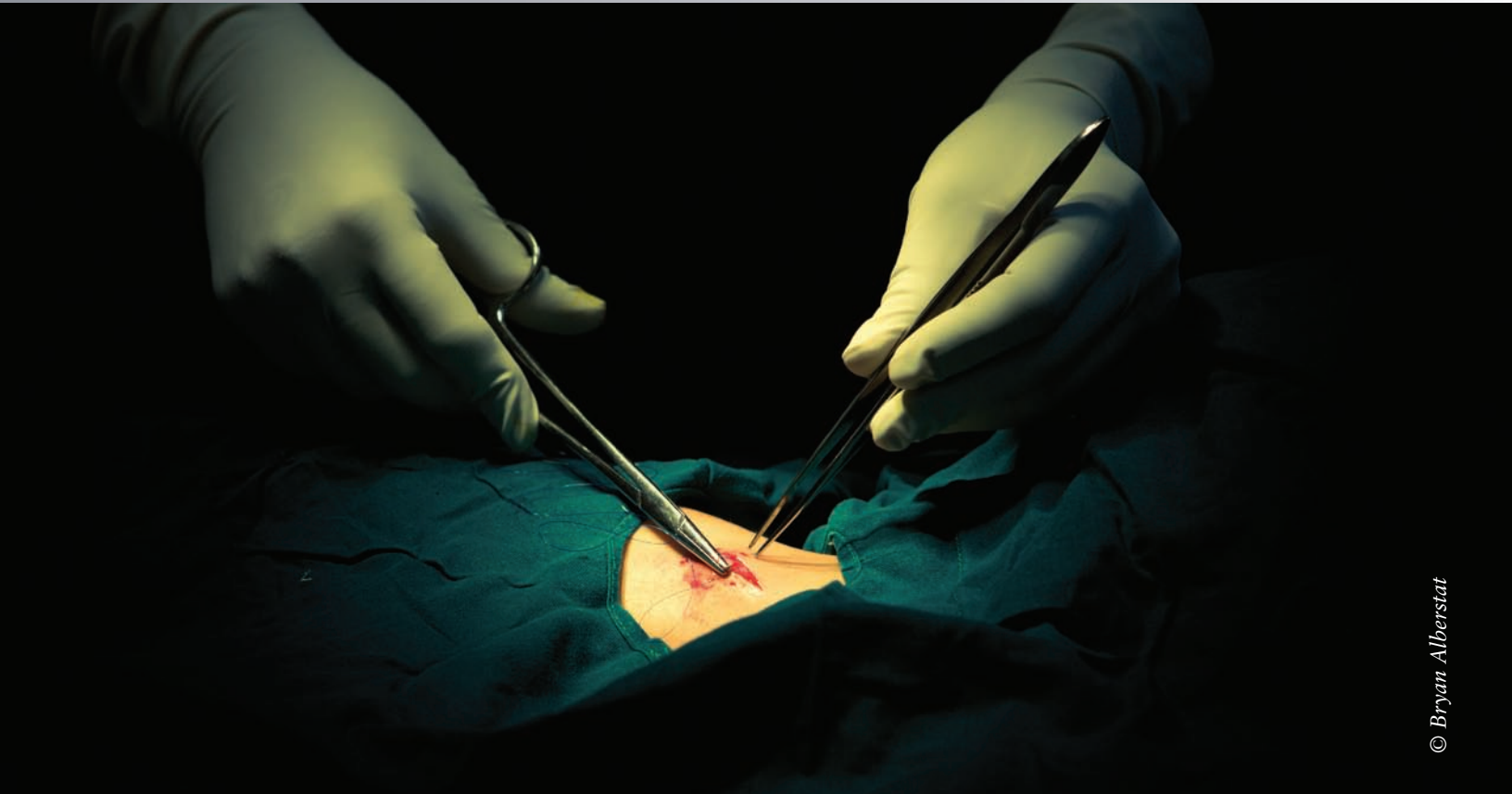




September 2014

Volume 32, Issue 3

ORNAC JOURNAL



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Preoperative Skin Antiseptics
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O.R. Safety Check Board

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Family Update:	1. Patient Identified Using Two Identifiers	Green Confirmed	Red Not Confirmed
	2. Procedure Confirmed	Green Confirmed	Red Not Confirmed
	3. Site Marked	Green Confirmed	Red Not Confirmed
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ATB Redosing	5. H&P Updated	Green Confirmed	Red Not Confirmed
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	7. Diagnostics/Images Reviewed	Green Confirmed	Red Not Confirmed
Equipment QC Completed & Documented:	8. Allergies Noted	Green Confirmed	Red Not Confirmed
	9. Antibiotics Given*	Green Confirmed	Red Not Confirmed
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EDITOR:

Deborah McNamara

ART DIRECTOR:

Sherri Keenan

TRANSLATION:

Jocelyne Demers-Owoka

EDITORIAL CHAIR:

Barbara Mushayandebvu

ADDRESS CHANGES:

ORNAC members / Membres de l'AIISOC:
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PRESIDENT - Rupinder Khotar RN, BScN, CPN(C) - North Vancouver, BC - president@ornac.ca

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ORNAC MISSION

The Operating Room Nurses Association of Canada (ORNAC) is an organization of Perioperative Registered Nurses and Associates dedicated to the:

- Promotion and advancement of excellence in the provision of safe perioperative care for patients;
- Professional growth, competence and personal enhancement of the ORNAC membership; and
- Progression of perioperative professional practice at a regional, provincial, national & international level.

MISSION DE L'AIISOC

L'Association des infirmières et des infirmiers de salles d'opération du Canada (AIISOC) est un organisme d'infirmières et d'infirmiers autorisés en soins périopératoires et d'associés se consacrant :

- À la promotion et à l'avancement de l'excellence quant à la distribution de soins périopératoires sécuritaires à nos patients;
- À l'amélioration des compétences tant sur le plan professionnel que personnel; et
- À la progression de la pratique professionnelle des soins périopératoires à l'échelle provinciale, nationale et internationale.



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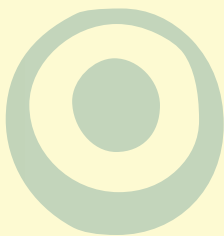
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PRESIDENT'S MESSAGE

Rupinder Khotar RN, BScN, CPN(C), ORNAC President is the OR Nursing Supervisor at Providence Health Care – St. Paul's site, Vancouver, BC, and the Past Chair of the ORNAC Standards Committee.



“Excellence is an art won by training and habituation. We do not act rightly because we have virtue or excellence, but we rather have those because we have acted rightly. We are what we repeatedly do. Excellence, then, is not an act but a habit.”

- Aristotle

Over the years I've had many conversations with colleagues and friends about the meaning of excellence in perioperative practice. Many of them readily speak about what excellence looks like to them and how they feel it can be lived. I've heard everything from excellence stemming from being good at one's work to excellence being innate for those to whom nursing is a vocation and not just a job.

When I think of perioperative nursing practice excellence I have an image in my mind. I see:

- an effective team easily identifiable by its collective knowledge and skills; and
- a group that can work in near silence because each member's attention and focus is directed outwards to the patient and the rest of the team.

This attentive silence and purposeful focus allows the team to attend to the patient's and one another's needs immediately. The ability to constantly assess the situation at hand, focus on multiple points in the operating room, modify care as necessary, and communicate with others are basic skills of the circulating nurse.

When I first started in the operating room I was amazed by the proficiency of some nurses and I quickly selected mentors from the group. The ones I admired the most were the ones who could stand at the nursing desk (with their heads down but not with their backs to the surgical team) completing the OR record and yet they were still able to respond to requests

or comments made by the surgeon, anaesthesiologist, or scrub nurse. They didn't miss a beat – literally. They were observing and listening constantly even while they taught students. I found this ability to focus on multiple things the hardest skill to perfect. Multi-tasking was hard enough but to be working and yet fully aware of my surroundings was a learned skill that I desperately wanted to perfect so I could be like the exceptional nurses who mentored me. I consider this awareness to be, to this day, a skill that must be constantly practiced.

This year's Perioperative Nurses Week (November 10-14) theme will be “Excellence. Every Patient. Every Time.” What a great mantra for perioperative nursing! It makes me think of optimized and individualized patient care facilitated by nurses who strive to achieve excellence. The best perioperative nurses I know live by this mantra and treat people with unwavering constancy.

Excellence in patient care helps to demonstrate why registered nurses are important for perioperative patient care. I feel tremendous gratitude for each and every nurse who lives by the mantra “Excellence. Every Patient. Every Time.” 🌟

Kind Regards,

Rupinder Khotar

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MOT DE LA PRÉSIDENTE

Rupinder Khotar, IA, B. Sc. Inf., CSP(C), présidente de l'AIISOC est infirmière surveillante du bloc opératoire de Providence Health Care – site de St. Paul, à Vancouver, en C.-B. et l'ancienne présidente du comité des normes de l'AIISOC.



Au fil des ans, j'ai eu plusieurs conversations avec des collègues et des amis concernant la signification de l'excellence dans la pratique des soins périopératoires. Nombre d'entre eux parlent volontiers de ce que l'excellence semble être pour eux et comment, selon eux, elle peut être vécue. J'ai tout entendu : que l'excellence provient du fait qu'une personne accomplit bien son travail ou qu'elle est innée pour les personnes ayant la vocation infirmière et pour qui cette profession n'est pas seulement un emploi.

Lorsque je pense à l'excellence dans la pratique des soins périopératoires, une image me vient à l'esprit. Je vois :

- Une équipe efficace pouvant être facilement identifiée grâce à ses connaissances et ses compétences; et
- un groupe pouvant travailler presque en silence parce que l'attention et la concentration de chaque membre sont orientées vers le patient et les autres membres de l'équipe.

Ce silence attentif et cette concentration intentionnelle permettent à l'équipe d'être immédiatement au service du patient et des besoins des autres. La capacité à constamment évaluer la situation qui se présente, à se concentrer sur les différents sites de la salle d'opération, à modifier les soins au besoin et à communiquer avec les autres constituent les compétences de base de l'infirmière en service externe.

Lorsque j'ai commencé à travailler en salle d'opération, j'ai été étonnée par la compétence de certaines infirmières et j'ai rapidement sélectionné des mentors parmi le groupe. Celles que j'admirais le plus étaient celles qui pouvaient être au poste de garde des infirmières (avec leur tête baissée sans tourner le dos à l'équipe chirurgicale) en remplissant la fiche de salle d'op, tout en étant capables de répondre aux demandes ou aux commentaires faits par le chirurgien, l'anesthésiste ou l'infirmière en service externe. Elles ne manquaient rien. Elles observaient et écoutaient constamment même lorsqu'elles enseignaient aux étudiants. Selon moi, cette capacité à se concentrer sur plusieurs choses à la fois est la compétence la plus difficile à perfectionner. Accomplir plusieurs tâches à la fois est déjà difficile, mais travailler et être pleinement consciente de l'environnement qui m'entoure a été une compétence apprise que je voulais absolument perfectionner pour être comme les infirmières exceptionnelles qui m'ont servi de mentors. À ce jour, j'estime que cette conscience est une compétence à laquelle on doit constamment s'exercer.

