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IMPACT

Canadian **I**mmunization **M**onitoring **P**rogram, **ACT**ive
Programme canadien de surveillance active de l'immunisation

I S S U E # 2 6

F A L L 2 0 0 8

This IMPACT newsletter is intended to share IMPACT surveillance updates as well as various immunization resources, with health professionals and the public 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

Rotavirus surveillance

Since 2007, IMPACT has undertaken surveillance of rotavirus infections. The surveillance has been focused on two separate studies to estimate the burden of rotavirus infections in the pediatric population.

1. Retrospective (2005–2007) and prospective surveillance of pediatric cases of all ages with rotavirus infections admitted to the 12 IMPACT pediatric tertiary care centers.
2. A two-year (2007–2008) pilot emergency department “snapshot” study of pediatric cases under the age of 3. Surveillance included a parent questionnaire and local and national laboratory stool testing.

To date, IMPACT centers have reported approximately 1,500 case reports of hospital admissions with rotavirus infections. The emergency department two-year pilot study is being reviewed and specimens tested.



Public Health
Agency of Canada

Agence de la santé
publique du Canada



Canadian
Paediatric
Society

Société
canadienne
de pédiatrie

*Have you had
your flu shot?
Protect yourself
and others.*

Two posters are available from the Canadian Coalition on Immunization Awareness and Promotion (CCIAP). Consider posting them in your hospital, office or clinic:

1. Top 10 reasons for getting the flu shot
2. Top 10 poor excuses for not getting the flu shot

View them and order at:
www.immunize.cpha.ca/en/publications-resources/posters/fluposters.aspx



These studies will provide valuable baseline information about the epidemiology and economic impact of rotavirus infections in Canada that will enable physicians, parents and public health officials to make informed decisions about the newly licensed rotavirus vaccines. It will also be a unique source of information about the early impact of vaccine use on the disease burden.

Wearing “vaccine safety hats,” nurse monitors also routinely screen admission for possible events following immunization with rotavirus vaccine, as they do with all adverse event surveillance targets.

The rotavirus surveillance protocol includes a surveillance arm (in planning stages) for documenting cases of intussusception. This surveillance will provide useful information about the baseline intussusception rate in infants and monitor any changes after vaccine implementation. Assurance of rate stability after the vaccines are introduced will be critical in maintaining confidence in vaccine safety and addressing concerns among vaccine providers and consumers.

Finally, we intend to incorporate an electronic reporting format for IMPACT rotavirus data collection, which will assist in the timely dissemination of data. Stay tuned for a follow-up report in future newsletters.

The following rotavirus case (one of the more severe cases) illustrates the potential of this virus to cause severe illness in previously healthy children:

A 3-year old (previously healthy) child with a 3-day history of fever and vomiting was admitted to hospital to rule out sepsis. The testing (EM) confirmed rotavirus. The child spent 22 days in hospital with 3 days in the intensive care unit, 8 days on intravenous fluid therapy and survived. This is a case from 2005, when rotavirus vaccine was not yet licensed.

Adverse events case examples

REMINDER: Case examples of adverse events following immunization reflect temporal associations (meaning events are reported with certain timelines after an immunization, but could be purely coincidental). These events are **not** to be confused with causality (when an event is considered to be caused by the vaccine). The Advisory Committee on Causality Assessment (ACCA), a national expert panel, determines causality ratings. It is important to keep in mind that the benefits of protection offered by vaccines should always far exceed the small risk of an adverse event.

Thrombocytopenia

A 6-year-old child developed bruising 21 days after Quadracel vaccination. There was no recent illness or medication use. Platelet count on admission was $6 \times 10^9/L$ and at discharge was $21 \times 10^9/L$, after an infusion with intravenous immune globulin (IVIG). The child spent one day in hospital and had no complications.

Editorial: A recent IMPACT case series (1992-2007) (citation below and in Paediatr Child Health, Vol. 13 Suppl A May/June 2008, 61A) concluded:

“Thrombocytopenia is a rare but potentially severe adverse event following vaccination, most often with measles-containing vaccines. Although distressing for parents, in this series there were few serious complications and resolution occurred in most children within 3 months. However, the potential for life-threatening complications warrants more research on mechanisms and avoidance of post-immunization thrombocytopenia.”

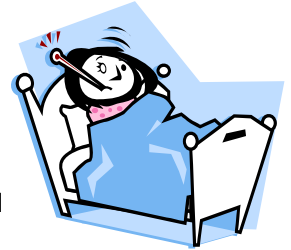
- Sauv  L, Bettinger J, Scheifele D, Halperin S, Bortolussi R, Law B, Canadian Immunization Monitoring Program, Active (IMPACT). Post-Immunization Thrombocytopenia in Canadian Children, 1992-2007. Poster presentation (abstract 130) June 24-28, 2008, 85th Annual Conference of the Canadian Paediatric Society, Victoria, BC.

