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INSIDE:

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1. Canadian National Report on Immunization, 1997. *Paediatric Child Health* Vol 3 Suppl B March/April 1998. 2. Health Canada. *National Consensus Conference on Pertussis*. Canada Communicable Disease Report 2003;29S3:1 - 33. 3. Health Canada. National Advisory Committee on Immunization. *Prevention of Pertussis in Adolescents and Adults*. Canada Communicable Disease Report 2002;29:1 - 9. 4. Vaccine Preventable Diseases - Pertussis. Health Canada. Available at: www.hc-sc.gc.ca/pphb-dgpsp/pdcd-dmtvpd-mevpd/pertussis_e.html, accessed on January 13, 2003. 5. Adacel Product Monograph, Aventis Pasteur Limited, September 2002.

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CHICA-Canada will lead in the promotion of excellence in the practice of infection prevention and control.

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CHICA-Canada is a national, multidisciplinary, voluntary association of professionals. CHICA-Canada is committed to improving the health of Canadians by promoting excellence in the practice of infection prevention and control by employing evidence-based practice and application of epidemiological principles. This is accomplished through education, communication, standards, research and consumer awareness.

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The year in review

As the year 2005 draws to a close, we should take time to reflect on the past year in terms of infection prevention and control news and activities.

The biggest news by far is avian flu. This presents the very real potential for triggering a global influenza pandemic. Across Canada, provinces and territories, regions, cities and towns as well as healthcare facilities are preparing for the very real potential of a pandemic.

Infection prevention and control expertise is essential in pandemic planning and many infection control professionals are playing a lead role in their agencies, facilities and communities.

On many other fronts, CHICA-Canada has been actively involved in bringing forth new knowledge and promoting expertise in infection prevention and control.

Community-acquired MRSA (or CA-MRSA) is also a focus of attention in Canada. In this issue, we feature a report from Nora Boyd on the recent joint working session on CA-MRSA co-sponsored by CHICA-Canada, the Public Health Agency of Canada, the Ontario Ministry of Health and Long Term Care, and Association of Medical Microbiology and Infectious Disease Canada.

In order to improve the knowledge of infection prevention and control among all healthcare workers (HCWs), CHICA-Canada has been at the forefront of identifying infection prevention and control core competencies for all HCWs in Canada. This is in response to concerns raised about the education of HCWs in infection control during the SARS outbreak.

Patient safety initiatives are growing across Canada. Infection control is a major component of any patient safety program. CHICA-Canada is to be congratulated for becoming a voting member of the Canadian Patient Safety Initiative (http://www.patientsafetyinstitute.ca/index.html).

To assist in monitoring and promoting safe and effective infection prevention and control, CHICA- Canada has developed a toolkit containing pre-designed audit templates to assess infection risk in a facility.

Another major initiative for CHICA-Canada is the establishment of a research fund with a maximum grant of $50,000. This grant is available to CHICA members to support research projects designed to demonstrate the value and importance and improve the practice of infection prevention and control in all health care settings.

This has been an exciting and rewarding year to be involved in infection prevention and control. ●

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Beginnings and endings

Rick Wray, RN, BA, CIC

At the end of my term as CHICA-Canada president, it's time to discuss both beginnings and endings.

At the recent CHICA-Canada board meeting in Toronto, we had the opportunity to welcome Joanne Laalo, infection control practitioner and 2003 HANDIC president. Joanne will be president-elect of CHICA- Canada beginning January 2006 and brings with her a wealth of experience and enthusiasm. We thank Dr. Anne Matlow for her extensive contributions during her two terms as director, standards and guidelines, and wish her well as she leaves the board. Dr. Bonnie Henry, physician epidemiologist at the BC CDC will be assuming this position for a one-year term. Dr. Henry's public health perspective will be a welcome addition. Adrienne Brown is completing her term as past-president. We owe her sincere thanks for her leadership, vision and dedication to CHICA-Canada.

The board also had the opportunity to learn about the extraordinary program that Margie Foster and her SOPIC colleagues have been developing for the CHICA-Canada Educational Conference in London Ontario, May 6-10, 2006. *Bridging Global Partnerships* promises to be a fitting way to mark both CHICA's 30th and SOPIC's 25th anniversaries.

CHICA-Canada is entering an important working relationship with The Canadian Patient Safety Institute (CPSI), The Canadian Council on Health Services Accreditation (CCHSA), and the Public Health Agency of Canada (PHAC). We share a common goal in enhancing patient safety and infection prevention and control. Each member of the relationship brings valuable skills and resources to the table. You will be hearing more about this over the upcoming year.

It was a privilege for me to represent CHICA-Canada at the 6th Annual International Federation of Infection Control (IFIC) congress in Istanbul, Turkey. It was a proud moment for all members when our association was acknowledged for its financial support to tsunami affected countries and for sponsorship support which allows IFIC attendance. CHICA and in particular Adrienne Brown were acknowledged for leadership in the development of the *Global Infection Control Calendar* which can be accessed on the CHICA-Canada website. It was a unique opportunity to meet infection control professionals from around the world and to share common experiences.

Finally, I'd like to express absolute confidence in Karen Hope's ability to lead CHICA through challenging times as president in 2006. I look forward to continuing to work with Karen and the association as past-president in the upcoming year and would like to thank CHICA-Canada members, the board, and the membership services staff for the opportunities, support and memories that I have gained. ●

De fins et de débuts

Rick Wray, RN, BA, CIC

À la fin de mon terme en tant que président de CHICA-Canada, je me dois de parler de fins et de débuts.

Lors de la dernière réunion du conseil d'administration de CHICA-Canada à Toronto, nous avons eu l'occasion d'accueillir Joanne Laalo, praticienne en prévention des infections et présidente de HANDIC en 2003. Joanne sera présidente désignée à compter de janvier 2006 et pourra nous faire profiter de son expérience et de son enthousiasme. Nous remercions la Dre Anne Matlow de sa précieuse collaboration pendant ses deux termes en qualité de directrice, Normes et directives et lui souhaitons bon succès. La Dre Bonnie Henry, épidémiologiste au CDC de Colombie-Britannique, assumera son poste pour une année. Son point de vue d'intervenante en santé publique sera le bienvenu. Adrienne Brown termine son terme de présidente sortante. Nous la remercions de son leadership, de sa vision et de son dévouement à CHICA-Canada.

Le conseil a eu l'occasion de prendre connaissance du magnifique programme que Margie Foster et ses collègues de SOPIC préparent pour la conférence de CHICA-Canada à London, Ontario, du 6 au 10 mai 2006. *Bridging Global Partnerships* sera un excellent véhicule pour célébrer le 30e anniversaire de CHICA et le 25e de SOPIC.

CHICA-Canada entame une importante relation avec l'Institut canadien pour la sécurité des patients, le Conseil canadien d'agrément des services de santé et l'Agence de santé publique du Canada. Nous partageons un but commun en matière de sécurité des patients et de prévention des infections. Chaque membre de ce partenariat possède de précieuses compétences et ressources. Nous vous tiendrons au courant des développements au cours de la prochaine année.

Ce fut pour moi un privilège que de représenter CHICA-Canada au 6e congrès annuel de la International Federation of Infection Control (IFIC) à Istanbul, Turquie. Nous pouvions tous être fiers lorsque notre association a été reconnue pour son appui financier aux pays touchés par le tsunami et sa commandite qui permet la participation au congrès IFIC. CHICA - et tout particulièrement Adrienne Brown - ont aussi été reconnus pour leur rôle de premier plan dans la mise au point du *Global Infection Control Calendar* accessible sur le site Web CHICA-Canada. Le congrès est une occasion unique de rencontrer des professionnels de la prévention des infections de partout au monde et de partager des expériences communes

En terminant, je tiens à souligner la confiance que je porte en Karen Hope pour diriger CHICA en ces temps exigeants en tant que présidente 2006! C'est avec plaisir que je travaillerai avec elle et l'association en qualité de président sortant. Je veux aussi remercier les membres de CHICA-Canada, le conseil et le personnel des services aux membres des occasions, de l'appui et des souvenirs que j'emporte de ma présidence. •

Joint sessions seek consensus on antimicrobial resistance

In Toronto October on 27 and 28, 2005, the Public Health Agency of Canada, the Ontario Ministry of Health and Long Term Care, Strategic Planning and Implementation Branch, Association of Medical Microbiology and Infectious Disease Canada and Community and Hospital Infection Control Association-Canada in partnership with the Canadian Committee on Antibiotic Resistance held a joint working session on community acquired Methicillin-resistant *Staphylococcus aureus* (CA-MRSA).

One hundred people – physicians, infectious disease experts, public health and infection control from across Canada gathered to learn about community acquired CA-MRSA. Experts Dr. John Jernigan and Dr.Rachael Gorwitz from CDC's CA-MRSA guideline team spoke about their two-year review of the subject and the US epidemiology. Dr Sheldon Kaplan, a paediatrician from Baylor College in Texas shared some case studies of adolescents in his practice with CA-MRSA.Dr. John Conly, Dr. Marie Louie and Dr. Upton Allen presented on the Canadian epidemiology in adults and children. Dr. James Irvine from Saskatchewan presented on a rural experience with CA-MRSA. Dr. Scott Weese reviewed his experience with CA-MRSA in horses and dogs. Dr. Jim Hutchison spoke about antibiotic use and resistance.

Draft position papers on CA-MRSA for adults and children were presented and reviewed to come to a consensus by those experts attending. Watch for the final version to be published in 2006.

The Canadian Committee on Antibiotic Resistance sponsored a working group to gather in Winnipeg on November 18 and19, 2005 to develop hygiene and asepsis guidelines for long-term and community care. The workshop was to fulfill one of the objectives of the National Action Plan for antimicrobial resistance formulated in 2002 and published in 2004.

