LA PRÉVENTION DES INFECTIONS

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RÉSUMÉ

Cet article est basé sur un discours présenté par les auteures au 42e congrès de la *Association for Perioperative Practice* (AfPP) en octobre 2006 au Royaume-Uni. Le thème du congrès était les Zones d'influence et la *International Federation of Perioperative Nurses* (IFPN) a animé une journée dont le thème était la sécurité.

L'article présente un bref résumé de l'influence des pratiques de prévention des infections sur la pratique périopératoire ainsi que sur les résultats chirurgicaux. Il offre également un résumé des principes de l'asepsie et des pratiques reconnues en prévention des infections.

De nos jours, la sécurité des patients est suivie de plus près que jamais – non seulement par les hôpitaux mais aussi par les consommateurs, le gouvernement, les patients et ceux qui appuient la réforme des soins de santé. L'Institut canadien d'information sur la santé (ICIS) démontre qu'un Canadien sur neuf contracte une infection hospitalière et qu'un canadien sur neuf reçoit un mauvais dosage ou une mauvaise médication. Le taux de mortalité des patients suivant une réaction indésirable est plus élevé que le taux de mortalité combiné de Canadiens morts d'accidents de voiture, du cancer du sein et du VIH[7]. Tout practicien périopératoire doit utiliser toutes les ressources disponibles pour assurer la sécurité de tout individu impliqué dans une intervention chirurgicale.

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INFECTION CONTROL CIRCLE OF SAFETY

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ABSTRACT

This article is based on a presentation given by the authors at the 42nd Congress of the Association for Perioperative Practice (AfPP), October 2006, in the United Kingdom. The conference theme was *Circles of Influence* and the Congress also hosted an International Federation of Perioperative Nurses (IFPN) Study Day featuring a safety theme.

This article contains a brief review of the influence of infection control practices on perioperative practice and surgical outcome. It reviews the Principles of Asepsis and accepted infection control practices.

Patient safety is more closely monitored today than ever before – not only by hospitals but also by consumers, health care reformers, governments and patients. The Canadian Institute for Health Information, (CIHI) shows one in nine Canadian adults acquire a hospital infection and that one in nine receives an incorrect medication or medication dosage. Our rates of patient deaths following an adverse event are higher than the combined death rates for Canadians involved in motor vehicle accidents, suffering from breast cancer, and HIV Positive.[7] Each perioperative practitioner must use all available resources to assist in the safety of everyone involved in surgical interventions.

Patient safety is a challenge. Infection Control is a challenge. The increased awareness surrounding patient safety issues in turn means more attention is being paid to all aspects of patient care. The spotlight is illuminating practices contributing to adverse events. Adverse events (AE) are defined as an unintended injury or complication that results in disability, death or prolonged hospital stay and that is caused by health care management rather than by a patient's underlying disease process.8 Nosocomial or hospital acquired infections are considered one of the most common complication of hospitalized patients.[11] Surgical Site Infections, (SSI) are considered an AE under the heading of hospital acquired infections or nosocomial infection.[8,11] Surgical site infections should be considered a mortal enemy of perioperative practice and should also be considered a patient safety issue.

Every OR nurse can probably remember a time when she/he committed, or witnessed, a break in proper technique. While we hope it is not something that happens on a daily basis, it can be helpful to go back to basics and review the best practices and the reasons behind their development.

A 2002 submission to The Future of Health Care in Canada Commission included this quote from Donald M. Berwick, MD "We envision a system of care in which those who give care can boast about their work, and those who receive care can feel total trust and confidence in the care they are receiving."[13]

Surgical suites are dynamic environments that operate behind closed doors and are constantly undergoing change. The challenge for all perioperative practitioners is to be active in creating safe environments and to make use of all tools available to our practice. The end result will be the creation of an Infection Control *Circle of Safety* for all patients and perioperative team members. Available tools include:

- Surgical asepsis;
- Standard infection control practices;
- Sterile Technique;
- Infection Prevention Strategies;
- Professional standards and best practices;
- Hospital guidelines, policies, procedures, and protocols; and
- An awareness and understanding of current research.