Miscellaneous events reported

A previously healthy 12-year-old child developed acute multi-system illness with fever, 4 days after dose 2 of the human papillomavirus (HPV) vaccine. The illness included hepatomegaly, pleural and pericardial effusion and hematuria. The child spent 9 days in hospital and recovered. The working diagnosis was infection, undiagnosed.

A 10-year-old child developed a migraine headache with nausea, lethargy and confusion, shortly after a second hepatitis B (HB) vaccination. The child spent 1 day in hospital and recovered. A similar, less severe headache followed dose 3 of HB vaccine.

A 1-year-old child developed extensive urticaria and swelling of hands and feet 5 days after meningococcal C conjugate, varicella and MMR vaccinations. The child spent 2 days in hospital and recovered. A dermatologist consult considered enterovirus infection a possibility.



Editorial: ACCA reviews case reports meeting criteria for severity or "unexpectedness". For more information on ACCA, visit <http://www.phac-aspc.gc.ca/im/vs-sv/acca-eng.php>.

The case for continued development of vaccines, addition of new vaccines and surveillance of diseases!

The following 2 cases illustrate the need for continued development of current vaccines and surveillance of the vaccine-preventable diseases:

A 4-year-old (previously healthy) child presented with pneumonia and seizures. A blood culture was positive for *Streptococcus pneumoniae*, isolate serotype 11A (not in the current 7-valent vaccine). The child died after 3 days in hospital.

A 6-month-old (previously healthy) child presented with pneumonia and empyema. Pleural fluid identified *Streptococcus pneumoniae*, penicillin non-susceptible, isolate serotype 19A (not in the current 7-valent vaccine). The child had one dose of the current pneumococcal conjugate vaccine at 4 months of age. The child spent 15 days in hospital and recovered.

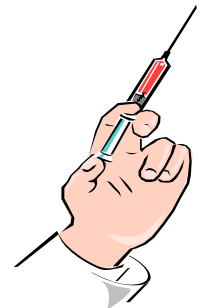
Editorial (Contributed by Dr. David Scheifele, IMPACT Data center and Shalini Desai at the Public Health Agency of Canada): These cases illustrate the challenge involved in controlling invasive pneumococcal infections using a 7-valent vaccine when 90 serotypes exist. Fortunately, only another dozen or so serotypes cause invasive infections with appreciable frequency. Unfortunately, some of these additional serotypes are causing infections more frequently, eroding the progress made with the 7-valent vaccine. The IMPACT surveillance of invasive pneumococcal infections is well positioned to document their changing epidemiology. Second generation conjugate vaccines spanning 10- to 13-valent are in advanced stages of evaluation, as partial answers to the challenge of pneumococcal diversity.

Vaccine-preventable disease case examples and the case for "herd immunity"

Herd immunity is the process where those who are immunized in a population against certain vaccine-preventable diseases protect those that are not/cannot be immunized (the very young or medical contraindications). The more immune a person/community is, the less likely an unimmunized individual is to come in contact with a certain disease.

The following cases illustrate the case for herd immunity:

A 2-month-old child (hadn't yet started immunizations) was admitted to hospital with pertussis confirmed by PCR. Complications included pulmonary hypertension and left lung collapse. The infant survived but had a long hospital course, which included assisted ventilation for 22 days, supplemental oxygen for 45 days, and 68 days in the hospital including 26 days in the intensive care unit.



A 2-year-old child with cancer, on chemotherapy (immunosuppressed) developed varicella from a household contact. The child was not given varicella immunoglobulin (VZIG) or varicella immunization (but was eligible for immunization prior to their cancer diagnosis). The hospital course was complicated by bacteremia, hepatitis and pneumonitis.

A 1-month-old child, (too young for immunizations) presented to hospital with symptoms of shock, meningitis, seizures and empyema. Blood and CSF identified *Haemophilus influenzae* type b organism. The infant survived, but spent 79 days in hospital, including 9 days in the intensive care unit.

Influenza

IMPACT has recently completed (for the 2007-08 influenza season) a pilot for electronic reporting. Prior to this season, influenza surveillance used a paper-based format. IMPACT will continue to pursue this new means of electronic reporting, which is timely and contributes pediatric data to the national Flu-Watch reporting system. Close to 500 cases of influenza disease (pediatric hospital admissions) were reported by IMPACT centers this past season, the largest number in the past 3 years. Future newsletters will include some case examples from surveillance.