« L'excellence est un art qui s'acquiert avec la formation et l'habitude. Nous n'agissons pas avec raison parce que nous possédons du mérite ou de l'excellence, mais nous possédons plutôt ces derniers parce que nous avons agi avec raison. Nous sommes ce que nous faisons répétitivement. L'excellence n'est donc pas une action, mais une habitude. »

- Aristote

Le thème de la Semaine des infirmières et infirmiers en soins périopératoires de cette année (10 au 14 novembre) sera « L'Excellence. Pour chaque patient... à chaque moment! » Quelle excellente maxime pour les soins périopératoires! Ça me fait penser à des soins optimisés et personnalisés pour les patients offerts par des infirmières qui s'efforcent de viser l'excellence. Les meilleures infirmières en soins périopératoires que je connais appliquent cette maxime et soignent leurs patients avec une constance inébranlable.

L'excellence dans les soins aux patients démontre l'importance des infirmières et infirmiers autorisés pour les soins périopératoires aux patients. Je ressens un grand sentiment de gratitude pour chacun des infirmiers et chacune des infirmières qui appliquent au jour le jour la maxime « L'Excellence. Pour chaque patient... à chaque moment! » 🍁

Bien à vous,

Rupinder Khotar

EXECUTIVE DIRECTOR'S MESSAGE

Catherine Harley, RN, eMBA, ORNAC Executive Director
executivedirector@ornac.ca



ORNAC's members and associates are its most valuable asset. As ambassadors in your communities, as advocates for patient safety, as mentors to today's new generation of perioperative registered nurses, and as association volunteers and advisors, members and associates are integral to ORNAC and vital to its success.

It's not a one-way street. ORNAC strives to also be a valuable asset to its membership and to ensure that everyone stands to gain from projects implemented through ORNAC's five pillars. Research validation of the ORNAC Standards and the re-design of the ORNAC website are the current priorities for the Research and Informatics pillar. The National Conference Planning pillar is working on the preparation of the ORNAC 2015 National Conference, in Edmonton, which will provide an innovative education program as well as a leading edge trade show involving National Exhibitors Advisory Committee (NEAC) and our corporate partners. The Professional Practice pillar has launched one continuing education webinar focused on CNA Certification for CPN(C) – the webinar is currently available on the ORNAC website and plans are underway for several more webinars in the near future. The Standards Committee, under the Professional Practice pillar, is diligently working on the next

ORNAC will continue to support the sustainability of perioperative registered nurses and will provide numerous benefits for Members and Associates who choose to stay engaged and involved .

version of the ORNAC Standards to be available at the 2015 ORNAC National Conference. The Advocacy pillar continues to focus on strengthening Board Governance as well as forming collaborative partnerships with aligned organizations like the Canadian Nurses Association (CNA) and the Canadian Patient Safety Institute (CPSI). The Marketing pillar is working on building an ORNAC Boutique, with ORNAC branded merchandise, and is also engaged in social media (Facebook and Twitter).

ORNAC will continue to support the sustainability of perioperative registered nurses and will provide numerous benefits for Members and Associates who choose to stay engaged and involved.

Benefits include communication that keeps you informed about ORNAC's achievements, challenges, and ambitions for improving patient safety and advancing the profession of perioperative registered nurses; entertaining and thought-provoking

events; access to career postings on the ORNAC website and in the ORNAC Journal; and quarterly issues of the peer-reviewed ORNAC Journal. Members and Associates will also receive a discount on the registration fee for the 2015 National ORNAC conference (register at www.ORNAC.ca).

ORNAC is dedicated to facilitating mutually satisfying and lifelong relationships between ORNAC and its members/associates. The ORNAC website provides further information on how you can take advantage of programs, reconnect with colleagues, and help ORNAC in its mission to serve the perioperative registered nurses across Canada and improve patient safety. ORNAC supports excellence – every patient... every time.

ORNAC is **your** professional association and we urge you to get involved and make the most of this connection. And please always feel free to contact me, at the email address above, with feedback or comments. 🍁

MESSAGE DE LA DIRECTRICE GÉNÉRALE

Catherine Harley, IA, M.B.A. pour cadres, directrice générale de l'AIISOC
executivedirector@ornac.ca



Les membres et les associés de l'AIISOC sont ses atouts les plus précieux. En tant qu'ambassadeurs dans vos communautés, de défenseurs pour la sécurité des patients, de mentors pour la nouvelle génération d'infirmières et d'infirmiers en soins périopératoires et de bénévoles et conseillers de l'association, les membres et les associés font partie intégrante de l'AIISOC et sont cruciaux à son succès.

Ce n'est pas une voie à sens unique. L'AIISOC s'efforce aussi d'être un atout précieux pour ses membres et de veiller à ce que tous et toutes bénéficient des projets mis en œuvre par le biais des cinq piliers de l'AIISOC. La validation de la recherche effectuée pour les normes de l'AIISOC et la restructuration du site Web de l'AIISOC constituent les priorités actuelles du pilier Recherche et informatique. Le pilier de la planification des conférences nationales travaille, quant à lui, à préparer la Conférence nationale 2015 de l'AIISOC, à Edmonton, qui offrira un programme éducatif novateur ainsi qu'une foire commerciale de pointe avec la participation du Comité consultatif national des exposants (CCNE) et de nos partenaires commerciaux. Le pilier de la pratique professionnelle a lancé un webinaire de formation continue axé sur la certification de l'AIIC pour les CSP(C) – ce webinaire est actuellement disponible sur le site Web de l'AIISOC et nous prévoyons offrir plusieurs autres webinaires bientôt. Le comité des normes, chapeauté par le pilier de la pratique professionnelle, travaille activement sur la prochaine version des

L'AIISOC continuera d'appuyer la viabilité des infirmières et des infirmiers en soins périopératoires et offrira de nombreux avantages à ses membres et associés qui choisissent de continuer à s'impliquer.

normes de l'AIISOC qui sera disponible lors de la Conférence nationale 2015 de l'AIISOC. Le pilier de la défense des droits continue de son côté à se concentrer à renforcer la gouvernance du conseil d'administration tout en s'efforçant de développer des partenariats de collaboration avec des organismes du même domaine, comme l'Association des infirmières et infirmiers du Canada (AIIC) et l'Institut canadien pour la sécurité des patients (ICSP). Enfin, le pilier du marketing travaille à concevoir une boutique de l'AIISOC offrant de la marchandise au logo de l'AIISOC et participe aux médias sociaux (Facebook et Twitter).

L'AIISOC continuera d'appuyer la viabilité des infirmières et des infirmiers en soins périopératoires et offrira de nombreux avantages à ses membres et associés qui choisissent de continuer à s'impliquer.

Parmi ces avantages, notons des communiqués vous gardant au courant des réalisations, des défis et des ambitions de l'AIISOC pour améliorer la sécurité des patients et faire progresser la profession des infirmières et infirmiers en soins périopératoires; des événements divertissants et suscitant la réflexion;

l'accès aux avis d'emplois vacants sur le site Web de l'AIISOC et dans la Revue de l'AIISOC ainsi que des numéros trimestriels de la Revue de l'AIISOC révisée par des pairs. Les membres et les associés obtiennent également un rabais sur les frais d'inscription à la Conférence nationale 2015 de l'AIISOC (inscrivez-vous à www.AIISOC.ca).

L'AIISOC se consacre à favoriser des relations mutuellement satisfaisantes et de longue durée entre l'AIISOC et ses membres/associés. Le site Web de l'AIISOC offre davantage d'information sur la façon dont vous pouvez profiter de nos programmes, reprendre contact avec des collègues et aider l'AIISOC dans sa mission pour servir les infirmières et les infirmiers en soins périopératoires de partout au Canada et améliorer la sécurité des patients. L'AIISOC appuie l'excellence – pour chaque patient... à chaque moment!

L'AIISOC est **votre** association professionnelle et nous vous encourageons fortement à vous impliquer et à profiter de cette relation. N'hésitez surtout pas à communiquer avec moi à l'adresse électronique ci-dessus pour me faire part de votre rétroaction et de vos commentaires. 🍁

Editorial Review Panel

If you're interested in joining the ORNAC Editorial Review Panel review panel e-mail journal@ornac.ca for more information.

Betty Barrett, RN, BN, CPN(C), Manager Surgical Suite Chinook Regional Hospital, and Content Expert for Curriculum Development of Perioperative Program Lethbridge College, Lethbridge, AB.

Audrey Cook, RN, CPN(C), BN, B.Sc, BA, Staff Nurse, South Shore Regional Hospital, Bridgewater, NS.

Chris Downey RN, CPN(C), MSc, RNFA, CMLSO, Registered Nurse First Assistant, Clinical Practice Leader, Perioperative Services, Clinical Educator-Operating Room, Kingston General Hospital, Kingston, ON

Margaret Farley, RN, CPN(C), Perioperative Clinical Development Educator, Regina Qu'Appelle Health Region, Regina, SK.

Kimberly Ferguson, RN, BSN, CNOR, Surgical Services Program Manager, BC Children's Hospital, Vancouver, BC.

Donna Gramigna, RN, BSN, CPN(C), VIHA Regional Clinical Nurse Educator, Royal Jubilee & Victoria General Hospitals, Victoria, BC.

Trudy Hebb, RN, BSCN, MHI, CPN(C), Perioperative Nursing Program Instructor, Registered Nurses Professional Development Centre, Halifax, NS.

Antoniette Labricciosa, RN, BScN, MEd, CPN(C), Staff Nurse, Mount Sinai Hospital and Trillium Health Centre, and Faculty, at Centennial College, Toronto, ON.

Diana Mabbett, RN, BScN, CPN(C), MDRT, Manager of Inpatient Surgery, Day Surgery, and Pre-Admission Clinic, Queen Elizabeth II Hospital, Grande Prairie, AB.

Alicia Oucharek, RN, BScN, MN, CPN(C), Staff Nurse - OR, St. Paul's Hospital, Saskatoon, SK.

Karin Page-Cuttrara, RN, MN, Faculty, School of Nursing, York University, Toronto, ON.

Sarah Pelletier, RN, BScN, CPN(C), RNFA, Quinte Healthcare Corporation (QHC), Belleville, ON.

Joan Porteous, RN, BN, CPN(C), Nursing Educator, Adult OR, Health Sciences Centre, Winnipeg, MB.

Sue Styles, RN, MSN, CPN(C), Perioperative Nursing Instructor, Grande Prairie Regional College, Grande Prairie, AB.

Lesia Yasinski, RN, BN, MSA, Manager of Nursing Initiatives, Winnipeg Regional Health Authority, Winnipeg, MB.



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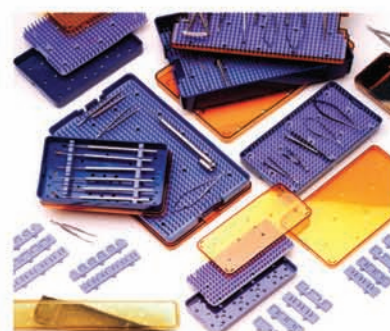
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ANTISEPTIQUES PRÉOPÉRATOIRES POUR LA PEAU AFIN DE PRÉVENIR LES INFECTIONS DU SITE OPÉRATOIRE : QUE FAIRE?

Auteurs :

Paule Poulin, Ph. D., chercheuse scientifique, services chirurgicaux, services de santé de l'Alberta, Foothills Medical Center, Calgary, AB.