In order to ensure the Circle of Safety is not broken, it is important for all perioperative nurses to ask themselves, on a daily basis "do I follow these safe practices? Am I making use of all the tools available to me". Hospitals are, inadvertently, a source of harm. While it is not possible to entirely eliminate infection, and microorganisms, the perioperative team has an obligation to "do no harm" by making use of all tools and adhering to best practices and policies.

Surgical asepsis

Time, and the advancement of science, has not changed the basic principles of asepsis. Neither have they removed the need for adherence to basic infection prevention practices.

Our infection prevention foundation remains hand washing or hand cleansing. It is simple, cost effective, quickly and easily achieved, and, most importantly, it is proven to be successful! As far back as the 19th century perioperative practice included initiatives to prevent infection and ultimately death. Florence Nightingale led the way in nursing practice by instituting changes to infection control practices.[1] Dr. Semmelweis (1818-1865), a Hungarian physician, noted that the rate of infection, and death, decreased if he simply washed his hands after performing autopsies and prior to delivering babies or conducting patient examinations.[2]

Hand washing or hand cleansing is the basis on which today's practices of infection control, and the Principles of Asepsis, have been built. When these practices and principles are adhered to **without fail** there is a decrease in infection rates.

NOW A BRIEF RE-CAP OF PRINCIPLES OF ASEPSIS:

1. All items within a sterile field must be sterile;

2. The edges of a container, bundle or wrapper are not considered sterile once open;

3. Gowns of scrub personnel are only sterile in front and on the sleeves to table level;

4. The sterile table is sterile only at table level.;

5. Sterile persons and items should only touch sterile persons or items;

6. Movement of people and items in and around the sterile field should be done in a manner that avoids contamination of the sterile field;

7. When a barrier is permeated or broken the area is considered contaminated. Recognize the break and rectify it; and

8. Last, and by far not the least, is the fact that any item of questionable sterility should **not** be used. "If in doubt, throw it out".[2]

OTHER INFECTION CONTROL PRACTICES:
Patients may acquire new diseases, ones with which they did not arrive in hospital. In addition, patients may acquire a nosocomial infection, including Surgical Site Infections (SSI). In Canada this adverse event has an incident rate of 7.5%.[8] The perioperative team needs to be committed to the prevention of this all too common post-operative complication.

In our quest to follow and re-affirm infection prevention strategies in today's more complicated health care environment it is important to review accepted infection control practices:
1. Do No Harm;
2. Remove Contaminants or Organisms;
3. Destroy Harmful Organisms;
4. Shield and Separate; and
5. Proper Disposal of Contaminants[3]

CHANGING OR ENVIRONMENTS:
Many surgical suites have de-canted procedures to other areas of the hospital, or to facilities such as ambulatory clinics, endoscopy units, angiography suites, nuclear medicine departments, catheterization labs, free standing clinics, or mobile clinic. It is important to remember surgeries performed outside the primary operating theatres must also employ all infection prevention strategies.

Many Minimally invasive surgeries (MIS) are being performed, on a day surgery basis, with increasing frequency and for a wider variety of procedures. To some the threat may seem less imminent with these types of simpler, shorter procedures. The microorganisms, however, do not care – any incision, no matter how small, presents an opportunity for infection.

Many facilities are discharging patients earlier than in the past and making use of other areas of the hospital or other services, such as home care or ambulatory settings, for follow-up work such as suture removal, dressing changes, or drain removal. As a result, the perioperative team may see fewer, and hear less about, post-operative complications, infections and outcomes. In facilities that service a physically large geographic area (as is the case in many areas of Canada) many patients will find it more convenient to seek post-operative assistance with their family physician, or at a clinic near their home, rather than traveling to the hospital where the surgery was performed. As a result, the perception may be that rates of infection have decreased but in fact, we may simply be unable to track them. The fact that infection rates may be less obvious can cause some to wonder if the need for the Principles of Asepsis, and other infection prevention strategies, are diminished.

Is there a need to follow all the Principles of Asepsis in every instance? Perhaps we could reduce changeover time by only cleaning floors that are visibly dirty, or by only wiping the OR bed and not the tables? Remember, your patient could suffer the consequences.

When we cross the first line of defense, the skin, we afford microorganisms with a port of entry. Adherence to best practices regarding infection prevention would help fulfill the obligation of healthcare professionals and provide the safest possible environment with the optimal patient outcomes.