Draft papers were reviewed for consensus by the group of CHICA-Canada members from across the country including Clare Barry, Nora Boyd, Dr. Elizabeth Henderson, Linda Kingsbury, Marg McKenzie, Agnes Morin-Fecteau, Judy Morrison, Patsy Rawling, Liz van Horne and Rick Wray. Watch for publication of these in early 2006. ●

Nora Boyd, RN M.Ed. CIC
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Do medical gloves reduce the risk of transmission of blood-borne pathogens in patient care activities?

BACKGROUND

The late 1980s raised fears of HIV transmission and heralded the standard use of gloves as a means of prevention. With the flourish of latex allergies erupting along with increased reports[1] of hypersensitivity associated with latex proteins in gloves, alternative materials were considered by healthcare facilities. But how protected are patients and healthcare workers from the risk of exposure to blood and bodily fluids? Especially with the increase incidence of novel blood-borne pathogens, such as West Nile virus, an investigation of the permeability of gloves is worth reviewing. Members of the Hamilton and Neighboring Infection Control (HANDIC) Chapter of Community and Hospital Infection Control Association (CHICA), the Niagara Health System Infection Control Team and Journal Club members conducted a literature review related to the use of medical gloves in patient care activities.

BLOOD-BORNE PRECAUTIONS

Definitions for blood-borne precautions remain inconsistent as varied schools of thought continue. Protective barriers against blood-borne pathogens date back to 1983 when the Centers for Disease Control and Prevention (CDC) published documents related to blood and body fluid precautions.[2] In 1987, both Canada and the CDC recommended that blood and body fluid precautions be used for all patients regardless of their blood-borne infection status, referred to as universal precautions.[2,3] Under universal precautions, blood and certain body fluids of all patients are considered potentially infectious for human immunodeficiency virus (HIV), hepatitis B virus (HBV), and other blood-borne pathogens.

In 1996, CDC published *Standard Precautions* incorporating *Universal Precautions (Blood and Body Fluid Precautions)* and *Body Substance Isolation* (designed to reduce the risk of transmission of pathogens from moist body substances).[4,3] Standard precautions apply to blood; all body fluids, secretions, and excretions except sweat, regardless of whether or not they contain visible blood; non-intact skin; and mucous membranes.[4] Transmission-based precautions (contact, droplet, and airborne) are designed for patients infected or colonized with highly transmissible or epidemiologically important pathogens when additional precautions beyond standard precautions are needed to interrupt transmission.[4]

GLOVE TYPES

Under standard precautions, clean non-sterile gloves are adequate when touching blood, bodily fluids, secretions, excretions, and contaminated items.[4] Yet Rego and Roley[5] recommend the degree of barrier effectiveness should be carefully considered before glove selection when there is a concern for potential exposure

to blood-borne pathogens or biohazard risks. Gloves are made of natural rubber latex (NRL), or synthetic latex-free materials such as vinyl (polyvinyl chloride), neoprene, or nitrile. Gloves are also powdered or powder free.

POWDERED GLOVES

Historically, Lycopodium spores and talcum powder were used to assist workers with donning and removal of medical gloves.[6] In the1940s modified cornstarch, now known as absorbable dusting powder (ADP), was introduced and is still used today on powdered surgical and most powdered examination gloves.[7,8] However, since 1971 the US federal Food and Drug Administration (FDA) placed a cautionary statement on the packages of all synthetic and natural rubber latex powdered surgical gloves: "after donning, remove powder by wiping gloves with a sterile wet sponge or towel or other effective method."[8] Is this process used in healthcare facilities? Powder can be dispersed by direct contact on the hands of workers; indirect transfer procedures; torn or punctured gloves; and aerosolization when gloves are snapped or removed.[8]

The potential consequences of glove powder are important to consider when selecting gloves for barrier protection. Powder complications to patients and glove wearers have been documented. For healthcare workers, powder can serve as a source of irritation, or a vehicle for allergens and microorganisms.[8] Even though damaged skin on hands is an unfavourable outcome from increased glove use, the damaged hands have been implicated as a reservoir for nosocomial transmission of Staphylococcus aureus.[9,10] Infected fingernails have resulted in Pseudomonas aeruginosa transmission.[9] Multiple antibiotic resistant bacteria such as MRSA and VRE may be able to use glove powder as a vector and/or food source in the hospital setting.[11]

Chemicals, cytotoxic drugs, and endotoxins can be transported by the glove powder.[8] For patients with wounds, complications such as prolonged inflammation, adhesion development and granuloma formation have been reported.[12,13,14,8] Surgeries for cranial, eye, joint, organ transplants, and cardiac catheterization have resulted in complications due to powder.[8] Epidural catheters are easily contaminated by surgical glove powder and this can be avoided by the use of powder free gloves.[15] Powder can also affect lab assay results, or hamper diagnostics films.[8]

With evidence of powder as a potential complication for glove wearers, it is necessary to review glove standards.

STANDARDS

Organizations such as Health Canada, CDC, and Occupational Safety Health Administration (OSHA) continue to recommend the use of gloves for adequate barrier protection. Except in cases of needle stick injury, gloves when intact serve as adequate barriers to blood-borne

pathogens.[3] The revised Blood-borne Pathogens Standard indicates personal protective equipment will be considered appropriate only if it does not permit blood or other potentially infectious materials to pass through to or reach the employee's work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time which the protective equipment will be used.[16] Furthermore, Health Canada[3] reports disposable, good quality, medical gloves made of vinyl, nitrile, neoprene, co-polymer and polyethylene serve as adequate barriers to blood-borne pathogens – particularly when latex allergies in workers or patients are a concern .The accepted standard should be that medical gloves be worn for all blood collection procedures.[3] Guidelines for collection of venous blood samples includes using disposable or vinyl gloves as stated in the World Health Organization's *Communicable Disease Toolkit for Iraq Crisis*.[17]

The Medical Devices Bureau in Canada produces information on the quality of gloves and on latex allergies, a compendium of non-latex gloves, and the results of tests on glove protein levels.[3] Blood-borne viruses can pass through holes in damaged gloves, although HIV seroconversion following passive exposure to body fluids through a hole in a glove has not been reported.[3]

The American Society for Testing and Materials (ASTM) provides glove standards for virus and chemical barriers internationally, but the FDA reports no viral or chemical barrier testing is required.[18]

Guidelines are necessary to establish criteria for glove selection that meet current standards. Glove selection should be based on the type of setting, type of procedure, likelihood of exposure to blood or fluid capable of transmitting bloodborne pathogens, length of use, amount of stress on the glove, presence of latex allergy, fit, comfort, cost, length of cuffs, thickness, flexibility, and elasticity.[3]

REVIEW OF LITERATURE

More research is needed to assess glove performance. Most available data dates back before 2000. In 1988, the CDC[2] reported there were no differences in barrier effectiveness between intact latex and intact vinyl used to manufacture gloves. Thus, the type of gloves selected should be appropriate for the task being performed.[2]

However, DeGroot-Kosolcharoen and Jones[19] reported four brands of sterile latex surgeon's gloves proved nonpermeable to water and blood. Other brands resulted in leakage from 1 to 52%, affirming that gloves can be regarded only as a means of reducing the risk of gross soilage from blood or body fluids.[19]

In 1996 Lehrman[20] reported that vinyl gloves could be considered an acceptable choice approach when latex is not required, such as for a very short (less than 10 to15 minute) procedure with minimal prospect for blood or body fluid contact. Non-latex gloves may also be appropriate when the surgical site is prepped preoperatively if the patient's skin is intact, making body fluid contact highly unlikely.[20]

Rego and Roley[5] reported there were no previous studies documenting the effectiveness of nitrile as a barrier to blood-borne pathogens. Their study compared the performance of gloves made of natural rubber latex, polyvinyl chloride (vinyl), and nitrile. Vinyl resulted as an appropriate barrier for non-rigorous, low-risk procedures of short duration, whereas nitrile or latex was recommended as the glove of choice for high-risk situations, including exposure to blood-borne pathogens.[5]

A more recent laboratory-based study[21] compared the performance of latex and non-latex surgical gloves. Non-latex neoprene and nitrile gloves were comparable to latex, but isoprene was found to be inferior to latex and other non-latex materials. The presence or absence of glove powder had no significant impact on the likelihood of glove failure.[21]

When compared to vinyl gloves, latex gloves have lower rates of perforation, better strength, elasticity, tactile sensitivity, comfort, fit, barrier properties, and durability.[22,23] Reactions can even occur with vinyl and nitrile gloves such as contact urticaria type I and contact dermatitis type IV.[22]

Ranta and Ownby[22] provide recommendations regarding natural rubber latex (NRL) glove use: a) NRL should only be used when prudent under universal precautions. NRL should not be used in low-risk situations such as food handlers, housekeeping, transport personnel; b) low-allergen, non-powdered NRL should be used to reduce sensitization and reactions to latex; c) non-powdered sterile NRL are preferred in sterile situations but low protein, powdered sterile NRL may be used with ongoing assessment of reactions; and d) healthcare workers sensitive to NRL should use non-latex gloves.

RECOMMENDATIONS

Medical glove material selection can be a systematic process from an infection control perspective to protect both the wearer and the patient against the transmission of infectious microorganisms. The most important criterion when selecting gloves is barrier performance.[23] NRL gloves are now known for their best barrier properties and education is needed. Therefore, the wearer must look at the type of protection needed for the specific task, and assess if the glove provides that type of protection.