A recent IMPACT presentation on the influenza surveillance during the 2006-07 influenza season (citation below and in Paediatr Child Health Vol 13 Suppl A May/June 2008, 43A) concluded the following:

"Influenza hospitalizations continue to represent a significant health burden among children in Canada, especially among children age under 5 years. Neurologic and developmental disorders may be an important target for future immunization guidelines. Observations over multiple influenza seasons are required to determine if vaccine programs for children 6-23 months will impact the age profile of children hospitalized with influenza in Canada, and are useful in identifying high risk groups to target in future immunization programs." Dr. Catherine Burton (lead author) was interviewed by the Medical Post at the 85th Annual Conference of the Canadian Paediatric Society, Victoria, BC.

Burton C, Vaudry W, Moore D, Scheifele D, Halperin S, Bettinger J, Law B, Tam T and the IMPACT Investigators Canadian Immunization Monitoring Program Active (IMPACT) Children Hospitalized with Influenza During the 2006-7 season: A Report From the Canadian Immunization Monitoring Program Active (IMPACT) Platform presentation (abstract 72), June 26, 2008, 85th Annual Conference of the Canadian Paediatric Society, Victoria, BC.

Publications & Presentations Update

To date IMPACT has an impressive list of publications (43) and presentations (73). The following information summarizes a recent IMPACT presentation:

Julie Bettinger PhD, Nicole Le Saux MD, David Scheifele MD, Scott Halperin MD, Wendy Vaudry MD, Robert Bortolussi MD, Raymond Tsang PhD, and the IMPACT investigators. The Changing Incidence of Meningococcal Invasive Infection across Canada, IMPACT 2002-2007. Presented at the 16th International Pathogenic Neisseria Conference, September 7–12, 2008, Beurs-WTC, Rotterdam, The Netherlands

Meningococcal infections rank second in Canada among life-threatening bacterial infection in children, adolescents and adults. Universal meningococcal conjugate C infant and adolescent immunization programs were started in three provinces in 2002–2003, followed by the remaining provinces in 2005. Our active surveillance network provides the most recent information on meningococcal serogroups in Canada since the implementation of universal meningococcal immunization programs.



IMPACT's 12 centres conducted active population-based surveillance for hospital admissions in all ages related to *Neisseria meningitidis* from January 2002 to December 2007. Case definition required the isolation of meningococcus or positive PCR test from a sterile site.

Conclusion: Incidence rates of Group C disease have shown a six-fold decrease in provinces that were first to establish universal infant immunization. Rates decreased in children and adults.

In the News

Newly licensed vaccines in Canada

The province of Québec is the first to implement the new MMR-V (combination measles-mumps-rubella-varicella) vaccine in the provincial program (June 2008).

The Pan-Provincial Vaccine Enterprise (PREVENT)

Source: <http://www.vido.org/news/prevent/index.php>

PREVENT is one of 11 new Centres of Excellence for Commercialization and Research established in February 2008 through the federal [Networks of Centres of Excellence](#) program. Beginning operation in mid-2008, PREVENT will make use of expertise at the Vaccine and Infectious Disease Organization at the University of Saskatchewan, the Canadian Center for Vaccinology in Halifax and the BC Centre for Disease Control.

The **Canadian Center for Vaccinology (CCfV)** in Halifax welcomes Mary Appleton as Executive Coordinator and PREVENT Regional Coordinator.

The **Canadian Coalition for Immunization Awareness and Promotion (CCIAP)** announced that Angela Slobodian has accepted the position as Senior Manager with the Canadian Coalition for Immunization Awareness and Promotion.

The IMPACT investigators and liaisons held their annual meeting on June 27, 2008 at the Fairmont Empress Hotel in Victoria, BC



Canadian Paediatric Society Annual Conference Victoria, BC, June 2008

From L to R: Dr. Pierre Dery (Québec City), Dr. Marc Lebel (Montreal), Dr. Scott Halperin (Halifax), Dr. Barbara Law (PHAC, Ottawa), Dr. Ben Tan (Saskatoon), Dr. Nicole Le Saux (Ottawa), Dr. Taj Jadavji (Calgary), Dr. Julie Bettinger (Vancouver), Dr. David Scheifele (Vancouver), Dr. Shalini Desai (PHAC, Toronto), Dr. Wendy Vaudry (Edmonton), Dr. Dat Tran (Toronto), Dr. Dorothy Moore (Montreal), Kim Marty (Vancouver).