CHALLENGING INFECTION CONTROL PRACTICES:
While certain infection control practices have been proven to be effective, that does not mean there is not room to challenge existing practices and determine more effective methods. Practices should be based on effectiveness, and research, not habit. The use of lab coats, for example, used to be considered necessary when leaving a surgical suite. This practice has been challenged and research has shown that it does not necessarily prevent surgical site infections. We do know, however, that leaving an unwashed lab coat hanging in a locker or on a hanger may cause cross contamination to scrub attire or to personal attire.[5]

By contrast, shoe covers have been proven to prevent infection. If used properly, and changed frequently, on footwear that is in clean and in good repair these covers can be effective.[6]

The Principles of Asepsis have stood the test of time. Research shows that hand washing compliance and cleansing practices help reduce the spread of antibiotic resistant organisms (ARO) such as MRSA.[3]

The ritualistic type behaviour that helped create an awareness of sterile and unsterile environments also helps maintain aseptic behaviour. Learning, practicing and teaching behaviours such as closing the theatre doors, never putting a hand or arm over a sterile field, and separating sterile and unsterile equipment, help to enforce sterile technique.

In today's fast paced perioperative setting it may be a challenge to not alter your circle of safety regarding infection control practices. The perioperative environment is also under the pressure of limited resources, limited time, and the urge to do things more quickly. It is important to remember that maintaining high standards, and consistent behaviour, sets boundaries and limits for the entire perioperative team. There is less pressure to take short cuts **if no one is doing it**. It also helps new team members define and reinforce their recently learned behaviours.

INFECTION CONTROL RESEARCH AND INFORMATION:
Research shows that we are not able to discard these practices. More information is now available about emerging diseases and adverse events, (surgical errors, and post-operative complications) than ever before. New technology allows for the tracking of numbers, and types, of infections, treatment cures, and results and to show us room for more improvement.

The push is on at a local, national, and global level for everyone to improve surgical outcomes. Recommendations have been laid out by Health Canada, the Canadian Patient Safety Institute (CPSI), Community and Hospital Infection Control Association (CHICA), the Canadian Council on Health Services Accreditation (CCHSA), the Institute for Safer Medication Practices (ISMP) Canada, and many others. Health care facilities and organizations also consult agencies such as the World Health Organization (WHO), the US Centers for Disease Control & Prevention (CDC), and the United Kingdom's National Health Service (NHS). Technology has allowed for an almost instant global sharing of resources regarding diseases, practices, and success rates.

There has been a profound impact on the Canadian government, health care providers, and the public since the publication of the Canadian Adverse Events Study by Baker et al released in 2004.[8] Table 1 outlines some study results relating to A/Es/SSIs. The study forced everyone involved in healthcare to face the facts and to begin to work to improve upon the statistics.

Today's public is full of well informed health care consumers. They are demanding better health care and a better performance from healthcare providers. The Canadian Institute for Health Information, (CIHI) shows one in nine Canadian adults acquire a hospital infection and that one in nine receives an incorrect medication or medication dosage. Canada's rate of patient deaths following an adverse event is higher than the combined death rates of Canadians involved in motor vehicle accidents, suffering from breast cancer, and who were HIV Positive. The study reported that hospitalization came with a higher risk of death than driving a car, working as a coal miner, doing construction work, being a truck driver, or working on an off-shore rig![7]

The Canadian Adverse Event Study used data retrieved from charts retro speculatively from the year 2000.[8] The data showed the rate of incidence of adverse events, including nosocomial infections and SSIs, in Canadian hospitals as 7.5%. In actual numbers that is approximately 70,000 preventable adverse events experienced by patients in 2000. The study also determined that in the year 2000 there were between 9,000 and 24,000 deaths, in Canada that might have been attributable to preventable adverse event deaths. Scary and significant numbers to mull over – and a sign that there is definitely room for improvement.

In 2002 the Canadian government invested fifty million dollars in the creation of the Canadian Patient Safety Institute (CPSI). The CPSI has identified the need for six targeted interventions, in 2005/2006, in its *Safer Healthcare Now!* initiative. Among the six is a strategy to reduce Surgical Site Infections (SSI) as outlined at www.saferhealthcarenow.ca.[7] Canadian healthcare organizations are taking up the call – the Fall 2006 *Safer Healthcare Now!* Newsletter (Volume 2, issue 3) lists approximately 470 teams with 160 healthcare organizations enrolled in the CPSI initiative.[7] As a result of this level of activity, the initiative will continue through 2007.