Using the following steps to meet FDA or ASTM standards can facilitate the decision process:

1. Verify with the vendor the residual powder content of the glove for a powder free claim. FDA and ASTM requires <2mg.[8,23]
2. Verify with the vendor the glove passes the irritation and sensitization test as per FDA and ASTM standards.[8]
3. Verify with the vendor the low protein claim of the glove. FDA and ASTM requires < 50ug/gm.[8]
4. Verify with the vendor the glove provides barrier protection against penetration of blood-borne pathogens as per ASTM F 1671 viral penetration. The FDA does not require manufacturers to test for viral penetration. Only

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gloves that passed the ASTM test should be considered for possible contact with blood-borne pathogens.[23]

5. Verify with the vendor the water leak claim as per FDA and ASTM standards.[8]
6. Verify with the vendor the glove provides protection against permeation of chemicals, chemotherapy drugs, and sterilants encountered in the facility as per ASTM F 739-96. The FDA does not require testing for chemical agents.[23]
7. Check with glove wearers the glove performance with the particular task.[23]

Do medical gloves reduce the risk of transmission of blood-borne pathogens in patient care activities? Hospitals should review their facility's types of gloves for barrier protection capabilities. A Canadian teaching hospital in Ontario reported no increase in cost as a result of consolidated glove purchases.[22] Incorporating a glove audit into a regular infection control cleaning and disinfection audit will quantify patient care practices in conjunction with medical glove use and open opportunities for best practice outcomes. ●

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New board members elected

The following board members have been elected for terms commencing January 1, 2006.

President-Elect

Joanne Laalo

Joanne has been an infection control practitioner at Cambridge Memorial Hospital, ON since 1997. Her career began in 1985, specialising in coronary and critical care and obtaining a CNA specialty certification in critical care nursing. She has a diploma in Nursing, a Nursing Leadership and Management Certificate from McMaster University and a BScN as of March 2006. She recently recertified, having obtained her initial CIC in 2000. Joanne is past-president of the Hamilton and Neighbouring Districts Infection Control group (HANDIC), and has been a member of CHICA-Canada since 1998. She is also a member of the working group for the regional infection control networks of the Ontario Ministry of Health and Long Term Care.

"As a novice ICP, I learned about the CHICA directory, which offered me an invaluable network of experts and other resources at my fingertips. As we look to the future of our profession we must build on the strengths of CHICA – Canada, such as networking, political advocacy and education and continue to offer all members the tools they require to practice competently. CHICA-Canada offers an excellent opportunity to be involved in a larger network of infection control professionals and allows us to expand our knowledge and, more importantly, continue to find our collective voice and advance our profession in the public eye. I look forward to working with the excellent board that we have and will serve you in the best way that I can."

Director of Finance

Cindy Plante-Jenkins

Cindy Plante-Jenkins, MLT, BSc(MLS), CIC, is an infection control practitioner at Trillium Health Centre in Mississauga, ON. Cindy is currently on secondment from her infection control role to participate in Trillium's THINK (Transforming Healthcare into Integrated Networks of Knowledge) initiative. She graduated from the University of Alberta with a BSc in Medical Laboratory Sciences and has Certification in Infection Control. Cindy is a member of the Toronto and Area Professionals in Infection Control (TPIC). This will be Cindy's second term as Director of Finance.

"My involvement with CHICA-Canada, at both a local and a national level, has been educational, rewarding and inspiring. I encourage every member to become more involved in their professional organization on whatever level possible. The world of the ICP is rapidly changing and demands made of CHICA-Canada have changed. During my first term, the organization struggled to obtain the ear of hospital administration, accrediting agencies, the community and government agencies. Now, after SARS and other infection control related news headlines, organizations and agencies are knocking on CHICA-Canada's door. We are finally being recognized as the knowledge brokers of infection prevention and control information. I look forward to working with the board and all members of CHICA-Canada during this exciting time of growth for our professional organization.

Physician Director

Dr. Dick Zoutman

Dr. Zoutman MD, FRCPC has been practicing medicine for over 20 years and specializes in internal medicine, infectious diseases and medical microbiology at Queen's University in Kingston, ON. He is also Professor of Pathology and Molecular Medicine, of Community Health and Epidemiology, and of Medicine in the Faculty of Health Sciences at Queen's. In addition, Dr. Zoutman is Chief of the Department of Medical Microbiology and Medical Director of Infection Prevention and Control, and is Chair of the Division of Infectious Diseases at the South Eastern Ontario Health Sciences Center in Kingston.

A primary focus of his investigative work has been the prevention and control of healthcare associated infections and related medical errors.

Dr. Zoutman continues to examine the impact of hospital resource allocation and infectious adverse events, as well as the use of information systems to improve the quality of patient care and to reduce hospital-acquired infections.

"CHICA-Canada, has become the resource Canadians look to on infection prevention and control issues. CHICA as the national leader in infection prevention and control must strive to bring the leading edge knowledge in protecting Canadians from infections into clinical practice. We will accomplish this through advocacy with industry, government, the healthcare delivery industry and the public at large. CHICA can be proud of its accomplishments over the past three decades. Our future is bright indeed."

The Director of Standards and Guidelines, Dr. Anne Matlow will complete her term of office in December, 2005. Dr. Bonnie Henry has been appointed to complete Dr. Matlow's term to December 31, 2006. Dr. Bonnie Henry is physician epidemiologist at the BC Centre for Disease Control. We thank Dr. Henry for taking on this important role. The board of directors thanks Dr. Anne Matlow for her dedicated service to CHICA-Canada and wish her every success in the future.

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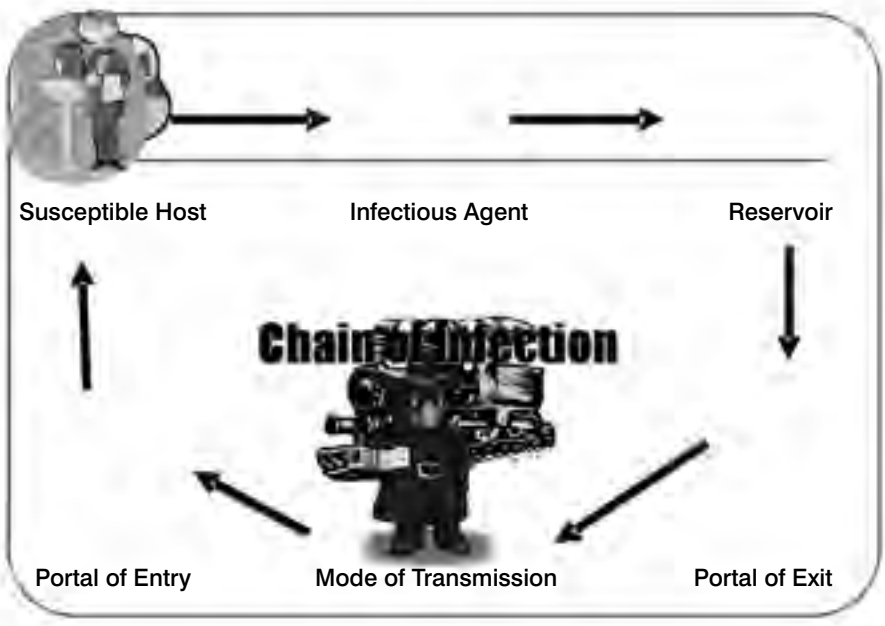
Infection prevention and control at home

Infection Prevention and Control (IP&C) practices are well established in healthcare settings. Recommendations and policies exist to prevent transmission of disease in hospitals, long term care facilities and other healthcare settings. Recently, the role of the home environment in the developed world in disease transmission has become the focus of interest of several research studies.[1-4] 'Home' has been described as the central point in the community setting and therefore has a strategic role in the transmission of disease throughout the community.[1] The home setting operates as a residence for household members, a place of food preparation and service, a hospital for recently discharged acute care patients, a daycare setting and an animal shelter.[1] In addition, there have been important demographic and social shifts in the last decades with an increase in working parents and subsequent increase in child-care outside the home (with subsequent increases in risk of infection exposure); an increase in public awareness of infectious diseases (from recent outbreaks such as SARS); and an increased marketing of antibacterial products for the home.[2]

This review will examine the risks for disease transmission in the home, the role of antibacterial products in the home setting, the controversy surrounding the 'hygiene hypothesis,'and recommendations for a risk-based approach to household hygiene.

The "chain of infection" is a useful model in IP and C to explain both disease transmission and opportunities for infection prevention. The home setting harbours *susceptible hosts*: young children, elderly, or those with decreased immune activity. In the home setting, the *infectious agent* may be bacterial but is most often viral. Typical bacterial pathogens in the home setting include food-borne pathogens such as *E.coli O*:157, Salmonella, Campylobacter or Listeria, as well as other pathogens such as *Staph aureus* or Group A Streptococcus.Viral pathogens include those causing respiratory illness (such as rhinovirus, respiratory syncitial virus, or Influenza) as well as those causing GI symptoms (such as norovirus or rotavirus). Parasites such as *Cryptosporidium* or *Giardia* may also be found in the home setting. The *reservoir* for infection can include contaminated food or water, pets and pet products, home surfaces (kitchen counters, door handles, and cleaning sponges or cloths) as well as the community itself when illness occurs in daycare, school or



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work settings. The *portal of exit* (the way that pathogens exit the reservoir) includes both feces and respiratory secretions. The *mode of transmission* includes both contact (from contaminated hands or contaminated surfaces) and droplet (aerosolized particles from coughs, sneezes, emesis or diarrhea). The *portal of entry* is typically ingestion from contaminated food or from contaminated hands. Infection can also occur from inhalation or contact with mucous membranes.

