhaps they remember needles from past doctor visits because they hurt.

Most of a child's experience with needles comes from immunizations, and there are plenty of them. The Canadian routine childhood immunization schedule recommends up to 20 injections by age 6 (this varies by provincial program).

What are we doing to minimize the pain from vaccine injections? Researchers recently asked parents and pediatricians in the Toronto area to describe what they did to manage immunization pain. Unfortunately, very few used effective analgesic strategies. Furthermore, parents said that they did not know they could do anything to reduce their child's pain, but that they would do something if they could.



In a recent workshop "**Conquering Pain: The Hidden Cost of Immunization**" held at the University of Toronto in January 2008, pain researchers, vaccine experts, clinicians, parents, educators, government officials, pharmaceutical company representatives, and media representatives convened to examine the evidence for the importance of pain management during routine childhood immunization, the effectiveness of different analgesic approaches, and strategies for their implementation. The event was spear-headed by Dr. Anna Taddio, Associate Professor, Leslie Dan Faculty of Pharmacy, University of Toronto, and sponsored by the Canadian Institutes of Health Research, SickKids Foundation, and University of Toronto. Speakers included: Dr. Scott Halperin, Head, Paediatric Infectious Diseases at IWK Health Center & Director, Canadian Center for Vaccinology; Dr. Moshe Ipp, SickKids paediatrician; Dr. Vibhuti Shah, Mount Sinai Hospital neonatologist and epidemiologist, Dr. Donna Lockett, SickKids knowledge broker and psychologist, Dr. Christine Chambers, Psychologist at IWK Health Center, Dr. Michael Rieder, Pharmacologist at the University of Western Ontario, and Dr. Taddio.

It was concluded that children feel pain during the injection of vaccines and parents that are distressed by this pain may avoid or delay future immunization. Experience with needle puncture pain in childhood may lead to anxiety before future procedures, more pain at future procedures, and needle phobia. Children with needle phobia and their parents avoid seeking medical care. Children can carry this phobia into adulthood.

Parents can reduce pain during injection of vaccines in infants and children by using analgesic drugs (such as topical local anesthetics) and sugar water (in young infants). In addition, cognitive-behavioural approaches, such as distraction, nurse coaching, coping skills, deep breathing, and demonstration and parent participation, are useful.



There are numerous injection techniques that can minimize injection pain also, including; injecting the vaccine quickly without aspirating, administering the least painful vaccine first, selecting otherwise equivalent products based on the one that causes less injection pain, injecting intramuscular vaccines at a 90 degree angle, and using the antero-lateral thigh for infants younger than one year and the deltoid muscle for children older than one year.

Although pain has typically been a routine part of immunization, it does not need to be. There are many ways to reduce a child's pain during medical procedures. The group is continuing to collaborate on ways that will facilitate uptake of this knowledge in clinical practice.

Additional information from the workshop can be obtained from the CCIAP website link <http://www.immunize.cpha.ca/en/health-care-providers/tips/programs.aspx>

Taddio A. Proceedings of the Workshop *Conquering Pain: The Hidden Cost of Immunization*. © University of Toronto, March 20, 2008.

Other references:

Taddio A, Manley J, Potash L, Ipp M, Sgro M, Shah V. "Routine immunization practices: use of topical anesthetics and oral analgesics," *Pediatrics* 2007, 120:e637-e643.

Uman LS, Chambers CT, McGrath PJ, Kisely S. "Psychological interventions for needle-related procedural pain and distress in children and adolescents (review)," *The Cochrane Library* 2006, Issue 4.

2) *The Canadian Center for Vaccinology (CCfV), Halifax Nova Scotia (Source: The CCfV web site: <http://centerforvaccinology.dal.ca/>)*

The Canadian Center for Vaccinology (CCfV), affiliated with Dalhousie University, the IWK Health Centre, and Capital Health, was established in 2005. It brings together top investigators in the fields of microbiology, immunology, infectious diseases, paediatrics, medicine, nursing, law, ethics, statistics, and the social sciences to develop, implement, and evaluate vaccine technologies and vaccines for infectious diseases that have a significant impact on Canadian and global health and to train experts in these critical and evolving fields.