Infection Control and Patient Safety are two terms that are more closely linked, and being more carefully scrutinized, than ever before. Healthcare consumers are better informed about, and interested in, more aspects of healthcare and healthcare professionals are being held accountable for their actions. Our processes and outcomes are under scrutiny by the media, healthcare facilities, patients, and regulatory bodies. In the 2003 SARS outbreak the disease spread quickly and severely. Much post-SARS criticism was leveled at insufficient hospital infection control practices. As a result, a class action suit was filed on behalf of patients who contracted SARS whilst in hospital.[10]

The release of the Canadian Adverse Events Study[8], coupled with happenings during the SARS outbreak, has created public angst about our healthcare system and hospital safety. The healthcare system and healthcare professionals have an obligation to work diligently to improve our practices and patient care, reduce infection rates, increase safety and patient care, and thereby alleviate public fears and concerns.

WORKING FOR CHANGE:

Many perioperative nurses wonder what they can do. In addition to system or facility wide programs, and adhering to recommended practices, it is important for individuals to stay aware about the issue of infection control. Some ways to make a difference include:

- Reading about, or presenting on, research findings or new initiatives;
- Conducting a study in your operating room;
- Reviewing the Principles of Asepsis on a regular basis and encouraging your facility to implement regular reviews of these principles;
- Keeping current by whatever method is most practical for you – reading journals, viewing information on the internet, attending seminars at provincial or national conferences, participating in sessions at your workplace, inquiring about new programs, etc.; and
- Practicing good habits and setting an example – are you constantly closing doors or monitoring sterile technique?

Reduction of SSIs is an issue faced around the world. The 2004 Adverse Events Study provides some comparisons of what some countries are up against (based on their own studies) as far as occurrence rates of A/E's including SSIs:

Table 1 –
Adverse Event (A/E) Occurrence Rates[6]

COUNTRY	RATE*
Canada	7.5%
New Zealand	12.9%
Australia	16.6% recalculated to 10.6%
United Kingdom	10.8% & 10.9% (2 studies)
United States	3.7% recalculated to 3.2% & 2.9% (2 studies)

**Not all studies used the same criteria and each was done independently of the others.*

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INFECTION CONTROL (cont.)

The battle for infection control is not being fought alone. It has the support of perioperative professionals across Canada and internationally. Among other programs, the following have been launched in recent years:

- The United Kingdom Department of Health launched a program, in 2005, titled *Saving Lives: A delivery program to reduce healthcare associated infections*;
- Australia established the Council for Safe and Quality in Health Care in 2002;
- The United States is currently running its *100,000 Lives Campaign* through the Institute for Healthcare Improvement and Canada's *Safer Healthcare Now*! campaign was modeled after theirs; and
- The World Health Organization (WHO) launched a World Alliance for Patient Safety in October 2004. Its goal is *Primum non nocere* (First do no harm). A focal point of its campaign is the worldwide reduction of surgical site infections.

The campaign to increase infection control, and eliminate SSIs, is truly a global push.

CONCLUSION:

The study of research relating to instances of, and the reduction of, A/E's (including SSIs) shows the following:

1. The location and type of surgery is irrelevant – microorganisms do not discriminate so all surgeries must be performed using all the infection prevention strategies available;
2. All perioperative professionals must adhere to accepted infection control practices and the Principles of Asepsis;
3. Infection control practices and sterile technique must be considered our usual and normal theatre behaviour whenever and wherever;
4. We must acknowledge the threats posed to patients in the operating room;
5. By working together healthcare professionals at all levels can help make the OR a safer place;
6. One of the greatest risks our patients face in hospital is the possibility of an infection; and
7. We increase our likelihood of success if we share our information.

This 1863 quote from Florence Nightingale appeared in a book on safety purchased at the 2006 European Operating Room Nurses Association (EORNA) Congress:

"It seems a strange principle to enunciate, as the very first requirement, in a hospital that it should ***Do the Sick No Harm****."*[12]

This quote holds as true today as it did when first spoken nearly 150 years ago. OR nurses, along with others in the healthcare industry, have an obligation to ensure the highest possible safety levels for our patients.

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