Opportunities to interrupt the 'chain of infection' include home hygiene practices such as hand hygiene, safe food handling, and home cleaning. Cases of respiratory or GI illness have been shown to cluster in households or among individuals in close proximity (such as daycares, schools, or university dorms), so hygiene practices are important in the prevention of the spread of disease.[5]

Publicity over the emergence of antimicrobial resistant organisms, SARS, avian influenza and food-borne outbreaks has raised public concern over infectious disease risks. Even prior to the SARS outbreak, a 1998 Gallup poll showed that 66% of those surveyed were very, or somewhat, concerned about exposure to bacteria and viruses and 40% believed that these organisms were becoming more widespread. Additionally, 72% believed that some bacteria are growing more resistant and 33% of those people were seriously concerned about the issue of antimicrobial resistance.[3] The general public has perceived a need for household products and devices (such as soap, toys, towels, and pet products) that incorporate antibacterial agents.[6] A 2001 survey of the US marketplace showed that 76% of liquid soaps and 29% of bar soaps contained antibacterial agents such as triclosan.[5]

There have been voices of caution raised from the scientific world on the use of antibacterial product in healthy households.[2,5,7] Research has shown no demonstrated health benefit of using antibacterial products in healthy households. Elaine Larson and her group performed a randomized control trial in 2004 that showed no difference in illness between families using antibacterial soaps versus those families that did not use these products.[2] She noted that antibacterial products are not effective against viral pathogens, which are the primary source of illness in healthy homes (i.e. viral GI or respiratory disease).While there may be benefits to using these products in homes with immune-deficient occupants or those experiencing a food-borne GI illness, there are risks to the routine use of antibacterial products. The antibacterial agents in these products are used at low concentrations for a short duration and this exposure may select for resistant strains and alter the mix of naturally-occurring organisms in the household setting.[5,6,7] The Community and Hospital Infection Control Association of Canada (CHICA-Canada) has published a position statement on the use of antibacterial products in the home setting.[6] This statement urges a focus on frequent handwashing, safe food preparation, good personal hygiene and basic home cleanliness rather than the routine use of antibacterial products. Stuart Levy from Tufts University in Boston, has suggested that products that evaporate quickly and don't leave a residue (such as alcohol hand rubs and bleach) are unlikely to lead to antimicrobial resistance and allow 'normal' bacteria to exist in the household environment.[7]

The rise in allergies and asthma in the past decades in the developed world as well as the use of antibacterial products in the home setting has raised another question: is there a limit to how clean we should be?[7,8] The 'hygiene hypothesis' first raised in 1989 by Strachan, postulates that reduced exposure to microorganisms (from infections or from exposure to dirt) in childhood may lead to reduced immune stimulation and to the later development of allergies and asthma.[9] The hygiene hypothesis argues that some exposure to microbes is necessary to ensure the immune system is properly balanced and controlled, or it may generate an allergic response too easily.[8] There is a shift in how the immune system responds as a person ages: a T-helper cell 2 (T-h2) response is normal in newborns, but a T-h1 response occurs in adults who do not have allergies. Exposure to immune stimulants such as viruses, bacteria and endotoxins in the prenatal period or in early childhood may shift the immune system from T-helper cell 2 (Th-2) dominance to T-h1 dominance. People who are predisposed to allergies typically have a T-h2 lymphocyte response (an 'allergic' response).[10] Studies have shown that exposure to siblings, daycares, pets and farms is protective against asthma perhaps because the immune system has been stimulated in early childhood.[10]

The hygiene hypothesis has generated some controversy. Since it is unclear what infectious exposure is necessary to provide immune stimulation, the hygiene hypothesis has led to the speculation that advances in public health may be implicated in reduced microbial exposure.[8] Additionally, the role of confounders in existing research is also unclear. It is possible that parents who have allergies and asthma are less likely to have large families (since they believe their children would also have these conditions) leading to fewer siblings; are unlikely to have pets in the home; and also are less likely to use daycares if their children have asthma or allergies.[10] Confounders such as these can be studied in randomized control trials, but it would be difficult to measure these variables since most families would not agree to be randomized to the number of children in the family, the presence of pets or a farm lifestyle.[10]

The possibility of disease transmission in the home, public awareness of infectious diseases, the demand for antibacterial products, and the possibility of an overly-clean environment promoting asthma or allergies in children has lead to a risk-based approach to home hygiene.[8] Using this strategy, the goal is to decrease the spread of infection while minimizing the disturbance of general microbial flora in the home setting. This includes frequent hand hygiene (with both plain soap and water and alcohol-hand rub products); safe food preparation; good personal hygiene; and basic home cleanliness.[6]

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Effective surface disinfection should be targeted at critical high-touch surfaces to reduce surface contamination and prevent cross-contamination to prevent exposure to harmful organisms in sufficient numbers to cause disease.[1] The level of risk varies in every household due the presence of very old or very young, the presence of pets, and the immune status of the residents.[8]

Bleach is an effective disinfectant in household settings.[7] Best home practices include daily cleaning and disinfection of high risk surfaces such as kitchen and bathroom sinks and drains, cutting boards, and local spills (or high risk accidents such as vomiting or diarrheal messes). High touch surfaces (faucets, door and appliance handles, flush handles, and kitchen countertops) should be cleaned and disinfected about three times a week, and low-risk items such as toilets and floors once weekly. The Clorox Bleach company (www.cloroxlaundry.com) has suggestions for both cleaning frequencies of common household surfaces and instructions on using appropriate bleach solutions.

The axiom 'everything in moderation' seems to apply to infection control practices in the home. A rational, risk-based approach that incorporates likely avenues of disease transmission and prevention using the chain of infection will accomplish the goal of keeping everyone protected (from communicable diseases) at home. ●

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Barrier precautions in trauma resuscitation: Infection control recommendations

INTRODUCTION

The risk of transmission of blood-borne pathogens such as human immunodeficiency virus (HIV), Hepatitis B and Hepatitis C are a well-documented occupational risk for healthcare providers (HCP) caring for trauma patients.[1] Trauma patients are often actively bleeding or requiring interventions, which may put the HCP at risk of infection. The response to a trauma is often less controlled than procedures occurring in other hospital settings. The routine use of barrier precautions including gloves, gown, mask and eye protection are intended to protect the HCP from exposures to blood and bodily fluids.

Kingston General Hospital (KGH) is a 450-bed tertiary care facility. The emergency department at KGH responds to approximately 160 traumas annually. The trauma team consists of representatives from anesthesia, general surgery, neurosurgery, orthopedics, emergency medicine, nursing, respiratory therapy, and radiology. The routine use of barrier precautions is supported by policies and procedures developed by the infection control service which are consistent with current Health Canada guidelines.[2] An audit was conducted as a quality improvement initiative to observe the use of barrier precautions among trauma team members during active trauma resuscitation. Recommendations for improving compliance for the routine use of personal protective equipment (PPE) were identified.

METHODS

An audit of the routine use of barrier precautions during trauma response was completed to identify the degree of HCP compliance with PPE use and to identify recommendations for improvements to current practices. The audit design included an observational period from August 2004 to February 2005. All trauma resuscitations undertaken in the Emergency Department at KGH occurring on a weekday between 08:00 and 16:00 hours were eligible for entry into the study. One infection control practitioner (ICP) was paged along with the trauma team for incoming trauma cases.

A review of the literature was completed using Medline with the following MeSH headings: emergency services, universal precautions, infection control and trauma. A standardized audit tool was developed following a literature review. The trauma coordinator, trauma team leaders, emergency department manager and the medical director of infection control reviewed the audit tool. The ICP observed and documented the use of gloves, use of gown, use of mask, use of eye protection, hand hygiene and handling of sharps. The ICP met with the trauma team coordinator a priori to review the audit procedure and the expectations of acceptable PPE use. All members of the trauma team were aware that the audit was taking place and no attempts were made to conceal the collection of data.

Procedures were categorized using criteria identified in the literature.[3] Procedures were classified as Type 1, when there was a risk of spraying or aerosolizing blood, bodily fluids or secretions. These procedures require the use

of a gown, mask, gloves and eye protection as a minimum acceptable standard. Type 2 procedures included procedures where splashing or aerosolization of blood or bodily fluids was unlikely.[3] These procedures required the use of gloves and diligent hand hygiene. Table 1 outlines the minimum expectation for compliance with PPE.[2]

Following the audit, the ICP worked in partnership with the attending emergency department physician responsible for trauma education to review findings and collaborate on recommendations for improvement.

FINDINGS

Six resuscitations were conducted during the study period. For each trauma response, the trauma team leader, attending physicians, residents and emergency department nurses were observed. In all of the six traumas observed, at least one break in infection control precautions occurred (100% of observed traumas). Although PPE are available to the trauma team, it was observed that the number of students and observers present at trauma resuscitations in a teaching environment depleted some items such as gowns. The details of the observations are outlined in greater detail below.

Hand Hygiene

Hand hygiene should be completed before and after patient care procedures, after removing gloves, and when hands are visibly soiled. The trauma rooms were equipped with a hand-washing sink and alcohol-based hand sanitizer was mounted on the wall between the two trauma rooms. The most common break in infection control precautions was inadequate hand hygiene, which occurred in all traumas observed by at least one member of the trauma team. Studies have documented that compliance with hand hygiene is lowest in acute care critical environments.[4]

Glove use

Glove use was nearly universal among trauma team members. Of the six traumas observed, one break was noted where gloves were not used when they should have been (i.e. gloves not worn for a direct patient care activity) (17% of traumas observed). Although glove use was nearly universal, gloves are intended to be task specific and in five of the six traumas (83% of traumas observed), it was observed that gloves were not always changed between tasks.

Environmental contamination

Changing of gloves during a trauma response occurred rarely and it was not uncommon for a HCP to obtain clean supplies from trauma supply lockers with contaminated, gloved hands. Observations included HCPs using the telephone with contaminated gloves and making notes/charting with gloves still donned. Environmental contamination was documented in four of the six traumas observed (67% of traumas observed).

Mask and eye protection

The use of mask and eye protection for aerosol generating respiratory procedures (refer to Table 1) was inconsistently used. Low compliance with PPE for high-risk respiratory procedures may be related to the fact that patients did not present to the emergency department with a febrile respiratory illness and thus are considered to be 'low risk' for respiratory infection. In three of the six traumas observed, inadequate mask/eye protection was documented.

