CANADIAN JOURNAL of EMERGENCY NURSING

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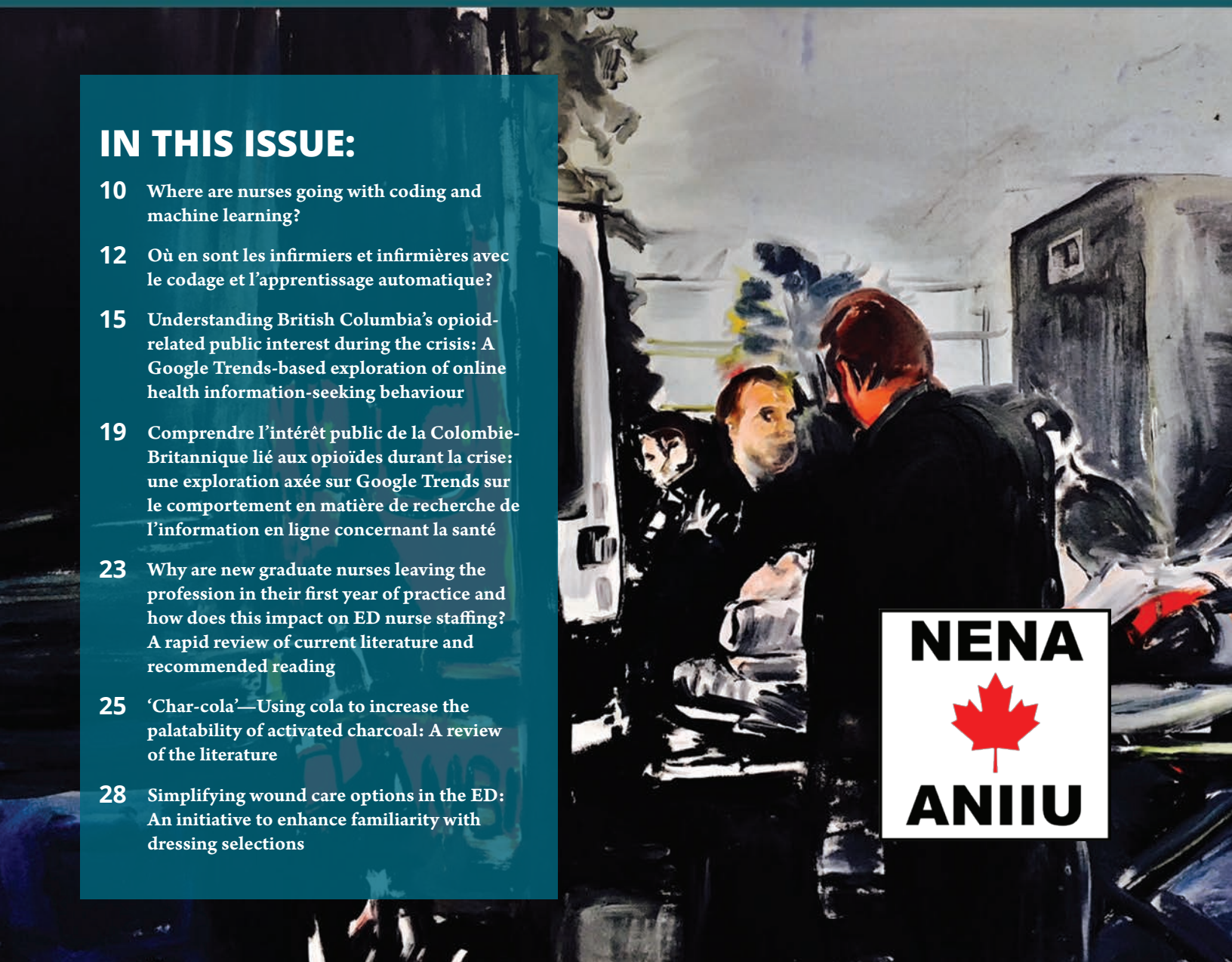

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Guidelines for Authors

The *Canadian Journal of Emergency Nursing (CJEN)* is distributed to members of the National Emergency Nurses Association, to individuals, and to institutions interested in emergency nursing. The journal is published bi-annually.