The center comprises three groups, each led by an Associate Director (identified below) under the leadership of the Center Director, Dr. Scott Halperin.

1. Vaccine Discovery, led by Dr. Song Lee. This group brings together a team of investigators focused on the development of novel vaccine formulations, with an emphasis on delivery systems, adjuvants, and mucosal immunity. It comprises researchers from the fields of bacteriology, molecular biology, virology, and immunology.
2. Vaccine Evaluation, led by Dr. Joanne Langley. This group encompasses all aspects of clinical research from initial clinical trials to program assessment. Investigators from the Clinical Trials Research Center (CTRC), an academic-based clinical research organization, provide expertise in the development and implementation of first-in-human phase 1 studies to post-licensure phase 4 trials. The CTRC team collaborates with clinical and molecular epidemiology experts who, with external partners, explore the field effectiveness of the vaccines and their effects on disease burden, vaccine compliance, and public acceptance.
3. Health Policy and Translation, led by Dr. Noni MacDonald. This group provides cross-cutting thematic interaction with the Vaccine Discovery and Vaccine Evaluation Groups teams. With demonstrated strength in health law, bioethics, policy development, and the social sciences, group investigators are able to predict and evaluate the impact new vaccines and vaccine technologies have upon the public and are able to guide vaccine research at the discovery and evaluation phases. Understanding public opinion, assessing acceptability, and attending to issues surrounding the governance and commercial aspects of vaccine research are critical roles in the development of innovative research plans. Group members contribute another level of collaboration and consultation with external organizations, significantly enhancing the Center's ability to rapidly meet the challenges of world-wide health concerns.

CCfV is located in the Dr. Richard B. Goldbloom Research and Clinical Care Pavilion at the IWK Health Centre in Halifax, Nova Scotia. Its facilities currently include laboratories, ambulatory clinical trial facilities, and data analysis, and training capabilities.

In addition, an exciting initiative is the construction of the sanofi pasteur Human Vaccine Challenge Unit. The challenge unit, which is unique in Canada, is a 5,400 square foot, ten-bed in-patient facility with isolation rooms, including full disease containment and physiological monitoring. The purpose of this facility is to conduct early-phase human vaccine clinical trials on behalf of academic and industry sponsors in an effort to understand how candidate vaccines can be applied to current and emerging health issues.

You can find more information on these groups and CCfV at <http://centerforvaccinology.dal.ca/>



Upcoming Conferences · Meetings Events · Information

Canadian Public Health
Association Annual
Conference (2008)
June 1-4, 2008
Halifax, Nova Scotia

85th Annual Conference of the
Canadian Paediatric
Society
June 24-28, 2008
Victoria, British Columbia

8th Canadian Immunization
Conference
November 30, 2008 -
December 3, 2008
Toronto, Ontario

IMPACT Investigator
Annual Meeting
June 27, 2008
Victoria, British Columbia

IMPACT Nurse Monitor
Annual Meeting
November 29, 2008
Toronto, Ontario

The next immunization poster contest for Grade 6 Canadian children will take place September to October 2008. Information will soon be available on the Canadian Coalition for Immunization Awareness and Promotion website at immunize.cpha.ca. This is a great way to promote health and educate our youth on the importance of immunization to our youth! Information packages will also be sent out to schools in August.

The revised Canadian Adverse Event Following Immunization Surveillance System (CAEFISS) reporting form will soon be available on the Public Health Agency of Canada website. Training on the use of the new form will be started in May 2008 for all provinces and territories who wish to be trained.

*Updated Immunization Resources

(Contribution by Mary Appleton)

More resources on the (improved) CCIAP website immunize.ca

The website for the Canadian Coalition for Immunization Awareness & Promotion has been re-designed to display a growing database of promotional and educational resources for health care providers and the public - and you can contribute to this virtual information centre for immunization. If you have articles, studies, project reports, promotional materials, or anything that you think other health care providers might find useful, email them to immunize@cpha.ca

Immunization Resources

Canadian

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Public Health Agency of Canada