Kelly Chapman, IA, B. Sc. Inf., M. Sc. S., CSP(C), services chirurgicaux, services de santé de l'Alberta, Foothills Medical Center, Calgary, AB.

Lynda McGahan, M. Sc., est actuellement consultante en soins de santé fondés sur des données probantes chez L. McGahan Consulting, mais ces travaux ont été effectués lorsqu'elle était agente de recherche pour l'Agence canadienne des médicaments et des technologies de la santé.

Lea Austen, M. D., M. Sc., professeure adjointe d'enseignement clinique, département de chirurgie, Université de Calgary et chirurgienne généraliste, Rockyview General Hospital, services de santé de l'Alberta, Calgary, AB.

Trevor Schuler, M. D., professeur adjoint de chirurgie, département de chirurgie, Université de l'Alberta et urologue, services de santé de l'Alberta, Edmonton, AB.

Conflit d'intérêts : Les auteurs ont déclaré n'avoir aucune affiliation qui pourrait être perçue comme un conflit d'intérêts.

RÉSUMÉ :

Contexte : Une désinfection de la peau des patients effectuée de manière sécuritaire et efficace en phase préopératoire est recommandée afin de prévenir les infections du site opératoire, réduire la morbidité chez les patients et réduire les coûts généraux. Il existe cependant un manque de consensus autour des recommandations de pratiques exemplaires concernant la meilleure solution antiseptique pour la peau et la meilleure méthode d'application.

Méthodes : En 2010 et en 2011, le comité consultatif des technologies de la santé du Surgery Operational Clinical Network (SOCN) des services de santé de l'Alberta a mené une analyse environnementale afin de déterminer les méthodes actuelles de désinfection préopératoire de la peau en Alberta, a révisé les principales publications et les lignes directrices existantes et a demandé une révision systématique de l'Agence canadienne

des médicaments et des technologies de la santé (ACMTS). À l'aide de cette information et d'un protocole établi pour les recommandations fondées sur des données probantes, le comité consultatif des technologies de la santé a fait des recommandations qui ont été révisées et approuvées en 2013 par la direction du SOCN et le groupe de prévention et de contrôle de l'infection des services de santé de l'Alberta.

Résultats : L'analyse environnementale a démontré qu'il existait des variantes dans la pratique en ce qui a trait aux types de solutions antiseptiques et aux méthodes d'application utilisées dans les 18 hôpitaux de l'Alberta ayant été sondés. L'examen systématique a suggéré que les douches antiseptiques préopératoires réduisaient la flore cutanée, mais que leurs effets sur les taux d'infections du site opératoire étaient peu concluants. Même si l'examen n'a pas permis de déterminer des preuves concluantes pour recommander une solution

Les normes de l'AIISOC relatives à cet article figurent dans la publication Normes de l'AIISOC pour la pratique des soins infirmiers périopératoires (1^{re} édition) de l'Association des infirmiers et infirmières de salles d'opération du Canada (AIISOC) d'avril 2013, section 2, p. 142, normes 2.35.1.



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SKIN ANTISEPTICS (cont.)

antiseptique optimale ou une méthode d'application, les résultats de deux essais cliniques randomisés d'envergure portent à croire que la chlorhexidine dans de l'alcool à 70 % est plus efficace que la povidone-iode pour la prévention des infections du site opératoire. Ces résultats et les recommandations du programme Des soins de santé plus sécuritaires maintenant! de l'Institut canadien pour la sécurité des patients (ICSP), ont été utilisés pour contribuer aux recommandations des services de santé de l'Alberta. Ces recommandations préconisaient entre autres d'abandonner les douches préopératoires avec des antiseptiques, sauf pour les cas spéciaux (chirurgies à risques élevés, comme les sternotomies et les implants, tel que recommandé par le groupe IPC) et de normaliser les solutions et les méthodes d'application des antiseptiques cutanés pour utiliser la chlorhexidine (CHG) dans de

l'alcool à 70 %. Les interventions impliquant les oreilles, les yeux, la bouche, les membranes muqueuses, les tissus nerveux, les bébés et les nouveaux cas de traumatismes faisaient cependant exceptions où la povidone-iode devrait être utilisée.

Conclusion : En utilisant les meilleures preuves actuellement disponibles, il a été recommandé que les services de santé de l'Alberta normalisent l'antisepsie chirurgicale de la peau pour adopter la CHG à 2 % dans de l'alcool à 70 % comme méthode antiseptique de choix et la povidone-iode, comme solution de rechange lorsque la CHG est contre-indiquée, afin de réduire les infections du site opératoire, les variantes dans la pratique et les coûts de soins de santé. Davantage de recherche est nécessaire pour déterminer la solution antiseptique pour la peau optimale afin de réduire les infections du site opératoire.

KEYWORDS: SURGICAL SITE INFECTION, EVIDENCE-BASED MEDICINE, CHLORHEXIDINE, POVIDONE IODINE, SKIN ANTISEPSIS, PREOPERATIVE SKIN PREPARATION.

PREOPERATIVE SKIN ANTISEPTICS FOR PREVENTING SURGICAL SITE INFECTIONS: WHAT TO DO?

Authors:

Paule Poulin PhD, Research Scientist, Surgery, Alberta Health Services, Foothills Medical Center, Calgary, AB.

Kelly Chapman RN, BSN, MHS, CPN(C), Surgical Services, Alberta Health Services, Foothills Medical Center, Calgary, AB.

Lynda McGahan MSc is currently an Evidence-Based Healthcare Consultant at L. McGahan Consulting but conducted this work as a Research Officer with the Canadian Agency for Drugs and Technologies in Health.

Lea Austen MD, MSc, Clinical Assistant Professor, Department of Surgery, University of Calgary and General Surgeon, Rockyview General Hospital, Alberta Health Services, Calgary, AB.

Trevor Schuler MD, Assistant Professor Surgery, Department of Surgery, University of Alberta and Urologist, Alberta Health Services, Edmonton, AB.

ABSTRACT:

Background: Safe and effective patient preoperative skin antisepsis is recommended to prevent surgical site infections (SSIs), reduce patient morbidity, and reduce systemic costs. However, there is lack of consensus among best practice recommendations regarding the optimal skin antiseptic solution and method of application.

Methods: In 2010 and 2011 the health technology appraisal committee of the Surgery Operational Clinical Network (SOCN), of Alberta Health Services (AHS), conducted an environmental scan to determine the current preoperative skin antisepsis in Alberta, reviewed key publications and existing guidelines, and requested a systematic review from the Canadian Agency for Drugs and Technologies in Health (CADTH). Using this information, and an established protocol for evidence-informed recommendations, the health

technology appraisal committee made recommendations that were, in 2012, reviewed and endorsed by the SOCN executive and the AHS-Infection Prevention and Control (IPC) group.

Results: The environmental scan revealed practice variation in the types of antiseptic solutions and application methods being used in the 18 Alberta hospitals surveyed. The systematic review suggested that preoperative antiseptic showering reduces skin flora but the effect on SSI rates was inconclusive. While the review found no conclusive evidence to recommend an optimal antiseptic solution or application method, the results of two large randomized controlled trials suggest that chlorhexidine in 70% alcohol is more effective than povidone iodine in the prevention of SSIs. These results and the recommendations from Safer Healthcare Now!, a program of the Canadian Patient Safety Institute (CPSI), were used to inform the

recommendations for AHS. These recommendations included abandoning preoperative showering with antiseptics except for special cases (high-risk surgeries such as sternotomies and implants as recommended by IPC) and standardizing skin antiseptic application methods and solution to chlorhexidine (CHG) in 70% alcohol. The exception would be procedures involving the ear, eye, mouth, mucous membranes, neural tissue, infants and emergent trauma cases where povidone iodine should be used.

Conclusion: Using the best available evidence it was recommended that AHS standardize surgical skin antisepsis to 2% CHG in 70% alcohol as the preferred antiseptic and povidone iodine, as an alternative when CHG is contraindicated, to reduce SSIs, practice variation, and health care costs. Further research is required to determine the optimal skin antiseptic solution to reduce SSIs.

INTRODUCTION:

Patient skin antisepsis plays a significant role in preventing surgical site infections (SSIs) that may increase patient morbidity, mortality, length of hospital stay, need for secondary procedures, and systemic costs.¹ To reduce the risk of SSIs topical antiseptics are applied to the patient's skin before surgery to reduce skin flora at the surgical incision site. A multicenter, randomized controlled trial² reported, in 2010, that 2% chlorhexidine gluconate (CHG) in 70% isopropyl alcohol is superior to povidone iodine (PI) for preventing SSIs. One member of Alberta Health Services (AHS), prompted by this article, posed two questions:

- 1) What methods of surgical site skin preparation are used in Alberta?; and
- 2) Could SSIs be reduced by adopting CHG-alcohol antisepsis?

The objectives of this study were to survey antiseptic skin preparation practices in Alberta, systematically review the literature regarding the clinical effectiveness of preoperative skin antiseptic solutions and application techniques, and develop and report recommendations to Alberta Health Services (AHS).

METHODS:

The study involved gathering information on current practices via an environmental scan, reviewing evidence (literature review, systematic review), reviewing existing consensus guidelines (*Safer Healthcare Now!*), and developing recommendations for AHS.


Environmental Scan

In order to determine the skin antisepsis processes currently in use in Alberta an 18-member working group, with representatives from both urban and rural zones within AHS, was formed. The working group conducted an Alberta-wide environmental scan, in June 2010, using an electronic survey method. The survey included questions on policy and procedures, pre-surgical scrub protocols, and operating room techniques including trauma scrub protocols, surgical skin preparation protocols, and procedural skin preparation. The survey was sent to 18 operating room sites, representing both urban and rural sites, across five zones within the AHS. All of the 18 sites responded to the survey.

Literature Review, Systematic Review, and Consensus Guidelines Review

Members of the Department of Surgery and Surgical Services conducted a literature review focusing on two key articles.^{2,3} A request was made, to the Canadian Agency for Drugs and Technology in Health (CADTH), for a rapid safety review⁴

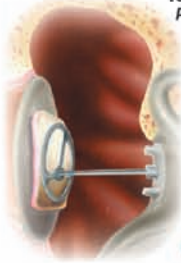
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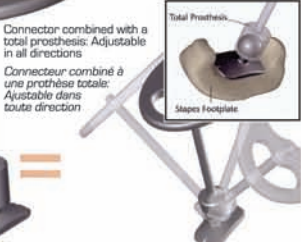


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ORNAC Call for Nominations 2015



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de salles d'opération du Canada

I) ORNAC Call for Nominations: Provincial Board of Director Positions with two year terms (unless otherwise specified) commencing May 2015.