The editorial board invites submissions within the four domains of emergency nursing: clinical care, education, leadership and research. Topic areas of emergency nursing that we encourage submissions on include transport, forensic, northern, rural and Indigenous nursing. Arts-informed scholarship and expressions are also welcome. If you are a novice writer, NENA member, and you have an important emergency nursing story, our editorial staff will be happy to partner with you to get your manuscript published.

The journal is listed in CINAHL and Medline and provides a forum for:

- New clinical practices
- Clinical case studies
- Research papers
- Practice improvement papers
- Scholarly projects
- Reviews
- Arts-informed scholarship
- Letters to the editor
- Short report or profile of:
  - an outstanding emergency nurse, department or program
  - a newsworthy event
  - an ally to Canadian emergency nurses.

CJEN will publish manuscripts related to emergency nursing by non-nurse authors, but priority will be given to Canadian emergency nurses. For detailed submission instructions, please email **editor@NENA.ca**

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President's Report

It's February. It's winter. It's cold. But the days are growing longer and there is a light at the end of the tunnel. One sure sign of approaching spring is the rash of notices promoting the NENA Conference.

Our conference committee has been hard at work for a year and they have come up with a crackerjack event designed especially for the needs of Canadian emergency nurses. First of all, we have some great preconference sessions scheduled for the day before the conference begins. Then we have a substantial conference schedule with topics covering the *science of nursing* in multiple scenarios to the *art of patient care*, which makes our work so much more than a series of technical activities. To top it off, there will be a social event at the Laurel Packing House. I would try to make it sound noble by emphasizing the networking potential of a social activity, but we go for the fun, and best of all, admission is included in your conference registration.

While our conference committee has been working hard to organize the conference, the NENA Board has been gaining its *sea legs* with our new Board structure to the point that we have completed some projects that have been haunting us. The website is increasingly robust, with updated position statements in French and English.

A certification course is available on the NENA website to assist in preparation for the Canadian Nurses Association Emergency Nurses certification exam and NENA will provide bursaries for members who achieve or renew certification. The revised Canadian Emergency Nurses Scope and Standards of Practice is well on its way to completion. Our committees have administered CTAS, TNCC, ENPC, and have been powering the roll-out of our fully Canadian EPICC courses.

In addition to our fixed committees, members have faithfully volunteered for additional tasks and short-term committee assignments. All of us are volunteers, but we owe a special debt of gratitude to those who work unseen. Thank you.

NENA is involved with the Canadian Association of Critical Care Nurses in supporting a project studying *Exploring New Graduate Nurses' Transition into Critical Care Nursing Practice*. It is expected that this landmark study will demonstrate not only the importance of supporting new graduate nurse transition, but also highlight pragmatic aspects of how we can recognize the challenges these nurses face and offer some retention strategies.

These are some of the projects with which NENA has been engaged, but to really get a feel for what NENA is doing, I invite you to be part of the Kelowna experience.

See you in Kelowna!

Stephanie Carlson
CJEN President

Rapport du président

C'est février. C'est l'hiver. Il fait froid. Mais les jours s'allongent et il y a une lumière au bout du tunnel. Un signe certain de l'approche du printemps est la série d'avis faisant la promotion de la Conférence de l'ANIIU.

Notre comité de la conférence travaille dur depuis un an et a mis sur pied un événement exceptionnel, spécialement conçu pour les besoins des infirmières et infirmiers d'urgence canadiens. Tout d'abord, nous avons d'excellentes sessions de pré-conférence prévues la veille du début de la conférence. Ensuite, nous avons un calendrier de conférences important avec des sujets couvrant la science de la prestation de soins infirmiers, des multiples scénarios à l'art des soins aux patients, ce qui rend notre travail bien plus qu'une série d'activités techniques. Pour couronner le tout, il y aura un événement social à la Laurel Packing House. Je voudrais essayer de le faire paraître noble en mettant l'accent sur le potentiel de réseautage d'une activité sociale, mais nous allons pour le plaisir, et en plus l'admission est incluse dans votre inscription à la conférence.

Pendant que notre comité de conférence a travaillé dur pour organiser la conférence, le conseil d'administration de l'ANIIU a accéléré la cadence avec notre nouvelle structure du conseil, au point que nous avons terminé certains projets qui nous hantaient depuis un certain temps. Le site Web est de plus en plus solide, avec des énoncés de position mis à jour en français et en anglais.