Canadian Paediatric Society

Canadian Coalition for Immunization Awareness and Promotion

The Canadian Foundation for Infection Diseases

Canadian Public Health Association

Canadian Medical Association

Canadian Association for Immunization Research and Evaluation

The Vaccine and Infectious Disease Organization

Meningitis Research Foundation of Canada

Immunization Education Initiative

*Canadian Health Services Research Foundation

www.cps.ca/English/surveillance/impact/impact.htm

www.phac-aspc.gc.ca

www.cps.ca

www.immunize.cpha.ca

www.researchid.com

www.cpha.ca

www.cma.ca

www.caire.ca

www.vido.org

www.meningitis.ca

www.immunizationeducation.ca

www.chsrf.ca



International

Centers for Disease Control

Immunization Action Coalition

Institute for Vaccine Safety

Global Alliance for Vaccine and Immunization

WHO Global Advisory Committee on Vaccine

Safety—webpage

World Health Organization

PneumoADIP

Medscape vaccine resource center

www.cdc.gov/nip

www.immunize.org

www.vaccinesafety.edu

www.vaccinealliance.org

www.who.int/vaccine_safety/en/

www.who.int/immunization/en/index.html

www.preventpneumo.org

www.medscape.com/resource/vaccines



Other Helpful Resources:

Visit the *Mother of All Immunization Trackers* web site. Sign up to keep track of your child's immunization status at: www.canadaimmunization.com

Provincial and Territorial immunization programs (updated September 25, 2007)

www.phac-aspc.gc.ca/im/ptimprog-progimpt/index.html

Mythbuster: Risk and benefits of vaccines: www.chsrf.ca/mythbusters/pdf/myth24_e.pdf

National Immunization Awareness Week (NIAW 2008)

NIAW was held April 20-26, 2008. This is a time set aside to increase awareness of the importance and success of immunizations.

Are we doing enough to spread the good news about immunization?

Do your part: Educate as many people as you can throughout the year on the importance of this life-saving intervention.

Quiz

1. True or False:

- Immunization providers should report all clinically significant events to the local health authority, whether they believe the events are caused by the vaccine or not.
- Ideal combination vaccines are as safe and effective as each of their single individual counterparts.

2. What are some techniques that can be used to decrease the pain associated with immunization?





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 French translation; newsletter - Dominique Paré

IMPACT Data Center: Dr. David Scheifele (Director); Kim Marty (Data Manager); Dr. Julie Bettinger (Epidemiologist); Debbie Heayn (Data scrutineer)

The Canadian Centre for Vaccinology (CCfV): Newsletter formatting - Natalie Giorgis; Heather Samson (IMPACT Nurse Liaison)

Answers to Quiz (Source: Canadian Immunization Guide, 7th edition, 2006)

- True: Part 1. General guidelines (Guideline 10) page 26. Canadian Immunization Guide)
 - True. General Principles of Combination Vaccines, page 33
- Page 41 & 42
 - Swaddling, holding or sucking on a pacifier.
 - Breastfeeding infants or offering sweet-tasting solutions such as oral sucrose or glucose
 - Distraction techniques, such as books, video games, cartoons, movies, bubble and party blowers for older children; children can be instructed to "blow away the pain" using party blowers, windmills or bubbles.
 - Pharmacologic agents such as EMLA (eutectic mixture of local anesthesia, consisting of 2.5% lidocaine and 2.5% prilocaine), Ametop[®] gel (45 amethocaine) and vapocoolants (e.g., Fluori-Methane). Studies have demonstrated that EMLA does not affect the immunologic response to MMR, DTaP-IPV-Hib (Pentacel[®]), hepatitis B (Recombivax[®]) or Bacille Calmett-Guérin (BCG) vaccinations. EMLA needs to be applied approximately 60 minutes before the injection. Ametop[®] gel produces anesthesia within 30-40 minutes and has been shown not to interfere with the immunologic response to MMR vaccine. Vapocoolants are effective immediately after application.
 - Techniques to decrease anxiety in adolescents and adults are important to minimize the risk of fainting. These techniques include ensuring that the temperature in the room is comfortable, avoiding long line-ups in mass immunization clinics and administering the vaccine while the person is seated. Patients who appear very anxious should be observed while seated until anxiety has resolved after the immunization.