Open Positions:

British Columbia • Saskatchewan • Ontario • Quebec • New Brunswick (1 year remaining) • Nova Scotia

Sequence of Events:

- September 15, 2014 - Call for Nominations published in the ORNAC Journal, on the ORNAC website, on the ORNAC Facebook page, and through e-blast to provincial members.
- October 15, 2014 - ORNAC Nominations Package sent electronically to the Provincial Council (PC) President. The package will include all background information including the forms for bios, nomination submission and all related paperwork, election process and electronic ballots.
- November 1, 2014 - The PC President is responsible for e-mailing the Nominations package to all members within his/her province.
- January 10, 2015 - The Nominations must be received by the PC President.
- January 25, 2015 - The PC President will determine which candidates meet the criteria for the ORNAC Board position. Nominations reviewed by the Provincial Nominating Committee.
- February 5, 2015 - Candidates will be notified whether they have or have not met the nomination criteria. If there is more than one candidate an election will be held within the specific province. If there is only one candidate an election would not occur and the candidate's name would be moved forward to be added to the National Election Slate to be voted on by ORNAC members at the AGM.
- February 10, 2015 - If an election is to be held the PC members are notified of who the candidates are, the date of the election and the election process by electronic vote. The biographies and background information on all candidates will be available on the provincial website and/or can be e-mailed by the PC President.
- March 1, 2015 - The PC President sends out Electronic Ballots to all Provincial members with voting privileges.
- March 7, 2015 - The Election takes place. Ballots must be returned by "12 midnight March 7"
- March 8, 2015 - The PC President will appoint two scrutineers from the PC Executive or PC members to tabulate the results of the election.
- March 15, 2015 - The PC President notifies the ORNAC Nominations Chair by e-mail of the successful candidate's name.
- April 1, 2015 - The ORNAC Nominating Committee Chair prepares the final Election Slate for the Annual General Meeting.
- May 2015 - At the ORNAC AGM the voting ORNAC members will vote on the final election slate.
- June 2015 - The new Board is introduced on the ORNAC website and by e-blast to the ORNAC membership.
- September 2015 - The new Board will be listed in the ORNAC Journal.

**FOR FURTHER INFORMATION ON THE
ORNAC NOMINATIONS PROCESS PLEASE CONTACT THE
ORNAC NOMINATIONS CHAIR AT NOMINATION@ORNAC.CA.**

2) ORNAC Call for Nominations for Officer and Board of Director Positions in 2015 for two year terms (unless otherwise specified).

Positions Open:
ORNAC President Elect & ORNAC Treasurer (1 year remaining)

Sequence of Events:

- September 15, 2014 - A call for nominations will be available nationally through the ORNAC Journal, on the ORNAC website, through the ORNAC Facebook page, and via e-blast from ORNAC and the Provincial Councils.
- September 15, 2014 - An ORNAC Nominations Package will be available on the ORNAC website. The package will contain all background information including the forms for bios, nomination submission and all related paperwork.
- October 15, 2014 - Candidates must submit the nomination paperwork to the ORNAC Nominating Committee and express their intent to run for the position.
- October 25, 2014 - The Nominating Committee will review all nominations and select the candidates who meet the ORNAC Board position criteria. The Nominating Committee Chair will submit the successful nominees' names to the ORNAC Board of Directors.
- November 8, 2014 - The Nominating Committee Chair presents the list of eligible candidates at the ORNAC Board meeting.
- November 15, 2014 - Candidates will be notified if they have, or have not, met the nomination criteria. If there is more than one candidate a national election will be held. The biographies and background information on all candidates will be available on the ORNAC website and/or via e-mail to ORNAC Members on request to the Nominating Committee
- January 15, 2015 - The Nominating Committee Chair will send the Electronic Ballots to all National Members with voting privileges.
- January 22, 2015 - The Election takes place. Ballots must be returned by midnight on January 22, 2015.
- January 23, 2015 - The ballots will be tabulated by the Nominating Committee
- February 1, 2015 - The Nominating Committee Chair notifies the ORNAC President in writing of the name(s) of the successful candidate(s) and the ORNAC President will inform the entire Board of Directors.
- April 1, 2015 - The ORNAC Nominating Committee Chair will prepare the final Election Slate for the Annual General Meeting (AGM).
- May 2015 - At the ORNAC AGM the voting ORNAC members will vote on the final election slate
- June 2015 - The new Board is introduced through the ORNAC website and e-blast to the ORNAC membership.
- September 2015 - The new Board will be listed in the ORNAC Journal.

3) ORNAC Call for Nominations for the Board of Director Positions Representing the Seats of Leadership, Education and Advanced Practice Positions in 2015 for a two year term.

Position Open:
Advanced Practice

Sequence of Events:

- September 15, 2014 - ORNAC Nominations Package is available on the ORNAC website. The package will contain all background information including the forms for bios, nomination submission and all related paperwork.
- October 15, 2014 - Candidates must submit the nomination paperwork to the ORNAC Nominating Committee and express their intent to run for the position.
- October 25, 2014 - The Nominating Committee will review all nominations and select the candidates who meet the ORNAC Board position criteria. The Nominating Committee Chair will submit the successful nominees' names to the ORNAC Board of Directors.
- November 8, 2014 - The Nominating Committee Chair presents the list of eligible candidates to the ORNAC Board.
- November 15, 2014 - Candidates will be notified if they have, or have not, met the nomination criteria. If there is more than one candidate a national election will be held. The biographies and background information on all candidates will be available on the ORNAC website and/or can be e-mailed to ORNAC Members on request to the Nominating Committee.
- January 15, 2015 - Electronic Ballots will be sent to all National Members with voting privileges.
- January 22, 2015 - The Election takes place. Ballots must be returned by midnight on January 22, 2015.
- January 23, 2015 - the ballots will be tabulated by the Nominating Committee.
- February 1, 2015 - The Nominating Committee Chair notifies, in writing, the ORNAC President of the name(s) of the successful candidate(s) and the ORNAC President will inform the entire Board.
- April 1, 2015 - The ORNAC Nominating Committee Chair will prepare the final Election Slate for the Annual General Meeting (AGM).
- May 2015 - At the ORNAC AGM the voting ORNAC members will vote on the final election slate
- June 2015 - The new Board is introduced through the ORNAC website and by e-blast to the ORNAC membership.
- September 2015 - The new Board will be listed in the ORNAC Journal and on the ORNAC website.

Appel de mise en candidature 2015 de l'AIISOC



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1) Appel de mise en candidature de l'AIISOC : Postes au conseil d'administration provincial ayant un mandat de deux ans (sauf avis contraire) à compter de mai 2015.

Postes à pourvoir :

*Colombie-Britannique • Saskatchewan • Ontario • Québec
Nouveau-Brunswick (durée restante d'un an) • Nouvelle-Écosse*

Fil des événements :

- 15 septembre 2014 – Un appel de mise en candidature est publié dans la Revue de l'AIISOC, sur le site Web de l'AIISOC, sur la page Facebook de l'AIISOC et par le biais d'un envoi par courriel aux membres provinciaux.
- 15 octobre 2014 – Une trousse de mises en candidature de l'AIISOC est envoyée par voie électronique à la présidente du conseil provincial. La trousse comprend toute l'information générale, y compris les formulaires pour les biographies, les soumissions de mises en candidature et tous les documents connexes, le processus d'élection et les bulletins de vote électronique.
- 1^{er} novembre 2014 – La présidente du conseil provincial est responsable d'envoyer par courriel la trousse de mise en candidature à tous les membres de sa province.
- 10 janvier 2015 – Les mises en candidature doivent être reçues par la présidente du conseil provincial.
- 25 janvier 2015 – La présidente du conseil provincial détermine quels candidats répondent aux critères pour le poste au Conseil d'administration de l'AIISOC. Les mises en candidatures sont passées en revue par le comité provincial de mises en candidature.
- 5 février 2015 – Les candidats sont avisés s'ils répondent ou non aux critères de mise en candidature. S'il y a plus d'un candidat à un poste, une élection aura lieu dans la province en question. S'il y a seulement un candidat, aucune élection n'aura lieu et le nom du candidat sera ajouté à la liste nationale de candidatures pour le vote des membres de l'AIISOC qui aura lieu lors de l'AGA.
- 10 février 2015 – Si une élection doit se tenir, les membres du conseil provincial seront avisés des candidats, de la date de l'élection et du processus d'élection par vote électronique. Les biographies et l'information générale sur tous les candidats seront disponibles sur le site Web provincial et (ou) peuvent être envoyés par courriel par la présidente du conseil provincial.
- 1^{er} mars 2015 – La présidente du conseil provincial envoie les bulletins de vote électronique à tous les membres provinciaux ayant le droit de voter.
- 7 mars 2015 – Tenue des élections. Les bulletins de vote doivent être retournés avant minuit le 7 mars.
- 8 mars 2015 – La présidente du conseil provincial nomme deux agents électoraux parmi les cadres supérieurs ou les membres du conseil provincial pour totaliser les résultats de l'élection.
- 15 mars 2015 – La présidente du conseil provincial avise par courriel la présidente des mises en candidature de l'AIISOC du nom du candidat sélectionné.

POUR DE PLUS AMPLES RENSEIGNEMENTS SUR LE PROCESSUS DE MISE EN CANDIDATURE DE L'AIISOC, VEUILLEZ COMMUNIQUER AVEC LA PRÉSIDENTE DES MISE EN CANDIDATURE DE L'AIISOC À NOMINATION@ORNAC.CA.

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(Suite.) Appel de mise en candidature de l'AISOC : Postes au conseil d'administration provincial ayant un mandat de deux ans (sauf avis contraire) à compter de mai 2015.

Fil des événements :

- 1er avril 2015 - La présidente des mises en candidature de l'AISOC prépare la liste de candidatures finale pour l'Assemblée Générale Annuelle (AGA).
- Mai 2015 - Lors de l'AGA de l'AISOC, les membres de l'AISOC ayant le droit de vote exercent leur droit de vote à partir de la liste de candidatures finale.
- Juin 2015 - Le nouveau conseil d'administration est présenté par le biais du site Web de l'AISOC et d'un envoi par courriel en masse aux membres de l'AISOC.
- Septembre 2015 - Le nouveau conseil d'administration est présenté dans la Revue de l'AISOC.

2) Appel de mise en candidature de l'AISOC pour les postes de membres de la direction et du conseil d'administration en 2015 pour un mandat de deux ans (sauf avis contraire).

Postes à pourvoir :

Président(e) élu(e)

Trésorier(ère) (durée restante d'un an)

Fil des événements :

- 15 septembre 2014 - Un appel de mise en candidature est lancé à l'échelle nationale par le biais de la Revue de l'AISOC, du site Web de l'AISOC, de la page Facebook et par courriel de la part de l'AISOC et des conseils provinciaux.
- 15 septembre 2014 - Une trousse de mise en candidature de l'AISOC sera disponible sur le site Web de l'AISOC. La trousse comprend toute l'information générale, y compris les formulaires pour les biographies, les soumissions de mises en candidature et tous les documents connexes.
- 15 octobre 2014 - Les candidats doivent soumettre leurs documents de mise en candidature au comité des mises en candidature de l'AISOC et exprimer leur intention de présenter leur candidature au poste.
- 25 octobre 2014 - Le comité des mises en candidature révisé toutes les mises en candidature et sélectionne les candidats répondant aux critères du poste au conseil d'administration de l'AISOC. La présidente des mises en candidature soumet le nom des candidats sélectionnés au conseil d'administration de l'AISOC.
- 8 novembre 2014 - La présidente du comité des mises en candidature présente la liste des candidats admissibles lors d'une réunion du conseil d'administration.
- 15 novembre 2014 - Les candidats sont avisés s'ils répondent ou non aux critères de mise en candidature. S'il y a plus d'un candidat à un poste, une élection aura lieu. Les biographies et l'information générale sur tous les candidats seront disponibles sur le site Web provincial et (ou) peuvent être envoyés par courriel par le comité des mises en candidature à la demande des membres de l'AISOC.
- 15 janvier 2015 - La présidente du comité des mises en candidature envoie les bulletins de vote électronique à tous les membres nationaux ayant le droit de voter.
- 22 janvier 2015 - Tenue de l'élection. Les bulletins de vote doivent être retournés avant minuit le 22 janvier 2015.
- 23 janvier 2015 - Le comité des mises en candidature totalise les bulletins de vote.
- 1er février 2015 - La présidente des mises en candidature avise par écrit la présidente de l'AISOC du nom du candidat sélectionné et la présidente de l'AISOC en informe tout le conseil d'administration.
- 1er avril 2015 - La présidente des mises en candidature de l'AISOC prépare la liste de candidatures finale pour l'Assemblée Générale Annuelle (AGA).
- Mai 2015 - Lors de l'AGA de l'AISOC, les membres de l'AISOC ayant le droit de vote exercent leur droit de vote à partir de la liste de candidatures finales.
- Juin 2015 - Le nouveau conseil d'administration est présenté par le biais du site Web de l'AISOC et d'un envoi par courriel en masse aux membres de l'AISOC.
- Septembre 2015 - Le nouveau conseil d'administration est présenté dans la Revue de l'AISOC.