Management of sharps

The management of needles and other sharps was extremely well done. There were no instances of needle recapping documented nor were there any observation of inappropriate sharps disposal or handling.

DISCUSSION

The observations made during this audit are not unique to KGH. Deficits in components of infection control programs have been well documented.[5] Several studies have documented that compliance with PPE is inconsistent in this type of high-risk clinical environment.[6, 7, 8] Overall, the use of precautions during a trauma response was discretionary rather than being based on existing policies. The challenge HCPs are faced with is that the potential for exposure to blood, body fluids and respiratory secretions can be difficult to predict particularly when the patient is unknown and often unable to provide health information to the trauma team.

Studies have documented that novice HCPs look to the more experienced staff members to guide their use of PPE. Unfortunately, senior staff are often called to supervise and provide guidance and may not anticipate becoming actively involved. Low compliance among senior staff may hinder efforts to achieve compliance with novice or less experienced practitioners.[9] Recommendations were made to incorporate more infection control education into the training of residents and nurses with the infection control service and trauma team leaders acting as infection control advocates. Incorporating the use of PPE into a low risk, practice environment may improve compliance. Williams at al. (1994) demonstrated that increased opportunities for training supports the integration of concepts into practice.[10]

There were two main limitations of this audit. Firstly, the observation process may have altered the behavior of the HCPs. However, several gaps in infection control precautions were noted despite this possibility. Secondly, the observation of multiple people and multiple behaviors during an active trauma is a clear limitation of this audit. This type of environment is not conducive to a comprehensive review of all members of the trauma team. Despite the limitations, the audit did identify apparent gaps in the routine use of PPE and allowed for collaboration of the trauma team and the infection control service. The observations made will be used to guide further educational efforts to improve compliance with the routine use of PPE.

CONCLUSION

The audit was done with a multidisciplinary team with partners representing the trauma team, the infection control service and the emergency department. At its inception, this multidisciplinary team acknowledged their support for this audit and a commitment to improving the use of infection control precautions. Barrier precautions should be universal for all members of the team because the potential exposure to pathogens can be difficult to predict. The information collected will be incorporated into training exercises and educational efforts.

Table 1: Minimum Acceptable Standards for PPE Use

Type 1: Risk of spraying or aerosolization of blood, body fluids or secretions.	**Includes:** Aerosol generating respiratory procedures: • Endotracheal intubation • Nasogastric tube placement • Nebulized therapy • Bronchoscopy • Bad-valve mask ventilation • Non-invasive ventilation including CPAP (continuous positive airway pressure) and BiPAP (bi-level positive airway pressure) • Airway suctioning • Thoracotomy Active gastrointestinal bleeding/emesis Chest tube placement Gastric lavage Profuse bleeding Wound irrigation	**Minimum PPE required:** • Gloves • Gown • Mask (fluid resistant procedure or surgical mask) • Eye protection (goggles or face shield) • Diligent hand hygiene
Type 2: Risk of spraying or aerosolization of blood, body fluids or secretions is unlikely.	**Includes:** Arterial blood gases Bleeding patient (not profuse; easily contained) Foley catheter insertion IV insertion Removal of bloody clothing Wound dressing Wound suturing Lumbar puncture	**Minimum PPE required:** • Gloves • Diligent hand hygiene

ACKNOWLEDGEMENTS

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[1]NIH Consensus Statement on Management of Hepatitis C:2002. NIH Consensus and State-of-the Science Statements; Vol 19 No 3, June 10-12, 2002. National Institute of Health, Office of Director

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PRECAUTIONS

General For instructions on recognition and treatment of anaphylactic reactions see the current edition of the Canadian Immunization Guide or visit the Health Canada website. The possibility of allergic reactions in persons sensitive to components of the vaccine should be evaluated. Epinephrine Hydrochloride Solution (1:1,000) and other appropriate agents should be available for immediate use in case an anaphylactic or acute hypersensitivity reaction occurs.[1] Health-care providers should be familiar with current recommendations for the initial management of anaphylaxis in non-hospital settings, including proper airway management.[1] Before administration take all appropriate precautions to prevent adverse reactions. This includes a review of the patient's history concerning possible hypersensitivity to the vaccine or similar vaccine, previous immunization history, the presence of any contraindications to immunization, and current health status. It is extremely important when a patient returns for the next dose in the series that the patient, parent or guardian should be questioned concerning any symptoms and/or signs of an adverse reaction after the previous dose of vaccine. (See CONTRAINDICATIONS and ADVERSE REACTIONS.) Frequent booster doses of tetanus or diphtheria toxoids in the presence of adequate or excessive serum levels of tetanus or diphtheria antibodies have been associated with increased incidence and severity of reactions and should be avoided. Do not inject into a blood vessel.

Caution Use a separate sterile needle and syringe, or a sterile disposable unit, for each individual patient to prevent disease transmission. Needles should not be recapped and should be disposed of properly. Before administration of ADACEL® [Tetanus and Diphtheria Toxoids Adsorbed Combined with Component Pertussis Vaccine] health-care providers should inform the patient or parent or guardian of the patient to be immunized of the benefits and risks of immunization, inquire about the recent health status of the patient and comply with any local requirements with respect to information to be provided to the patient before immunization.

Pregnancy and Lactation The effect of ADACEL® on the development of the embryo and fetus has not been assessed. Vaccination in pregnancy is not recommended unless there is a definite risk of acquiring pertussis. As the vaccine is inactivated, any risk to the embryo or the fetus is highly improbable. The benefits versus the risks of administering ADACEL® in pregnancy should carefully be evaluated when there is a high probable risk of exposure to a household contact or during an outbreak in the community. The effect of administration of ADACEL® during lactation has not been assessed. As ADACEL® is inactivated, any risks to the mother or the infant is highly improbable. The benefits versus the risks of administering ADACEL® during lactation should carefully be evaluated by the health-care provider, particularly when there is a high probable risk of disease transmission through exposure to a household contact or during an outbreak in the community. The risks of disease transmission from the infected mother to the infant who may not have been fully immunized should also be evaluated.

ADVERSE REACTIONS

In a clinical trial with 749 adolescents and adults given ADACEL® [Tetanus and Diphtheria Toxoids Adsorbed Combined with Component Pertussis Vaccine] (n = 449) or Td Adsorbed (n = 151), adverse events following ADACEL® were primarily localized to the site of injection. Pain was the most common local reaction (68.6%), while erythema and swelling were reported in 11.8% and 16.7%, respectively. These local adverse events were generally mild and transient in duration. Systemic adverse events that were reported after vaccination with ADACEL® were fever (9.4%), vomiting (2.4%), headache (38.8%), diarrhea (10.0%), seizures (14.7%), chills (12.5%), generalized bodyache (20.0%), decreased energy (25.4%) and sore or swollen joints (9.1%). Of the 38.8% that reported headaches, 72.2% were mild and less than 5% were categorized as severe by the vaccinee. While decreased energy was common (25.4%), only 5.9% of vaccinees considered it as significant. The adverse event rates observed with ADACEL® were comparable to those seen with the group that received Td Adsorbed (Table 1).[1]

TABLE 1: RATE (%) OF ADVERSE EVENTS REPORTED AFTER VACCINATION WITH ADACEL® COMPARED TO Td ADSORBED[1]

Adverse Events	Severity	Adverse Event Rate %	
		ADACEL®	Td Adsorbed
Local			
Pain	Any	68.6	68.7
	Severe	0.4	0.7
Swelling	Any	16.7	16.6
	Severe	10.3	8.7
Redness	Any	11.8	6.6
	Severe	3.3	2.0
Systemic			
Headache	Any	38.8	35.8
	Severe	1.8	0.7
Fever	Any	9.4	6.0
	Severe	0	0
Decreased Energy	Any	29.4	27.8
	Severe	2.2	2.0
Bodyache	Any	20.0	13.9
	Severe	1.1	0
Chills	Any	12.5	5.3
	Severe	0.7	0.7
Nausea	Any	14.7	11.3
	Severe	0.9	0
Diarrhea	Any	10.0	11.3
	Severe	0.2	0.7
Sore Joints	Any	9.1	6.6
	Severe	0.4	0
Vomiting	Any	2.4	0.7
	Severe	0.9	0