Welcome

Welcome to the IMPACT team

Melanie Laffin Thibodeau is the new Senior Coordinator, Surveillance at the Canadian Paediatric Society and will oversee the administrative side of the Canadian Paediatric Surveillance Program (CPSP) and IMPACT. This is her official welcome from the team! She will spend a day with the IMPACT nurse monitor liaison, based in Halifax at the Canadian Center for Vaccinology, learning about IMPACT and will also attend the IMPACT nurse monitor meeting on November 29, 2008 in Toronto.

Welcome Back

Debbie Cote, (Winnipeg IMPACT Nurse Monitor). We are very happy to have you back!

Upcoming Events

IMPACT Nurse Monitor
Annual Meeting
November 29, 2008
Sheraton Centre
Toronto Hotel

Canadian Immunization
Conference (8th)
November 30, 2008 to
December 3, 2008
Toronto, Ontario

<http://www.phac-aspc.gc.ca/cnic-ccni/2008/index-eng.php>

* Indicates new to this section since the last newsletter issue

Immunization Resources

Canadian

IMPACT

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
 *Canadian Centre for Vaccinology

www.cps.ca (click on "Surveillance")
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
www.centerforvaccinology.dal.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



*www.cispimmunize.org

The American Academy of Pediatrics (AAP) Childhood Immunization Support Program (CISP) is funded through a cooperative agreement with the Centers for Disease Control and Prevention (CDC). Since 1999, the CISP has worked to improve the immunization delivery system across the nation by developing an infrastructure within the Academy to support its members and providing education and resources on immunization and immunization-related issues.

*www.vaccinateyourbaby.org

Vaccinate Your Baby is an awareness campaign launched by the Every Child by Two group, an organization devoted to raising awareness of the critical need for timely immunization and to foster a systematic way to immunize all of America's children by age two. The site was launched in August 2008, and features news and information for parents want the truth about immunization and to learn how best to protect their children from vaccine-preventable diseases.

*www.path.org/vaccineresources

PATH's Vaccine Resource Library (VRL) seeks to gather the world's best immunization resources in a single, easy-to-use website. The VRL offers a wide variety of high-quality, scientifically accurate documents and links on specific diseases and topics in immunization.

***www.familiesfightingflu.org**

Families Fighting Flu (FFF) is a non-profit, volunteer-based organization established in 2004 that is made up of families and healthcare practitioners. Each family has experienced first-hand the death of a child due to influenza or has had a child experience severe medical complications from influenza. FFF is dedicated to educating people about the severity of influenza and the importance of annual influenza vaccines for children.

***Articles/Books**

Asif Doja MD MEd FRCPC. Genetics and the myth of vaccine encephalopathy. *Pediatr Child Health* Vol. 13(7), Sept. 2008, p. 597-99.

Claire-Anne Seigres MD, Edwin M. Lewis MPH, Juhani Eskola MD, Stephen J.W. Evans MSc and Steven B. Black, MD. Human Papillomavirus Immunization in Adolescent and Young Adults. A Cohort Study to Illustrate What Events Might be Mistaken for Adverse Reactions. *Pediatric Infectious Diseases*; Vol. 26 (11), Nov. 2007, p. 979-84.

Paul A. Offit, MD *Autism's False Prophets: Bad Science, Risky Medicine, and the Search for a Cure*, September 2008 (link to an excerpt at <http://cup.columbia.edu/book/978-0-231-14636-4/autisms-false-prophets/excerpt>). The book has received favorable coverage in the media, including a review in the *Wall Street Journal*. Read the review <http://online.wsj.com/article/SB122212979072465559.html>

"Every child has a right to be vaccinated against deadly diseases. We started Every Child By Two to protect children from diseases. It didn't occur to me that I would also have to protect them from misinformation about life-saving vaccines. Paul A. Offit's book sets the facts straight."

—Rosalynn Carter, former First Lady, co-founder of Every Child By Two

"A definitive analysis of a dangerous and unnecessary controversy that has put the lives of children at risk. Paul A. Offit shows how bad science can take hold of the public consciousness and lead to personal decisions that endanger the health of small children. Every parent who has doubts about the wisdom of vaccinating their kids should read this book."

—Peter C. Doherty PhD, St. Jude's Children's Research Hospital, and Nobel Laureate in Medicine for fundamental contributions in immunology

"As a parent it is my job to protect my children. Hearing all the rumors about vaccine side effects made me question the right thing to do. This book makes it clear that vaccines save lives, and that they clearly do not cause autism." —Amy Pisani, mother





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Canadian Paediatric Society (CPS) - Melanie Laffin Thibodeau (Surveillance Coordinator) Marie Adèle Davis (Executive Director);
Dominique Paré (French translation; newsletter)

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): Natalie Giorgis (Newsletter formatting); Heather Samson (IMPACT Nurse Liaison)



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