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**3) Appel de mise en candidature de l'AIISOC pour les postes du conseil d'administration
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- 15 septembre 2014 - Une trousse de mise en candidature de l'AIISOC sera disponible sur le site Web de l'AIISOC. La trousse comprend toute l'information générale, y compris les formulaires pour les biographies, les soumissions de mises en candidature et tous les documents connexes.
- 15 octobre 2014 - Les candidats doivent soumettre leurs documents de mise en candidature au comité des mises en candidature de l'AIISOC et exprimer leur intention de présenter leur candidature au poste.
- 25 octobre 2014 - Le comité des mises en candidature révisé toutes les mises en candidature et sélectionne les candidats répondant aux critères du poste au conseil d'administration de l'AIISOC. La présidente des mises en candidature soumet le nom des candidats sélectionnés au conseil d'administration de l'AIISOC.
- 8 novembre 2014 - La présidente du comité des mises en candidature présente la liste des candidats admissibles lors d'une réunion du conseil d'administration.
- 15 novembre 2014 - Les candidats sont avisés s'ils répondent ou non aux critères de mise en candidature. S'il y a plus d'un candidat à un poste, une élection aura lieu. Les biographies et l'information générale sur tous les candidats seront disponibles sur le site Web provincial et (ou) peuvent être envoyés par courriel par le comité des mises en candidature à la demande des membres de l'AIISOC.
- 15 janvier 2015 - Les bulletins de vote électronique sont envoyés à tous les membres nationaux ayant le droit de voter.
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- 23 janvier 2015 - Le comité des mise en candidature totalise les bulletins de vote.
- 1^{er} février 2015 - La présidente des mises en candidature avise par écrit la présidente de l'AIISOC du nom du ou des candidat(s) sélectionné(s) et la présidente de l'AIISOC en informe tout le conseil d'administration.
- 1^{er} avril 2015 - La présidente des mises en candidature de l'AIISOC prépare la liste de candidatures finale pour l'Assemblée générale annuelle (AGA).
- Mai 2015 - Lors de l'AGA de l'AIISOC, les membres de l'AIISOC ayant le droit de vote exercent leur droit de vote à partir de la liste de candidatures finale.
- Juin 2015 - Le nouveau conseil d'administration est présenté par le biais du site Web de l'AIISOC et d'un envoi par courriel en masse aux membres de l'AIISOC.
- Septembre 2015 - Le nouveau conseil d'administration est présenté dans la Revue de l'AIISOC et sur le site Web de l'AIISOC.

and a systematic review⁵ of antiseptic effectiveness. The “Critical Appraisal Skills Programme” tool⁶ was used to evaluate the CADTH systematic review. The consensus guidelines for skin antisepsis, from “*Safer Healthcare Now!*”,⁷ were also reviewed and summarized.

Development of Recommendations

The Alberta Health Services health technology appraisal committee of the Surgery Operational Clinical Network⁸ met, after gathering the evidence, to review and make recommendations. The recommendation process was created by adapting the *Local HTA Decision-Support Program*.⁹ This program provides a method by which recommendations can be made in a systematic, consistent, and transparent manner using a defined set of criteria and a deliberative process. The major steps were as follows:

- **Criteria Review.** The criteria used for recommendations were from the *Local HTA Decision Support Program*.⁹ These criteria are grouped into five domains: health gain, service delivery, strategic fit, innovation, and financial;
- **Technology Evaluation.** Technologies were evaluated on a matrix using the “Technology Evaluation Worksheet” of the *Local HTA Decision Support Program*.⁹ Information provided for each of the criteria was discussed using a deliberative process;
- **Recommendations.** Recommendations were made using the “Recommendation and Decision Guide” of the *Local HTA Decision Support Program*;⁹ and
- **Feedback.** The surgical community at large provided comments and feedback on the first draft of the recommendations. The recommendations were then reviewed and endorsed by the Surgery Operational Clinical Network’s Executive Committee. The recommendations, once approved, were sent to the AHS Infection Prevention and Control group for additional review. Comments were incorporated into the final

recommendations to be used in the development of a standardized protocol.

RESULTS:

Environmental Scan:

A summary of the environmental scan is given below. The total percentage values of responses can exceed 100% as respondents were asked to select all answers that applied.

Policy and procedures

Of the 18 participating facilities 55% said that they had a general skin preparation policy versus a procedure-specific policy. Respondents all said that they adhered to *ORNAC Standards for Perioperative Nursing Practice* with some facilities referencing additional guidelines of the Association of periOperative Registered Nurses (AORN) and *Berry & Kohn's*.

Pre-surgical scrub

Approximately 78% of respondents said that patients are instructed to perform a pre-surgical scrub or shower prior to the surgical day. There was, however, variation in the products used and the instructions given to the patient. Screening for antibiotic-resistant organisms was done by 75% of respondents.

Operating Room Technique

a) *Trauma scrub.* Trauma scrub was performed by 83% of respondents and primarily by the surgeon (88%). All respondents reported using some type of personal protective equipment (100%). Antiseptic solutions used include a proprietary 7.5% povidone iodine (PI) scrub (80%), 0.9% saline (53%), CHG scrub (40%), 10% PI (13%), and 7.5% PI (7%). Two percent CHG-alcohol was not used by any of the respondents (0%). Saline with antibiotics was also mentioned in the “comments” field of the survey.

b) *Surgical skin preparation.* Skin antisepsis preparation was primarily

performed by the circulating nurse (100%) as well as by the surgeon when sterile (12.5%) or unsterile (31.3%). Hand hygiene prior to the skin prep was variable with soap (56%), antiseptic (44%) and surgical hand scrub (12%) being used in addition to sterile gloves. The surgical preparation technique varied from touch (56%) to no-touch (12%) using an aseptic technique (sterile gloves/sterile field, 100%) to a clean technique (clean gloves, 19%). The responses indicated practice variation in the method of application, number of applications, and drying time of the antiseptic product. Respondents avoided pooling of skin prep solutions by wringing out sponges, using blue pads, removing soiled linens, and visual inspection. Alcohol-based skin prep products were avoided, or adequate drying time was allowed, when using electro-cautery. Various sterile drapes were being used across Alberta from clear adherent to PI-impregnated drapes.

Products used for surgical skin preparation varied from multi-use bottles to single-use products. Skin preparations were performed using commercial skin preparation trays, on-site prepared trays, and single-use products that did not require a preparation tray. Various products were used including 10% PI paint (69%), 2% CHG-alcohol (56%), 7.5% PI scrub (31%), CHG scrub (25%), 2% CHG-aqueous (19%), 7.5% PI scrub (19%), 7.0% PI-alcohol (19%), and 4% CHG aqueous (12%). Other products identified in the comments include 0.05% CHG and 3% chloroxylenol. Respondents indicated 50% had a policy addressing multi-use preparation solution storage and usage with variations in the length of time the product would be allowed to remain open.

c) *Procedural skin preparation.* Procedures that required skin preparation included central lines, arterial lines, epidural, spinal or pin insertions. Procedural skin preparations were performed by anaesthetists (94%), surgeons (38%),



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SKIN ANTISEPTICS (cont.)

and nurses (19%). Technicians were also mentioned in the "comments" field of the survey. Personal protective equipment was used (100%). Hand hygiene was performed by various methods including hand washing with soap (50%), hand washing with antiseptic soap (56%) and use of a surgical hand scrub (31%). Procedural skin antiseptic solutions included 10% PI (56%), 2% CHG-alcohol (44%), 7.5% PI (12%), a proprietary 7.5% PI scrub (12%), 2% CHG-aqueous (6%), and CHG scrub (6%); alcohol swabs were also mentioned in the "comments" field of the survey. Across the province there was a variation in preparation trays purchased with the majority being disposable trays for epidural trays (87%), spinal trays (87%), and central line trays (73%). A small percentage reported the use of non-disposable trays prepared on-site for epidural and spinal anesthetics, and central line insertion.

Literature Review:

The Darouiche RCT report,² that had initially prompted this investigation, showed that preoperative cleansing of a patient's skin with 2% CHG - 70% alcohol is superior, for preventing SSIs during clean-contaminated surgery, to cleansing with PI². As reported in a critical appraisal¹⁰ the study had several strengths including adequate sample size, appropriate randomization, blinding of subjects and evaluators, and use of multiple medical centres and procedures. Another, lesser quality, randomized controlled trial (RCT) study, by Paochaoroen et al.,¹¹ also suggested that 4% CHG is more effective than PI at preventing SSIs. The strength of the antiseptic solution (2% CHG² and 4% CHG)¹¹ and the combination with alcohol (2% CHG with 70% alcohol² versus 4% CHG with 0% alcohol)¹¹ differed in the RCTs making it difficult

to determine the most effective skin antiseptic solution for preventing SSIs, i.e., CHG, alcohol, or a combination of the two.¹⁰

A study by Swenson et al.³ compared three different skin preparation solutions as shown in Table 1.¹² While the sequential implementation method used is inferior to the RCT method employed by Darouiche, the Swenson study raises the possibility that iodophor-based compounds may be superior to CHG in preventing SSIs when combined with alcohol. Therefore, it is possible that many of the other commercially available antiseptic solutions may result reduced SSI rates if they were mixed with a 70% alcohol.

Systematic Review:

The systematic review,⁵ that had been requested from Canadian Agency for

Table 1: Clean-Contaminated SSI Rates^{1,2}

A comparison of data from Swenson et al.³ and Darouiche et al.²

Study	7.5% PI, 70% isopropyl alcohol, 10% PI ^a	Iodine povacrylex in 70% isopropyl alcohol ^b	2% CHG in 70% isopropyl alcohol ^c	10% PI ^d
Swenson 3	44/541 (8.1%)	27/414 (6.5%)	46/454 (10.1%)	---
Darouiche 2	---	---	39/409 (9.5%)	71/440 (16.1%)

Data are number of SSI/number of surgical procedures classified as clean-contaminated (%).