In a separate clinical trial with 269 adolescents aged 11 and 12 years-old, ADACEL® was shown to have a safety profile that was comparable to that seen in the first trial in older adolescents. In addition, when ADACEL® was administered concomitantly with a dose of Hepatitis B vaccine, the adverse events rates were not affected.[1] Localized reactions consisting of discomfort, pain, swelling and redness at the injection site may be associated with tetanus and diphtheria toxoids.[1,6] Following booster doses, local erythema and swelling are not uncommon and Arthus-type sensitivity may occur.[1] Severe local reactions are often associated with high levels of circulating antibody, usually resulting from over-immunization due to toxoid being given too frequently.[1,6,7]
Very rarely, large local reactions, consisting of redness and/or swelling >30cm, some with circumferential swelling of the injected limb, have been reported following the fourth and fifth pediatric doses of acellular pertussis-containing vaccine. These local reactions are usually not associated with significant pain and resolve spontaneously. Systemic reactions, such as generalized urticaria, are uncommon. Influenza-like symptoms have been reported and usually occur within 12 hours of vaccination with some diphtheria and tetanus toxoids.[1] Neurological complications such as peripheral neuropathies[8,9] and demyelinating diseases of the central nervous system (CNS)[10] following tetanus toxoid or diphtheria toxoid have been documented but are rare.[8,9] The U.S. Institute of Medicine has concluded that the evidence is inadequate to accept or reject a causal relation between tetanus toxoid, DT or Td and demyelinating diseases of the CNS (acute demyelinating encephalomyelitis, transverse myelitis, optic neuritis) or peripheral mononeuropathy (other than those caused by direct intravenal injection).[11] The following neurologic illnesses have been reported as temporally associated with some vaccines containing tetanus toxoid: neurological complications[12] including cochlear lesion,[13] brachial plexus neuropathies,[14,15] paralysis of the radial nerve,[16] paralysis of the recurrent nerve,[17] accommodation paresis, and GBS disturbances with encephalopathy (with or without permanent intellectual and/or motor function impairment).[18] In the differential diagnosis of polyradiculoneuropathies following administration of a vaccine containing tetanus toxoid, tetanus toxoid should be considered as a possible etiology.[19,20] The Institute of Medicine concluded that the evidence favours acceptance of a causal relation between tetanus toxoid and brachial neuritis.[8]
On the basis of a case report and evidence that a vaccine-induced immunologic response can cause Guillain-Barré Syndrome (GBS), the Institute of Medicine concluded that tetanus toxoid-containing vaccines can trigger GBS in adults. No increased risk for GBS has been observed with the use of DPT in children.[21] Persistent nodules at the site of injection have occurred following the use of an adsorbed product, but this complication is unusual,[1] and may be related to subcutaneous administration.[1] Sterile abscess at the site of injection has been reported following use of some adsorbed vaccines (6 -10 per million doses).[1] Rare cases of allergic or anaphylactic reaction (i.e., hives, swelling of the mouth, difficulty breathing, hypotension, or shock) have been reported after receiving some preparations containing diphtheria, tetanus and/or pertussis antigens.[1] Death following vaccine-caused anaphylaxis has been reported.[1] As with any vaccine, there is the possibility that broad use of the vaccine could reveal rare adverse reactions not observed in clinical trials. Physicians, nurses, and pharmacists should report any adverse occurrences temporally related to the administration of the product in accordance with local requirements and to the Service Product Safety Office, Pharmacovigilance Department, Sanofi Pasteur Limited, 1755 Steeles Avenue West, Toronto, ON, M2R 3T4 Canada; 1-888-621-1146 (phone) or 416-667-2103 (fax).

DOSAGE AND ADMINISTRATION

For persons who have previously been immunized against tetanus, diphtheria, and pertussis a dose of 0.5 mL should be administered as a reinforcing dose. There are currently no data upon which to base a recommendation for the optimal interval for administering subsequent booster doses with ADACEL® [Tetanus and Diphtheria Toxoids Adsorbed Combined with Component Pertussis Vaccine].

Tetanus Prophylaxis in Wound Management[1]

The table below summarizes the recommended use of immunizing agents in wound management.

History of tetanus immunization	Clean, minor wounds		All other wounds	
	Td*	TIG†	Td	TIG
Uncertain or <3 doses of an immunization series**	Yes	No	Yes	Yes
≥3 doses recieved in immunization series**	No‡	No	No§	No¶

*Adult type tetanus and diphtheria toxoids. If the patient is <7 years old, a tetanus toxoid-containing vaccine such as QUADRACEL® or PENTACEL® is given as part of the routine childhood immunization.
**Primary immunization is at least 3 doses at age appropriate intervals.
† Tetanus immune globulin, given at a separate site from Td.
‡ Yes, if >10 years since last booster.
§ Yes, if >5 years since last booster. More frequent boosters not required and can be associated with increased adverse events. The bivalent toxoid, Td, is not considered to be significantly more reactogenic than T alone and is recommended for use in this circumstance. The patient should be informed Td has been given.
¶Yes, if individuals are known to have a significant humoral immune deficiency state (e.g., HIV, agammaglobulinemia) since immune response to tetanus toxoid may be suboptimal.

It is important to ascertain the number of doses of tetanus toxoid previously given and the interval since the last dose. When a tetanus booster dose is required, a combined preparation of tetanus and diphtheria toxoid formulated for adults (Td) is preferred. Appropriate cleansing and debridement of the wound is imperative, and use of antibiotics may be considered. For individuals planning to travel to developing countries, it may be prudent to offer an early tetanus booster, prior to travel if more than 5 years have elapsed since the last dose.

ADMINISTRATION

Inspect for extraneous particulate matter and/or discoloration before use. If these conditions exist, the product should not be administered. For information on vaccine administration see the current edition of the Canadian Immunization Guide or visit Health Canada website. SHAKE THE VIAL WELL to distribute uniformly the suspension before withdrawing each dose. When administering a dose from a stoppered vial, do not remove either the stopper or the metal seal holding it in place. Aseptic technique must be used for withdrawal of each dose. (See PRECAUTIONS.) Before injection, the skin over the site to be injected should be cleansed with a suitable germicide. Administer the vaccine **intramuscularly.** The preferred site is into the deltoid muscle. After insertion of the needle, aspirate to ensure that the needle has not entered a blood vessel. **DO NOT INJECT INTRAVENOUSLY.** Needles should not be recapped and should be disposed of properly. Give the patient a permanent personal immunization record. In addition, it is essential that the physician or nurse record the immunization history in the permanent medical record of each patient. This permanent office record should contain the name of the vaccine, date given, dose, manufacturer and lot number.

STABILITY AND STORAGE

Store at 2° to 8°C (35° to 46°F). DO NOT FREEZE. Discard product if exposed to freezing.
Do not use after expiration date.

AVAILABILITY OF DOSAGE FORMS

Vial 1 x 0.5 mL (Single Dose)
Vial 5 x 0.5 mL (Single Dose)

REFERENCES: 1. Data on file at Aventis Pasteur Limited. **2.** American Academy of Pediatrics. In: Pickering LK, ed. 2003 Red Book: Report of the Committee on Infectious Diseases, 25th ed. Elk Grove Village, IL: American Academy of Pediatrics: 2003:26-27,230-234,439-448,563-565. **3.** National Advisory Committee on Immunization. Canadian Immunization Guide, Sixth Edition. Her Majesty the Queen in Right of Canada, represented by the Minister of Public Works and Government Services Canada, 2002. **4.** National Advisory Committee on Immunization (NAC): Statement on Pertussis Vaccine. CCDR 1997;23:1-12. **5.** Halperin SA, et al. An adult formulation of a five-component acellular pertussis vaccine combined with diphtheria and tetanus toxoids is safe and immunogenic in adolescents and adults. Vaccine 2000;18:1312-1319. **6.** Ehsan AH, et al. Reaction to tetanus toxoid: report of a case with immunologic studies. N Engl J Med 1963;269:1408-1411. **7.** White WG, et al. Reactions to tetanus toxoid. J Hyg (Camb.) 1973;71:283-297. **8.** Edsall G, et al. Excessive use of tetanus toxoid boosters. JAMA 1967;202:17-19. **9.** Reactions to tetanus toxoid. Br Med J 1974;1:49 (In Editorial). **10.** Blumstein GI, Hirschhorn R. Peripheral neuropathy following tetanus toxoid administration. JAMA 1966;198:156-157. **11.** Tsairis P, et al. Natural history of brachial plexus neuropathy: report on 99 patients. Arch Neurol 1972;27:109-117. **12.** Strattner KR, et al, eds. Adverse events associated with childhood vaccines: evidence bearing on causality. Washington: National Academy Press, 1994:67-117. **13.** CDC Update: Vaccine side effects, adverse reactions, contraindications, and precautions – recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 1996;45(RR-12):1-35. **14.** Rutledge SL, et al. Neurological complications of immunizations. J Pediatr 1998;109:917-924. **15.** Wilson GS. Allergic manifestations. Post-vaccinal neuritis. In: Hazards of Immunization based on University of London Heath Clark Lectures 1966. London, Athlone Press 1967:153-156. **16.** Cody CL, et al. Nature and rates of adverse reactions associated with DTP and DT immunizations in infants and children. Pediatr 1981;68:650-660. **17.** Schlievska GK. Unusual neurological complications following tetanus toxoid administration. J Neurol 1977;215:299-302. **18.** Recommendation of the Immunization Practices Advisory Committee (ACIP). Diphtheria, tetanus and pertussis: guidelines for vaccine prophylaxis and other preventive measures. MMWR 1991;40(RR-10):1-28.

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Vaccine Information Service: 1-888-621-1146 or 416-667-2779.

Full Product Monograph available on request.

Product information as of September 2002.

Manufactured by:

Sanofi Pasteur Limited
Connaught Campus
1755 Steeles Avenue West
Toronto, Ontario, Canada M2R 3T4

ADA 009 ENGS 031

Ecolab Poster Contest

An Annual Poster Contest is sponsored by Ecolab and supported by a Chapter of CHICA–Canada to give ICPs an opportunity to put their creative talents to work in developing a poster which visualizes the Infection Control Week Theme.

The winner of the Annual Poster Contest is announced at the annual CHICA-Canada Conference. Winners receive full registration at the next CHICA–Canada conference.

You are invited to design a poster that will be used for **Infection Control Week 2006** using the following theme:

"Infection Prevention: Planning for tomorrow"

- Your entry should be informative, eye-catching and applicable to both healthcare and community settings.
- Your entry will be judged on overall content.
- Artistic talent is helpful but not necessary.
- The winning entry will be submitted to a graphic designer for final production.
- Your entry will become the property of CHICA–Canada.

Deadline Date: January 27, 2006

Send submissions to: Director of Programs and Projects, c/o CHICA–Canada PO Box 46125 RPO Westdale, Winnipeg MB R3R 3S3. Courier address: 67 Bergman Cresent, Winnipeg MB R3R 1Y9
Fax: 204-895-9595 E-mail: *chicacanada@mts.net*.
Include your name, address and phone number on the back of your entry.

GRAND PRIZE:

Full registration at the 2006 CHICA–Canada National Education Conference in London, Ontario. No limit to number of entries, so enter often!