Un cours de certification est disponible sur le site Web de l'ANIIU pour aider à la préparation de l'examen de certification de l'Association des infirmières et infirmiers d'urgence du Canada, et l'ANIIU offrira des bourses aux membres qui obtiennent ou renouvellent leur certification. La portée et les normes de pratique des infirmiers et infirmières d'urgence canadiennes révisées sont en voie d'achèvement. Nos comités ont administré le CTAS, le TNCC et l'ENPC, et ont permis le déploiement de nos cours EPICC entièrement canadiens.

En plus de nos comités permanents, des membres se sont loyalement portés volontaires pour des tâches supplémentaires et des affectations de comité à court terme. Nous sommes tous des bénévoles, mais nous devons une dette spéciale de gratitude à celles et ceux qui travaillent en coulisse. Un grand merci.

L'ANIIU participe avec l'Association canadienne des infirmières et infirmiers en soins intensifs dans l'appui d'un projet visant à étudier la transition des *infirmiers et infirmières diplômés vers la pratique infirmière en soins intensifs*. On s'attend à ce que cette étude marquante démontre non seulement l'importance de soutenir la transition des infirmiers et infirmières diplômés, mais aussi de souligner les aspects pragmatiques de la façon dont nous pouvons reconnaître les défis auxquels font face ces infirmiers et infirmières en proposant des stratégies de rétention.

Ce sont quelques-uns des projets auxquels l'ANIIU a participé, mais pour avoir une idée de ce que fait l'ANIIU, je vous invite à faire partie de l'expérience Kelowna.

Au plaisir de vous retrouver à Kelowna!

Stephanie Carlson
Présidente de l'ANIIU

Editor's report

In this, the Spring 2018 edition of the *Canadian Journal of Emergency Nursing (CJEN)*, I am proud to report on the excellent work of our peer reviewers. Ten of our colleagues volunteered to provide expert blinded peer-reviews of the articles included in this edition of the journal. Peer-review is essential to the functioning of a professional and scientific community—it provides quality control and is self-corrective. To continue to provide expert peer-review, we must grow our network of expert peer-reviewers. If you would like to contribute to the *CJEN* by being a reviewer, email the editor at **editor@NENA.ca**. The commitment will be no more than providing a critique of one or two articles per year, related to your area of expertise.

Articles in this edition of the *CJEN* range from being technology-based (computer coding and online search data), to a rapid review of literature (regarding new nurse retention), to a clinical practice article (about activated charcoal). The submissions are high-quality and diverse in their content and origin, very much like our specialty, which cares for all ages of patients in settings as varied as forensics, rural, urban, and transport.

The *CJEN* is the journal of our specialty and we welcome and encourage submissions. The journal stands as the knowledge base and communique for the amazing work done by emergency nurses. Though our priority is publishing articles by, about, and for frontline Canadian emergency nurses, we will consider submissions by other disciplines that are relevant to our specialty. For submission instructions, please email **editor@NENA.ca** for our complete submission guidelines.

Matt Douma
CJEN Editor

Artistic expression

By Madeline Mills

I felt like I needed to help save the world, so, when I was 29 years old, I left my job at an art gallery and went to nursing school. I love being a nurse. It's a great honour, and it's also one of the saddest, hardest jobs there is. Sometimes the things I saw in the hospital overwhelmed me—the lights, the pathos, the faces of people who were dying or suffering.

Years ago, I was working on the intensive care unit with a patient on life support. She was hooked up to every kind of machine, and there were so many ugly tubes connected to her. In the morning when the sun came up, yellow and rosy-pink, light ripped through the room and it transformed everything. Even the tubes looked beautiful.

I knew I wanted to paint the things I was seeing but, of course, I could never ask a patient for consent when they were so vulnerable. So, instead, I focused on the hospital and the staff. My personal project kept growing, and eventually EMS invited me to go on a ride-along.

I did a whole series of paintings based on that night in the ambulance. I feel like they represent heroism in health care, but I just couldn't finish this particular painting at the time. I think it was the lighting that made it feel scary—the flashing red of the ambulance and the dark of the night.