^a Sequential application of 7.5% PI (Betadine soap), 70% isopropyl alcohol, 10% PI (Betadine paint);

^b DuraPrep, 3M;

^c ChlorPrep, Cardinal Health;

^d Scrub Care Skin Prep Tray, Cardinal Health

Drugs and Technologies in Health (CADTH), included 12 RCTs and 8 observational studies. The critical appraisal¹⁰ of the systematic review determined that the reviewers asked clearly-focused questions, included the right type of studies, tried to identify all relevant studies, and assessed the quality of the studies. The results were tabulated and summarized narratively. No meta-analysis was undertaken given heterogeneity of the studies. The review lacked any Canadian or local data reflecting current SSI rates or any economic data. This, however, is not a criticism as it was beyond the scope of the review and was not requested.

Preoperative showering using antiseptics:

The results of the systematic review indicated that, while preoperative antiseptic showering reduces skin flora, the effect of antiseptic showering on SSIs rates is inconclusive. Showering regimens and compliance varied in the studies that were reviewed. Further evidence is needed to determine the optimal solution, strength, number, and timing of showers as well as the cost-effectiveness of antiseptic showers compared to normal hygiene.

Antiseptic application technique:

The review found that the method of antiseptic solution application, scrub versus paint, is inconsequential. Two RCTs suggested that applying PI, just prior to making an incision, is as effective as soap or saline for preventing SSIs. In three RCTs, no significant difference in SSI rates were found based on application techniques, i.e. scrub versus paint, but a large retrospective cohort study suggested that scrub and paint combined prevents more composite wound infections than paint alone.

Antiseptic solution:

The review found that, given the heterogeneity of the studies, conclusions about which antiseptic solution is most effective at reducing SSIs could not be drawn. Disinfectant products are often mixed with an alcohol or aqueous base which makes it difficult to form conclusions about the relative contribution of component ingredients to skin antiseptics.⁵

Given the results of the review, further evidence is needed to determine which antiseptic solution and application

method are most effective for reducing SSIs.

Safer Healthcare Now! Guidelines

Safer Healthcare Now! is a program of the Canadian Patient Safety Institute (CPSI) designed to help healthcare organizations improve safety through the use of quality improvement methods and the integration of evidence in practice. Safer Healthcare Now! conducted a broad narrative review,⁷ of the evidence for preventing SSIs, based primarily on prevention guidelines. It was published by numerous health organizations including National Institute for Health and Care Excellence, U.K. (NICE), Society for Healthcare Epidemiology of America, U.S.A. (SHEA), Centers for Disease Control and Prevention, U.S.A. (CDC), and World Health Organization, United Nations (WHO).

Safer Healthcare Now! developed a bundle of recommendations.⁷ Alcohol-based CHG antiseptic solutions were recommended over PI as antiseptic prophylaxis except for procedures involving the ear, eye, mouth, or neural

tissue.⁷ This recommendation of CHG was, however, not based on a systematic review of the literature.

Surgery Operational Clinical Network Recommendations:

Following the process outlined in the Methods, the Alberta Health Services (AHS) Surgery Operational Clinical Network health technology appraisal committee made the following recommendations:

Preoperative showering using antiseptics: There is no conclusive evidence to suggest that antiseptic showering reduces SSIs any more than showering with regular soap. The committee recommended that, with some exceptions, antiseptic showering should, where used in Alberta, be discontinued, thus realizing a cost savings. The AHS-Infection Prevention and Control group recommended preoperative showering with CHG for high risk surgeries, including sternotomies and implants, as it reduces bacteria and may lower SSI rates.^{5,13} Preoperative CHG showering may also be considered for specific procedures where local SSI rates are high.

Antiseptic application technique: There is no conclusive evidence to suggest that any particular method, by which antiseptics are applied, prevents more SSIs than any other. The committee recommended that the application technique be standardized to promote consistency in practice and to prevent errors. Standardization will be developed in collaboration with the nursing leads and the AHS-Infection Prevention and Control group in order to identify application techniques suitable for standardization and comparative costing. Single use skin markers are recommended to prevent the disappearance of skin marks during the application of antiseptic.

Antiseptic solution: The studies reviewed reported on a variety of disinfectants at various concentrations and often they were mixed with an alcohol or aqueous base that may

influence their effectiveness. There is no conclusive evidence, currently, to recommend any single skin antiseptic solution as the most effective in preventing SSIs. Further studies are needed to provide unequivocal evidence regarding the optimal antiseptic solution for preventing SSIs. CHG-alcohol was, however, more effective than PI for reducing SSIs according to the two large RCTs^{2,11} and of these two the study conducted in North America² was of very high quality. The committee, therefore, recommended that CHG in 70% alcohol be used as the reference standard solution to reduce SSIs. This would bring uniformity to practice within the province. A pink-coloured solution was preferred with an option for clear when ongoing surveillance of limb perfusion is required.

Special cases: The committee recommended that PI be used to prepare the skin of emergent trauma patients when there is insufficient time for CHG-alcohol solution to dry completely prior to making an incision. PI was also recommended for treating mucous membranes, which should not be exposed to alcohol, and for procedures involving the ear, eye, mouth, or neural tissue. The AHS-Infection Prevention and Control group also recommended that CHG-alcohol be contraindicated, and PI used, for patients with sensitivities or allergies to CHG and for infants less than two months old.

Safety and training: Safety issues when using alcohol-based solutions are rare, but can include operating room fires. To better address safety issues, regarding the use of CHG-alcohol solution, the committee recommended the adoption of the Safer Healthcare Now training recommendations.⁷

Care pathways: The committee recommended that their Skin Preparation Report, along with the Safer Healthcare Now recommendations (on appropriate use of prophylactic antibiotics, appropriate hair removal, maintenance of perioperative glucose control, and

perioperative normothermia) be used to create a Care Pathway for the prevention of SSIs in Alberta. This would apply to surgical services as well as central line insertion in diagnostic imaging, critical care and the catheter lab, and to minor surgery. Based on the above recommendations, the nursing leads have created standardized protocols that are currently under review by AHS. Once approved, these protocols will be distributed province-wide.

Implementation: The final report was distributed to all Surgery Chiefs and AHS leaders across the province (March 2013) for operational implementation. A feedback survey was sent to physicians and nursing staff asking if there were any disadvantages to using specific skin preparations in their practice. A provincial working group, comprising members of the Surgery Operational Clinical Network, AHS-Infection Prevention and Control staff and physicians, and AHS-Quality and Healthcare Improvement, has been formed to facilitate implementation. A standard provincial protocol and implementation strategy are being developed to minimize practice variation and reduce SSIs. Implementation of these recommendations will be monitored by surveying SSI rates in the province in conjunction with AHS-Infection Prevention and Control. The environmental scan could, alternatively, be repeated as a surrogate endpoint to detect a change in clinical practice and to ascertain costs/quantities of solutions used post-implementation.

DISCUSSION

This project was initially prompted by a question brought forward by one member of AHS: given the published article by Darouiche et al.,² demonstrating that CHG-alcohol is more effective than PI for preventing SSIs, should AHS adopt CHG-alcohol? Existing practices, within Alberta, were surveyed and a critical appraisal of current literature was carried out. There was a request for a systematic review⁵

ACKNOWLEDGEMENTS

We are grateful to Dr. Elijah Dixon for the critical appraisal.¹⁰ Valuable feedback was provided by Dr. John Conly, Bernice Heinrichs, and Sue Lafferty from AHS-Infection Prevention and Control and members of the Surgery Operational Clinical Network. Kelly Chapman conducted this work while working as a Project Manager with the AHS-Health Technology Assessment & Innovation team. Lynda McGahan conducted this work while working as a Research Officer with the Canadian Agency for Drugs and Technologies in Health. We thank the health technology appraisal committee of the Surgery Operational Clinical Network for their commitment and participation in this review and Dr. Ann Kyle for editorial review.

ORNAC Standards pertaining to this article can be found in the Operating Room Nurses Association of Canada (ORNAC) (April 2013) *Standards, Guidelines, and Position Statements for Perioperative Registered Nursing Practice* (11th edition). Section 2, pg. 130, Standard 2.35.1.

and a review of consensus practice guidelines⁷ was conducted. The Surgery Operational Clinical Network health technology appraisal committee then used this evidence to make recommendations based on established criteria and processes.⁹

Although there is currently no conclusive evidence regarding the optimal skin antiseptic solution for the prevention of SSIs the committee recommended that, where possible, AHS implement a standardized practice of using CHG-alcohol with a standardized application procedure. This recommendation is based on the benefit of using CHG-alcohol, compared with PI, in reducing SSIs and of abandoning less effective solutions that are currently in use in Alberta. It is also in alignment with the *Safer Healthcare Now!* Recommendations.⁷

When a skin antiseptic solution is standardized there are potential financial benefits that can result from bulk purchasing. A decision to use a multi- or single-use product has yet to be made by the AHS. Multi-use products increase the risk of contamination and waste due to individuals decanting more product than needed or the need to discard product due to contamination or expiry. Single-use products may have a higher unit cost and environmental impact. This area needs further evaluation.

The objective of developing a standardized application technique is to simplify training protocols, reduce errors, and reduce SSIs.^{14, 15} A provincial working group has been formed, in order to help meet this objective, comprising members of the Surgery Operational Clinical Network, AHS-Infection Prevention and Control, and AHS-Quality and Healthcare Improvement. The recommendation and standardization protocols may also be extended to percutaneous invasive procedures including insertion of central line catheters and vascular access devices used in diagnostic imaging procedures.

Although this report recommends using CHG 70% alcohol antiseptic, further

studies are needed to evaluate whether PI, or iodine povacrylex, in combination with isopropyl alcohol may be superior. A Clinical Trial working group has been initiated to investigate whether such a study could be designed and recognizing that the role of manufacturer sponsorship will need to be closely monitored to ensure non-biased outcomes. Similar trials are ongoing elsewhere but only for restricted applications such as colorectal surgery (e.g. Clinical Trial number NCT01233050).

This report demonstrates how a question from a single individual prompted a province-wide investigation resulting in an evidence-based decision to standardize practice variation and reduce SSIs in Alberta.

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SPOTLIGHT ON ORNAC MEMBERS

AN INTERVIEW WITH ERIN ROBERTSON RN, BSCN(HONS), CPN(C).

Submitted by: Catherine Harley, RN, eMBA, ORNAC Executive Director.

Erin Robertson is a Perioperative Registered Nurse working as the Nurse Clinician in Perioperative Services (Operating Room, Elective Outpatient Surgery and Endoscopy) at Mount Sinai Hospital in Toronto, ON. Erin completed the Perioperative Nurse course in 1999 and worked in the Surgical Suites at Kingston General Hospital for three years prior to moving to Toronto. She then spent nine years as a staff nurse in the OR and one year as the patient flow coordinator prior to taking on her current role. During her time at Mount Sinai Erin has completed her post RN BScN (with honours) and is currently taking her Masters of Nursing: Leadership in Education and Health Policy. Erin is an active member of periOperative Registered Nurses of Greater Toronto (ORNGT) and serves as the program convener. Erin lives in Toronto with her husband and two boys.



Erin Robertson RN, BScN(Hons), CPN(C).



My graduate degree is teaching me to push the boundaries of “what we know and how we know it.”

What is your current role on the perioperative team?