HOST CHAPTER 2006:

Toronto Professionals in Infection Control (TPIC)

SPONSOR:

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3M Canada Infection Prevention Research Grant

As part of an ongoing initiative to promote innovative infection control and prevention practices in Canadian healthcare, 3M Canada has created a research grant through its Infection Prevention Platform. The research grant is targeted to individual members of the Community and Hospital Infection Control Association – Canada (CHICA–Canada) for use in research studies. The research grant will be a one-time payment offered on an annual basis.

One research grant of $6,000 to the Principal Investigator of the successful application will be presented at the 2006 CHICA–Canada National Education Conference (London, Ontario - May, 2006) (travel, accommodations and meals will be provided by 3M Canada Company for the successful recipient).

Applications are available at www.chica.org or by contacting CHICA-Canada.
Deadline date for applications: March 1, 2006. Applications must be sent to:

Secretary/Membership Director
CHICA-Canada
PO Box 46125 RPO Westdale
Winnipeg MB R3R 3S3

Or courier to:
Secretary/Membership Director
CHICA-Canada
67 Bergman Crescent
Winnipeg MB R3R 1Y9

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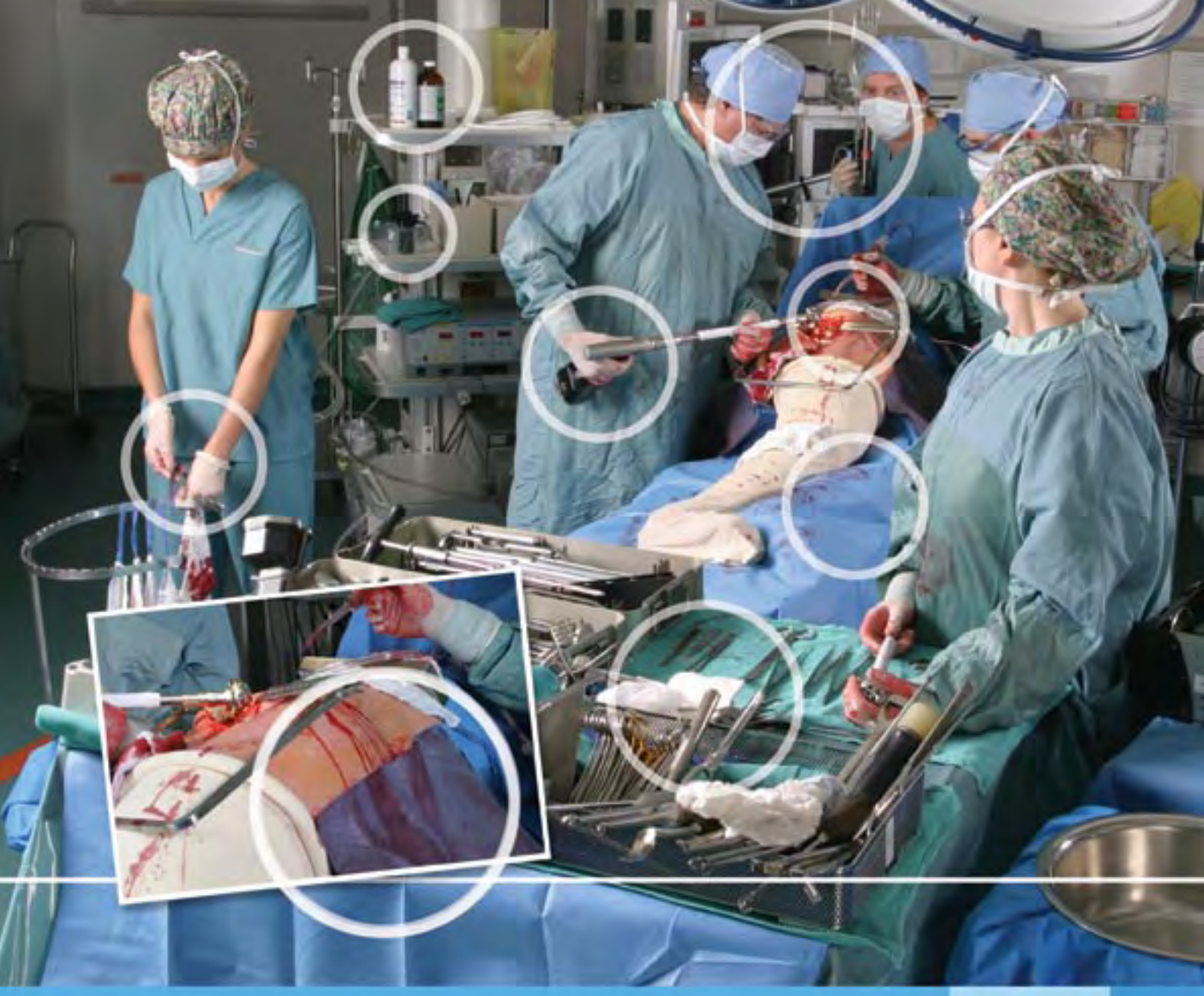

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3M

Southern Ontario (SOPIC)

Our June meeting topic was *C. difficile*: running across the healthcare continuum using educational material from the Paul Webber teleconferences. In the afternoon, we shared highlights of the CHICA conference for both the long term care and acute care groups.

The September 16 meeting was our annual fun day: Network and Learn with enjoyment. The topic was 'Eradicating Hand, Foot and Mouth Disease': communication and conflict management presented by Stephanie Card BA, MA in Leadership. At lunch we had a special ceremony to present the 2nd SOPIC Betty Bannerman Award of Excellence.

On November 18, SOPIC hosted a Long Term Care Conference; Germ Warfare 24/7 Infection Control in Action. The speakers were Mark Loeb MD medical microbiologist and researcher on long term care, Mc Master University, Jim Gauthier, Providence Manor Continuing Care, Kingston, Nadeen Bailey Waterloo Region Public Health Unit and Harriet Potters Parkwood, London.

Nora Boyd, SOPIC president

Eastern Ontario (EOPIC)

The past months have been busy for EOPIC. First and foremost we've had a name change. We are now officially known as CHICA-EO.

We would like to congratulate Shirley McDonald on her retirement from Kingston General Hospital. As CHICA webmaster and CHICA-EO secretary for 2006 we are sure you'll stay busy. CHICA-EO would also like to extend our best wishes to Linda McCarey, a long-time member of our group, who is moving on in her career in public health. She will also be moving to our neighboring CHICA chapter to the west. Good luck Linda.

A number of our members have also been involved in the first edition of the Queen's Basic Infection Control Online Course. Dr. Dick Zoutman and Jim Gauthier collaborated on the course's development and Dick, Jim, Janet Allen and Laurie Doxtator also instructed modules throughout the course. Taking on student roles were Christine Weir, Christine Wilkinson, Dorianne Chesterton and Dana Anderson, who have all successfully completed the course. Congratulations to all involved for their hard work and dedication. Good luck to those registered to begin the next offering of this course in January, 2006.

CHICA-EO will celebrate the 20th Anniversary of our chapter in 2006. As chapter status was presented at the CHICA-Canada National Conference in London, Ontario in 1986, CHICA-EO is encouraging as many members as possible to attend next year's conference to mark our anniversary.

British Columbia (BCPIC)

BCPIC education sessions for 2005 have covered a variety of topics. Epidemiologist Gayle Shimokura spoke on Hepatitis C in a hemodialysis unit. Dr. Bonnie Henry addressed the interface between local public health and facility infection control. Dr. Henry was with the public health department in Toronto during the SARS outbreak, and is now with the BC Centre for Disease Control. Dr. Liz Bryce covered bacteremia surveillance. In early June, BCPIC executive and other members traveled to Merritt, BC for a meeting with members from the Interior Health Authority. Interior health has created 10 new positions in infection control, so there were lots of new members there. Speaker Peter Riben spoke about infection control in evolution: events and forces having on impact on infection control.

BCPIC members voted to change the chapter name to CHICA - BC.

The BC government is organizing a provincial infection control network. A coordinator has been hired, and a stakeholders summit meeting was held in September. A second summit will be held in December. Their website is http://www.picnetbc.ca/

2006 NATIONAL EDUCATION CONFERENCE
"BRIDGING GLOBAL PARTNERSHIPS"
London, Ontario – May 6-10, 2006

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Email: *chicacanada@mts.net*
http://www.chica.org

Keynote Speaker:
Stephen Lewis
Former Canadian Ambassador to the U.N., and Special Envoy for HIV/AIDS in Africa.

IMPORTANT DATES TO REMEMBER

January 27, 2006	Deadline for submission of Abstracts Deadline for Poster Contest
January 31, 2006	Deadline for application to Virox Partnership Scholarship
March 1, 2006	Deadline for 3M Research Grant
April 3, 2006	Deadline for reservations at Delta Winnipeg
April 17, 2006	Early Bird Registration Deadline
May 10, 2006	CHICA-Canada AGM and Town Hall

Watch for the Registration brochure in January 2006

And watch the CHICA-Canada website for conference updates– www.chica.org

Registration Fees (Plus GST – 118833201RT0001)

To April 17	Member	Non-Member
Novice ICP Day	$50.00	$75.00
PreConference – Half Day	$75.00	$100.00
PreConference – Full Day	$100.00	$150.00
Conference, not including PreConference Day or novice	$350.00	$450.00
Daily, not including PreConference Day, each day	$150.00	$200.00
Student, Daily, each day*	$75.00	$75.00
Silver[1], Daily, each day	$75.00	$75.00
After April 17		
Novice ICP Day	$50.00	$75.00
PreConference – Half Day	$100.00	$150.00
PreConference – Full Day	$200.00	$300.00
Conference, not including PreConference Day or novice	$450.00	$600.00
Daily, not including PreConference Day, each day	$200.00	$300.00
Student, Daily, each day*	$75.00	$75.00
Silver[1], Daily, each day	$75.00	$75.00

*Registration must be accompanied by a letter of attestation by the teaching institution that the applicant is a full time student in a field related to infection control.
[1] Retired and not seeking employment in infection control.