I am currently employed at Mount Sinai Hospital in downtown Toronto in Perioperative Services which encompasses the Operating Rooms, Elective Outpatient Surgery, and Endoscopy. My role within the perioperative team is to support professional practice and includes facilitating the orientation of new staff and students to the environment, facilitating the development and implementation of learning plans, and addressing the educational needs of staff members. In addition to providing educational support I am actively involved in initiating, executing, and supporting various departmental and institutional quality improvement initiatives.

Who was your greatest mentor?

I have been fortunate to have had many nurses, in perioperative services and in other roles and departments, who have greatly influenced my practice. From my preceptors as a novice perioperative nurse, who taught me the importance of our role as client advocates and to always expect the unexpected, to new perioperative nurses/students who bring a new perspective and an eagerness to learn, many individuals have positively contributed to my practice. I have been fortunate to have met or worked with some great perioperative nursing leaders who have encouraged and supported my professional and educational pursuits. Some nurses I would like to mention include Anne Marie Dutka (Howlett) who introduced me to perioperative nursing, Brenda Lynn and Chris Downey

SPOTLIGHT (cont.)

AN INTERVIEW WITH ERIN ROBERTSON

who provided opportunities for me to flourish as a novice perioperative nurse, and Sharon Ball who saw my potential and enthusiasm for perioperative nursing and encouraged and supported my professional goals and educational pursuits.

Why did you pursue your Master's Degree in Leadership in Education and Health Policy?

Once I completed my post-RN BScN I realized that my formal education was now on par with all Registered Nurses currently entering practice. After working at the bedside for 12 years I wanted to be in a leadership role where I could further contribute to influencing professional practice and driving patient safety and best practice initiatives. The nurse clinician in perioperative services role was open and I knew that, to be proficient in the role, I needed additional knowledge, skills, and perspective.

How will this degree impact on your current role?

My graduate degree is teaching me to push the boundaries of "what we know and how we know it." By doing this I feel I can further contribute to perioperative nursing knowledge. My education is increasing my ability to bridge the gap between perioperative nursing knowledge and our perioperative nursing professional practice.

Tell us how you came to receive the Johnson and Johnson Research award through ORNAO.

I have been a member of ORNGT for the last eight years. The last two years I have been a volunteer on the program committee (and this past year I was the convenor) responsible for organizing the educational sessions, that are held four times a year, and collaborating with the membership to address their learning needs. Through my participation with ORNGT I met the qualifications and received an endorsement from my regional President as well as support from two colleagues on my application. It was a great feeling to be called up on the stage, in front of my peers, and be recognized at ORNAO 2014 in London.

What benefits do you see in ORNAC membership?

The main benefit of being a member of ORNAC is the ability to network and be part of a supportive perioperative community. Other benefits include being a part of, and having a voice in, the organization that sets the standards for my professional perioperative practice. Additionally,

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SPOTLIGHT ON ORNAC MEMBERS (cont.)

AN INTERVIEW WITH ERIN ROBERTSON RN, BSCN(HONS), CPN(C).

I think that perioperative registered nurses are in for some exciting and likely challenging times ahead on a couple of fronts.

ORNAC, through the Journal and conferences, supports my continuing education needs. In my role as a Nurse Clinician it is fantastic to be able to put out an e-mail to my ORNAC perioperative nurse educator group (PNEC) and have numerous responses in a matter of minutes. It is reassuring to know we are

not alone and that we all struggle with similar issues in our efforts to collectively enhance patient care.

How do you see the future for perioperative nurses?

I think that perioperative registered nurses are in for some exciting and likely challenging times ahead on a couple of fronts.

The first is the massive amount of new and constantly changing technology that is affecting our environments. Perioperative nurses need to continuously embrace change by pro-actively acquiring the knowledge and skills that are required by perioperative registered nurses to ensure our patients receive the best possible care.

Secondly, perioperative nurses are going to see an increase in the various

“new” healthcare professionals being infused into the perioperative environment. Perioperative Registered Nurses need to be able to articulate what they contribute to the perioperative environment, why they are the best people/advocates/experts, and how they are essential to the patient and the inter-professional team.

Any words of wisdom for the next generation?

Be proactive! Learn everything you can! Take advantage of opportunities to learn new skills, network, and enhance your knowledge. Participate in committees - have a voice. Preceptor and mentor students-be a positive role model. And use the literature, and your peers' expertise, to support best practice initiatives.

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LES COMPÉTENCES NON TECHNIQUES DES PRATICIENS EN SERVICE INTERNE : LE SYSTÈME SPLINTS

Auteurs :

Rhona Flin, Ph. D., professeure de psychologie appliquée, Centre de recherche en psychologie industrielle, Université d'Aberdeen, Écosse.

Lucy Mitchell, Ph. D., ancienne chercheuse universitaire au Centre de recherche en psychologie industrielle, Université d'Aberdeen, Écosse.

Bonnie McLeod, Inf. aut., B.Sc.Inf., M.S.Inf., CSP(C), ancienne présidente, Association des infirmières et infirmiers de salles d'opération du Canada (AII SOC).

Les normes de l'AII SOC relatives à cet article figurent dans la publication *Normes, lignes directrices et énoncés de position pour la pratique de soins infirmiers périopératoires autorisés* (11^e édition) de l'Association des infirmières et des infirmiers de salle d'opération du Canada (AII SOC) d'avril 2013, section I, partie A – Champs de pratique de l'AII SOC, énoncé 4, pg 19, section I, partie A, pages 29 à 32 et section I, partie B, normes 3.4.1 à 3.4.9, page 42.

RÉSUMÉ :

Cet article présente l'ensemble des compétences non techniques, et l'outil d'évaluation du comportement, pour les praticiens/les infirmiers et les infirmières en service interne (p. ex. : les infirmières/les infirmiers en soins périopératoires; les techniciens en salle d'opération) connu sous le nom de Scrub Practitioners' List of Intraoperative Non-Technical Skills (Liste de compétences non techniques peropératoires pour les praticiens en service interne) ou le système SPLINTS. Le système SPLINTS a été élaboré au Centre de recherche en

psychologie industrielle de l'Université d'Aberdeen, en Écosse, par une équipe de recherche se composant de psychologues, d'infirmières en service interne et d'un chirurgien. Les détails du système ont été présentés par Rhona Flin lors de la Conférence nationale et internationale de l'AII SOC avec l'IFPN, à Ottawa, en avril 2013. Le présent article expose les grandes lignes du projet de recherche et la méthode utilisée pour développer le système SPLINTS en plus de suggérer la raison pour laquelle il pourrait être un outil de formation et d'évaluation précieux pour les praticiens en service interne au Canada.

Le système SPLINTS pour les praticiens en service interne a été financé par HHS Education Scotland et par une subvention pour le développement stratégique de la recherche du Conseil écossais de financement, décernée au Réseau de recherche écossais pour la sécurité du patient. Vous trouverez tous les détails concernant le système et les publications s'y rapportant à www.abdn.ac.uk/iprc/splints.

NON-TECHNICAL SKILLS OF THE SCRUB PRACTITIONER: THE SPLINTS SYSTEM

Authors:

Rhona Flin, PhD, Professor of Applied Psychology, Industrial Psychology Research Centre, University of Aberdeen, Scotland.

Lucy Mitchell, PhD, former Research Fellow at Industrial Psychology Research Centre, University of Aberdeen, Scotland.

Bonnie McLeod RN, BScN, MSN, CPN(C), Past President, Operating Room Nurses Association of Canada (ORNAC).

ABSTRACT:

This article describes the non-technical skill set, and behavioural rating tool, for scrub practitioners/nurses (e.g. perioperative registered nurses; operating room technicians) known as the Scrub Practitioners' List of Intraoperative Non-Technical Skills or the SPLINTS system. The SPLINTS system was developed at the Industrial Psychology Research Centre of the University of Aberdeen, Scotland, by a research team comprising psychologists, scrub nurses, and a surgeon. Details of the system were presented, by Rhona Flin, at the ORNAC National and International Conference with IFPN, in Ottawa, in April of 2013. This article outlines the background of the research project and the method used to develop the SPLINTS system and suggests why it might be a valuable training and assessment tool for scrub practitioners in Canada.

THE BACKGROUND:

Adverse events (AE) are iatrogenic (unintended) injuries or complications that are caused by the delivery of the patient's care rather than the underlying medical condition. The first study of adverse events in Canadian hospitals,¹ published in 2004, indicated that 7.5% of hospital patients suffered an adverse event and that for 51.4% of the AEs the service most responsible for the delivery of care

was surgery. A later systematic review reported that 41% of all adverse events occurred in the operating theatre.² A subset of AEs is called surgical 'never events' and they include such incidents as sponges and instruments being retained within patients³ or wrong-site operations. It is estimated that, in the USA, there are over 4000 malpractice claims for surgical 'never events' each year.⁴ A new report on surgical never events⁵ identifies human factors as part of the cause. This can include failures of attention, lack of assertiveness, inadequate leadership, and poor communication among team members. These factors relate to what are now called non-technical skills. Non-technical skills are the cognitive and social skills that complement the technical skills in order to lead to safe and efficient task performance.⁶ The term comes from European aviation skill categories and is also widely used in many higher risk occupations to describe generic non-technical skill categories such as the communication, teamwork, leadership, situational awareness and decision-making that are critical for safety.

The importance of non-technical skills training has long been recognised in the aviation industry but it is a relatively new area of research for healthcare. Airlines have, since the 1980s, incorporated non-technical skills training into their team training in the form of Crew Resource Management (CRM) programmes.⁷ This step was the

result of the airline industry recognising, after retrospective incident analysis, that accidents or 'near-misses' usually occurred as a result of a combination of factors, rather than one isolated issue, and that one of the contributing factors was often human error or another human factor. The aviation industry, rather than blaming individuals, accepted that human error is inevitable and, to minimize risk, it now provides training in non-technical skills through CRM courses. Air Canada introduced CRM training for pilots in the 1990s.⁸

This CRM (non-technical skills) training involves teaching team members to understand that humans are fallible and that thinking and teamwork skills can sometimes be compromised – particularly in high pressure situations. An incident may result from an individual lacking a critical piece of information or becoming fixated on a peripheral issue rather than keeping an overall perspective of the full task at hand. CRM training is designed to minimize these instances by encouraging a positive culture that permits members of the team to communicate openly and by teaching the skills for effective teamwork including, for example, the ability to recognize that another team member is concentrating and know when they should, or should not, be interrupted. In recent years this type of CRM training has been introduced for operating theatre teams in Canada and in other country's healthcare systems.⁹

The SPLINTS system was developed at the Industrial Psychology Research Centre of the University of Aberdeen, Scotland, by a research team comprising psychologists, scrub nurses, and a surgeon.

The main difference between providing training for non-technical skills in aviation as opposed to healthcare is that, in aviation, annual pilot licensing is only granted after passing both technical and non-technical skills examinations. In nursing/ medicine, there is not, as yet, any requirement for non-technical skills assessment in order to practice. These non-technical skills are not, in fact, explicitly taught in medical/nursing degree courses in Canada or the United Kingdom although this is beginning to change.¹⁰ Non-technical skills would seem to be critical for staff in the operating theatre as this is where multi-disciplinary teams of different training backgrounds, with various levels of expertise, work together toward the same goal – safe surgery for the patient. Researchers in a number of countries are now recognizing this and have begun working with clinicians to develop assessment and training methods that could lead to improving patient safety.¹¹

Behavioural rating systems have now been developed in order to rate an individual's non-technical (CRM) skills performance. A research team of psychologists and clinicians based at the University of Aberdeen has developed non-technical skills rating systems for anaesthetists (ANTS, www.abdn.ac.uk/iprc/ants), anaesthetic assistants (ANTS-AP, www.abdn.ac.uk/iprc/antsap) and surgeons (NOTSS, www.abdn.ac.uk/iprc/notss) and these systems are now being used by clinicians, to rate and train colleagues within their respective disciplines, in several countries.

The skill sets, or 'taxonomies', in the behavioural rating system, typically include a list of the most essential non-technical skills for the role that is being assessed and also provide behavioural markers in the form of examples of good and poor performance. The examples are provide guidance to the person who is going to be using the system to observe task performance, make ratings, and provide feedback. A numeric rating scale, and space for debriefing comments, are usually provided on the score form for recording the behavioural rating.

SPLINTS FOR THE SCRUB NURSE:

In 2007 the NHS Education for Scotland (NES) funded research into developing a similar rating system for the scrub practitioner and this funding resulted in the SPLINTS system project. A multi-disciplinary team of perioperative practitioners, psychologists, and a consultant surgeon began by reviewing the medical and psychological literature on scrub practitioner non-technical skills. Very little empirical research was found and this confirmed that this was a new topic of study as related to the scrub practitioner.¹² The review determined that, of the 424 papers originally identified, only 37 reported data collected in the operating theatre and only 13 of those papers had data pertaining to the non-technical skills of scrub practitioners. The non-technical skills of the scrub practitioner, as outlined in the literature, focused on communication, teamwork, and situation awareness (knowing what is going on around you).^{13, 14} Although perceptual and anticipatory skills are critical for the scrub practitioner only one paper in the review had explicitly studied this. An Australian study referred to scrub practitioners possessing 'judicial wisdom' to assess the behaviour and actions of the theatre team by drawing on their personal expertise, combined with their technical knowledge of procedures, without the need to interrupt the surgeon.¹⁵ There were 10 papers on communication in the review including a Canadian study on the development of a communication checklist to promote better team communication between disciplines.¹⁶ Disruptions caused by information exchange about future patients, or other communications irrelevant to the patient currently undergoing surgery, were also discussed as a distraction for the nurses in theatre.¹⁷

The literature review provided no evidence of a behavioural rating system in use for scrub practitioners in any healthcare systems. In order to further investigate and identify the essential non-technical skills, specific to the role of scrub practitioner, semi-structured interviews were conducted with experienced scrub practitioners (n=25) from three Scottish hospitals. Consultant surgeons (n=9) from

four Scottish hospitals were also interviewed to gain a surgical perspective regarding which scrub practitioner behaviours make the surgical task easier or more difficult.¹⁸ Interviewing ‘subject matter experts’ (SME) is a recognised method of task analysis and is used to identify the social (inter-personal) and cognitive (thinking) processes a worker uses to achieve task goals.¹⁹ Sometimes it is difficult for experts to verbalise what they do in their jobs, as they believe that they perform automatically, so interview techniques have been developed to enable this tacit knowledge to emerge.

Further evidence was obtained, from these interviews, to support the

importance of situation awareness for scrub practitioners. Listening, watching, understanding and anticipating were all described as being critical skills required for the scrub practitioner to be able to effectively assist the surgeon. Teamwork was also mentioned and interviewees described the importance of the skills of sharing, clarifying, and coordinating with other members of the scrub and the wider theatre team. Being organised and preparing for a case, when there was time available, and setting an example to others by maintaining high standards were also stated as important to the scrub practitioners. Coping with stress, particularly when a procedure does not go according to the original plan, was

another critical skill that was mentioned. There were fewer mentions of the skills of leadership and decision-making although guiding a less experienced surgeon and making decisions surrounding which instruments to hand to the surgeon did emerge in the interviews.

Behavioural rating systems should be concise and focus on only the most critical skills so that they are not overly complex or time-consuming for the user. The SPLINTS system was prepared for use by scrub practitioners in theatre so, in order to generate a list of essential non-technical skills for the scrub practitioner, the data extracted from the literature review was combined with the

Table 1: SPLINTS v 1.0 skill categories, elements and behavioural examples for good (✓) and poor (✗) performance

Category	Element	Behavioural examples
Situation awareness	Gathering information	✓ watches surgical procedure ✗ fixates on one task
	Recognising and understanding information	✓ reacts to conversational cues exchanged between other team members ✗ does not change own activity level when appropriate
	Anticipating	✓ times requests appropriately ✗ asks for items late
Communication and teamwork	Acting assertively	✓ gives clear instructions/ requests to team members ✗ fails or is slow to communicate requirements
	Exchanging information	✓ uses non-verbal signals where appropriate ✗ fails to articulate problems in a timely manner
	Co-ordinating with others	✓ deals appropriately with interruptions from others ✗ ignores requests of others
Task management	Planning and preparing	✓ organises equipment ✗ opens sterile equipment/ supplies indiscriminately
	Providing and maintaining standards	✓ protects sterile field and instrumentation ✗ fails to check equipment settings/ relies on others to do so
	Coping with pressure	✓ does not rise to others' emotional outbursts ✗ raises voice unnecessarily

data from the interview studies. Four panels of experienced scrub practitioners (Participant total, n=16) then discussed and refined the skill list to produce the prototype SPLINTS taxonomy.²⁰ This prototype contained three skill categories, each with three underlying elements, and the panels also provided examples of good and poor behaviours to assist users of the SPLINTS system in make judgements regarding a scrub practitioner's performance (see Table 1).

A handbook was also produced to help scrub practitioners use the system in practice and to assess non-technical performance in the operating theatre. Along with the skill categories, the underlying elements, and the behavioural examples, a rating scale was also created for the SPLINTS system to enable the user to make specific ratings of performance: 1 = poor; 2 = marginal; 3 = acceptable; 4 = good; NR = not required (for occasions where that skill was not necessary). There is also a section on the rating form, to allow the user to record notes for each behavioural element so that the trainer/assessor can, at the conclusion of the surgical procedure, provide performance scores as well as structured feedback to the scrub practitioner.

The next study in the SPLINTS project was conducted to test the reliability and sensitivity of the SPLINTS system.²¹ This was important to ascertain whether the prototype system contained all the essential skills and elements necessary for safe and effective scrub practitioner performance and to test whether the SPLINTS system could be used reliably to rate the behaviour of scrub practitioners. This study recruited, on a volunteer basis, experienced (mean=17 years; SD=8.22; range 2-35 years) scrub practitioners (n=34) who each attended a session consisting of a 4-hour training and testing workshop covering background regarding human factors and non-technical skills in high-risk industries. The training also included instruction in and practice using the SPLINTS system to rate the performance of a scrub practitioner. This training used a 12 minute film of a simulated scenario, showing an operating theatre situation,

which was paused at various intervals to allow for discussion among participants. The researchers then tested the SPLINTS system by asking the participants to individually rate (without discussion) the performance of the scrub practitioner in the simulated scenarios (n=7). Each scenario showed a scrub practitioner dealing with a different, and realistic, intraoperative situation. Situations included, for example, discovering that a swab/sponge is missing from a count or organising equipment when a laparoscopic case has to be converted to an open procedure. The scenarios were designed to show the full range of behaviours that were to be scored using the four-point SPLINTS rating system.

Acceptable inter-rater agreement (rwg>.7) (22) was achieved between the raters. This was, given the short training time the participants received (4 hours), encouraging. Participants fell within one scale point of expert ratings in >90% of skill categories, and elements, and were able to use SPLINTS to rate performance with a reasonable level of accuracy. There was also good internal consistency in the system with absolute mean difference $M < 0.2$ of a scale point for all three categories. Evaluation questionnaires were completed by participants and indicated that they felt the SPLINTS system contained all the essential skills and was a usable tool in the operating theatre. The project then underwent a final test of the usability of the SPLINTS system, in the real theatre setting, at four Scottish teaching hospitals. Volunteer scrub practitioners, in the roles of mentor, were asked to use the SPLINTS system to structure feedback for junior (less than 2 years' experience) scrub practitioners' performance on cases (n=20) over a four week period. Not all the participants managed, due to other work pressures, to

complete their observations and ratings. Questionnaires that were completed (n=8 mentors and 8 juniors) provided a preliminary indication that SPLINTS was usable in the operating theatre. This now needs to be tested more systematically by the practitioners who are trying out SPLINTS as a tool for training and assessing scrub practitioners' non-technical skills.

Details of this project and related papers can be found at www.abdn.ac.uk/iprc/splints. A new tool, A-ANTS, is now also being developed for the assessment of anaesthetic practitioners, such as nurses and Operating Department Practitioners (ODP), who assist the anaesthetist.^{23, 24}

CONCLUSION:

What the SPLINTS system aims to do is to provide a structured framework, and common terminology, for discussing non-technical skills that all good scrub practitioners possess and use on a daily basis. The experienced scrub practitioners, who were involved in the project, have all indicated that the SPLINTS system will provide them with a training resource for an aspect of scrub practitioner performance by identifying skill sets that are sometimes difficult to teach. It should also be noted that SPLINTS can be used to rate scrub practitioners of all experience levels, not just junior members of staff, and it can also be used for self-assessment. By developing the SPLINTS system, the Aberdeen project group has now produced a system that helps provide a common language for discussing non-technical issues that may emerge during the course of the busy working day in the multi-disciplinary operating theatre. The SPLINTS tool could be adapted for use by other healthcare facilities, including those

The SPLINTS system for scrub practitioners was funded by HHS Education Scotland and a Strategic Research Development Grant from the Scottish Funding Council, awarded to the Scottish Patient Safety Research Network.

Full details of the system, and supporting publications, can be found at www.abdn.ac.uk/iprc/splints.

in Canada, with testing to ensure that it is applicable to the behaviours typically found in those operating theatre environments.

ORNAC Standards pertaining to this article can be found in the Operating Room Nurses Association of Canada (ORNAC) (April 2013) Standards, Guidelines, and Position Statements for Perioperative Registered Nursing Practice (11th edition). Section I, Part A - ORNAC Scope of practice for Perioperative Registered Nurses statement 4, pg 19, Section I, Part A, pg(s) 28-31 and Section I Part B RNS 3.4.1 - 3.4.9 pages 40-41.

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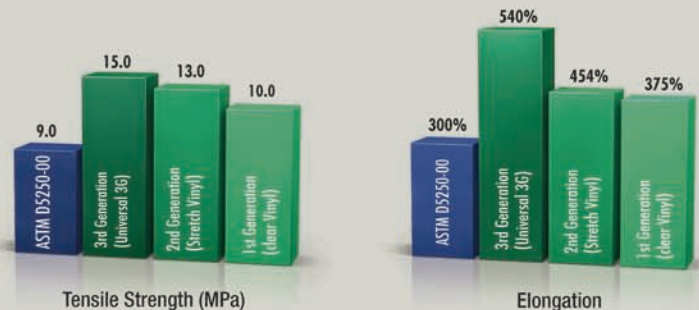
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