Fees include Continental Breakfast (Sunday, Monday, Tuesday, Wednesday), Lunch (Sunday, Monday and Tuesday)
President's Reception, Sunday, May 7, included in registration. Non-registered guests: $25.00 per person, plus GST.
Gala Anniversary Celebration, Tuesday, May 9. Not included in registration. $75.00 per person, plus GST

Cancellation Policy

Cancellation request must be submitted in writing. Those received by March 17, 2006 – 70% refund; those received by April 7, 2006 – 50% refund; those received after April 7, 2006 cannot be refunded. Registrations may be transferred **at any time without penalty.**

Conference Hotel

Hilton London
300 King Street
London ON N6B 1S2
Website: *http://www.londonontario.hilton.com*

Telephone: 1-800-210-9336
or 1-519-439-1661
or – 1-800-HILTONS (445-8667)

Room Rate: $149.00 single/double
(plus 12% taxes)
Deadline for reservations: April 3, 2006

EXHIBIT AND SPONSORSHIP OPPORTUNITIES

An Industry Showcase will be held to give attendees the opportunity for further knowledge and education through viewing and discussion of products and services in the field of infection prevention and control. Exhibit Information is available at www.chica.org or by contacting CHICA-Canada. Booth Rentals are $1,500 each (8'x10' booth) plus GST.

Guidelines for Sponsorship of the conference are available from CHICA-Canada. Sponsors of the conference benefit from additional promotion of their company as well as direct benefits through discounted booth fees, complimentary registration, and the opportunity to hold a Mini Symposium with specific product information. For more information, see www.chica.org or contact CHICA-Canada.

CALL FOR ABSTRACTS

Deadline for submission: January 27, 2006

Abstracts for presentation at the 2006 National Education Conference of the Community and Hospital Infection Control Association Canada will be accepted until the close of business January 27, 2006. The Abstract Committee reserves the right to select papers for presentation on the basis of relevance and interest, and to choose the types of presentation.

Abstract Preparation and Guidelines for Acceptance

A. Content

1. Abstracts should be based on results that have not or will not be published or presented before the meeting date.
2. The potential significance of the observations, as well as the scientific and/or educational quality of the work will influence which abstracts are accepted. Where possible, the author(s) should emphasize the features of the project that are new or different.
3. All concepts and abbreviations must be defined at first use in the body of the abstract.
4. Any corporate assistance must be acknowledged.
5. Any sources of funding must be acknowledged.

B. Format

Abstracts should be submitted in one of the following formats:

Format 1: This format is intended for abstracts involving the presentation of scientific research findings, such as those involving randomized clinical trials, case-control, observational or descriptive studies, or outbreak investigations where appropriate comparisons or analysis of data has been performed.
NOTE: The abstract should disclose primary findings and not include statements such as "experiment in progress" or "results will be discussed."

Abstract Title: (CAPITAL LETTERS)
Authors: The presenter must be denoted with an asterisk, e.g.: Rivers, T*, General Hospital, London, Ontario
Background/Objectives: Outline study objectives, the hypothesis to be tested, or description of the problem.
Methods: Report methods used or approach taken.
Results: Indicate essential results obtained in summary form with appropriate statistical analysis (p value, confidence intervals, odds ratio, etc.)
Conclusions: Provide a summary of findings as supported by results with implications and conclusions.

Format 2: The format is intended for abstracts involving the description of educational or performance improvement programs, observations, or other infection prevention activities, including descriptions of facility or community-based programs or interventions, discussions or infection prevention policy, and descriptions of a particular prevention model or method.

Abstract Title: (CAPITAL LETTERS)
Authors: (The presenter must be denoted with an asterisk, e.g. Sauvignon, C*, Shakespeare, W, General Hospital, London, Ontario
Issue: Identify the specific problems or needs addressed.
Provide brief introduction of the proposed topic. Include important background and current information on issues.
Project: Description of the intervention/program
Results: Specific results in summary form.
Lessons Learned: Summary of the lessons learned and implications.

C. Major Interest (select one)

- ❑ Clinical Infectious Diseases
- ❑ Infection Prevention and Control

D. Subject Categories (select only one)

The author(s) should select the one subject category that best categorizes the submissions. This will assist conference planners in organizing the program. If the presenting author prefers a poster presentation, that preference must be indicated at the time of submission.

- ❑ Antimicrobial Resistance
- ❑ Ambulatory Care
- ❑ Antisepsis/Disinfection/Sterilization
- ❑ Cost Effectiveness
- ❑ Device Related Infections
- ❑ Emerging Pathogens
- ❑ HIV/AIDS/Hepatitis
- ❑ Home Care
- ❑ Infection Control Programs
- ❑ Infections in the Immunocompromised host
- ❑ Long-term care
- ❑ Molecular Epidemiology
- ❑ Occupational Health
- ❑ Outbreak Investigation
- ❑ Pediatrics
- ❑ Product Evaluation
- ❑ Quality/Process Improvement/Adverse Events
- ❑ Surveillance
- ❑ Site Specific Infections (SSI, Pneumonia, UTI, Bloodstream)
- ❑ Tuberculosis
- ❑ Other

E. Preferred method of Presentation if abstract selected (select one only)

- ❑ Poster
- ❑ Oral presentation
- ❑ No preference

F. Guidelines for Abstract Selection

Abstracts not meeting the stipulations outlined under both A(Content) and B (Format) above will not be considered for acceptance.

Submission of Abstracts

1. **New** abstracts must be submitted online. See www.chica.org to link to abstracts submissions page.

2. Abstracts must be submitted online by January 27, 2006

3. Abstracts will be reproduced and submitted for inclusion in the pre-conference issue of the Canadian Journal of Infection Control. Presenters must be registered at the conference.

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Antimicrobial Hand Wipes

- Effective against gram positive and gram negative bacteria (including MRSA and VRE) and fungi.
- Contains 0.5% PCMX for persistent kill.
- Wipe away debris and soil.
- Emollient enriched formula helps retain moisture on the skin.

SANI-DEX® – Essuie-mains antimicrobiens

- *Efficace contre les bactéries Gram positif et Gram négatif (y compris le SARM et l'ERV) et contre les champignons.*
- *Contient 0,5 % de chloroxylène pour une action désinfectante persistante.*
- *Enlève les débris et la saleté.*
- *La formule émolliente aide à garder la peau hydratée.*

Convenience, Compliance, Control

Commodité, Conformité, Contrôle

Call 1-800-263-7067 for more information on the Sani-System® Program, or visit us at www.pdipdi.com

Composez le 1 800 263-7067 pour de plus amples renseignements au sujet du programme Sani-SystemMD, ou consultez notre site Web www.pdipdi.com

PDI receives license on CHG swabs

The introduction of Chloroscrub, a new Chlorohexidine Gluconate-based (CHG) product, heralds the expansion of Professional Disposables Internationals (PDI) presence in the pharmaceutical market. PDI's new Chloroscrub features 3.15% Chlorohexidine Gluconate and 70% isopropyl alchohol. PDI, a leading industry supplier of pre-moistened wipes will be the first company to offer CHG in swab and swabstick delivery systems.

Chloroscrub may be used for a variety of antiseptic skin preparation needs such as peripheral IVs, blood cultures and minor surgical procedures. The products became available in October. The CHG Swab is available in 100 per box; the CHG Swabstick is available in 50 per box and the CHG Maxi Swabstick is available in 30 maxi-swabsticks per box.

For more information call 888-437-6704 or e-mail chlorascrubchg@pdipdi.com

Circuit Clean introduces washable keyboards

A nationwide study in the US conducted by the University of Arizona measuring normal bacterial levels inside offices revealed that computer keyboards are among the top five most germ-contaminated spots tested. According to Circuit Clean, a leading Canadian marketer of washable data input and security devices, keyboards are hard to clean and a wipe of a rag dampened with disinfectant is not enough. Aggressive cleaning will often damage the keyboard. Too much disinfectant runs the risk of short-circuiting the keyboard.

The solution, according to Circuit Clean, is the SpillSeal computer keyboard. This keyboard can be totally submerged in a bath of hospital grade cleansers. The keyboard is liquid proof, allowing bacteria to be destroyed. Innovative technology seals and protects each key from liquid or air-borne penetration, which can reduce the spread of infection. According to a study conducted at Northwestern Memorial Hospital in Chicago, keyboards contaminated the fingers of doctors and nurses both bare and gloved, which increased the danger of transferring bacteria to patients. The study also documented that touching the keyboard just once was enough to transfer bacteria.

SpillSeal can also be cleaned daily. For more information on SpillSeal contact Circuit Clean at 905-318-7930 or visit www.circuitclean.com

Wood Wyant's new Ultra Wipes launched

Wood Wyant and Sani-Marc recently launched the product Ultra Wipes, ready-to-use, no rinse, disinfecting and cleaning wipes. With no mixing or chemicals, no measuring and no dipping, the wipes provide a healthy and safe product to kill a broad spectrum of germs. The company claims Ultra Wipes can eliminate 99.9% of bacteria in 60 seconds. The wipes can be pulled from a dispenser, used and tossed. The neutral ph of the wipes will not cause long term damage on surfaces compared to alcohol or hydrogen peroxide based products. The presaturated formula promotes long enough contact time for maximum disinfection at each application.

The dispenser can be placed in workstations, patient/resident rooms or in any area where cross contamination is a concern.

For more information call Wood Wyant at 800-361-7691, Sani-Marc at 877-726-4627 or visit www.woodwyant.com

AD INDEX

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