When I found out about the art show in the Gray Gallery, I decided to try again because, to me, this painting is so Canadian. The EMTs and nurses didn't ask this man for his credit card before helping him. He happened to be poor, but he got the same fantastic care he would have received if he was rich. I love that. And I love Canada.

Madeline Mills, faculty member, Bachelor of Science in Nursing program at Grant MacEwan University in Edmonton. Madeline's painting was part of an exhibit in the Gray Gallery organized by the Arts in Health Education Group called Oh, Canada! Canada's 150 years of Daring to Care that featured artistic works from 13 faculty members and students.

Treasurer's report

Hello,

My name is Kitty Murray and I am currently the treasurer of NENA. I have included a gross representation of our income and expenses based on our final statements of the last fiscal year from July 1, 2016 through June 30, 2017. As you can see, most of our income is from membership dues and course fees from the main courses run through NENA (TNCC, ENPC, CTAS, EPICC). Last year's NENA conference in Charlottetown gained a profit of approximately $40,000, which was split 50/50 between NENA and the host province. Not all conferences generate this large a profit—kudos to the Charlottetown team.

Our main expenses are the annual conference (offset by the income generated), board meetings (travel and accommodation), *CJEN* (your journal) and bursaries and promotion, as well as accounting fees.

Next year's budget is based on the prior year's expenses, as well as priorities brought forward by the membership and the board. Looking forward to seeing you in Kelowna.

Kitty Murray
NENA Treasurer

National Emergency Nurses Association
Income and Expenses
July 2016 through June 2017 (our last fiscal year)

Income	
Membership dues	$33,523.71
Course fees*	$89,605.00
Advertising	$16,594.34
Conference registration	$88,981.62
Sponsorships etc.	$28,000.00
Total	**$256,704.67**

**note course fees shown are minus royalties and fees to provinces*

Expenses	
EPICC course development	$5,808.28
Conference expenses	$85,898.34
Board meetings	$30,970.46
Misc. travel	$19,313.08
CJEN and bursaries	$25,174.05
Promotion & admin	$8,000.00
Accounting & legal	$23,391.39
Total	**$198,555.60**

Rapport de la trésorière

Bonjour,

Je m'appelle Kitty Murray et je suis actuellement trésorière l'ANIIU. J'ai inclus une représentation brute de nos revenus et de nos dépenses en fonction de nos déclarations finales de notre dernier exercice financier, soit du 1er juillet 2016 au 30 juin 2017. Comme vous pouvez le voir, la plupart de nos revenus proviennent des cotisations et des frais de scolarité des principaux cours gérés par l'ANIIU (TNCC, ENPC, CTAS, EPICC). La conférence de l'ANIIU de Charlottetown de l'année dernière a généré un bénéfice d'environ 40 000 $ séparé en deux entre l'ANIIU et la province hôte. Toutes les conférences ne génèrent pas un tel profit. Un grand bravo à l'équipe de Charlottetown.

Nos principales dépenses sont associées à la conférence annuelle (compensée par les revenus générés), les réunions du conseil d'administration (déplacement et hébergement), CJEN (votre journal) et les bourses et promotions, ainsi que les frais de comptabilité.

Le budget des années suivantes est basé sur les dépenses des années antérieures ainsi que sur les priorités présentées par les membres et le conseil d'administration. Au plaisir de vous voir à Kelowna.

Kitty Murrray
Trésorière l'ANIIU

Association nationale des infirmiers et infirmières d'urgence
Revenus et dépenses
De juillet 2016 à juin 2017 (notre dernière année fiscale)

Revenus	
Cotisations des membres	33,523.71 $
Frais des cours*	89 605.00 $
Publicité	16 594.34 $
Inscription conférence	88 981.62 $
Commandites, etc.	28 000.00 $
Total	**256 704.67**$

**notez que les redevances et les frais aux provinces sont déduits des frais de cours.*

Dépenses	5 808.28 $
Élaboration cours EPICC course	85 898.34 $
Dépenses conférence	30 970.46 $
Réunions conseils d'administration	19 313.08 $
Divers déplacements	25 174.05 $
CJEN et bourses	8 000.00 $
Promotion et administration	23 391.39 $
Comptabilité et services juridiques	**198 555.60 $**
Total	

Director of Education Report

CTAS Update

CTAS Revisions

CTAS revisions for the current CTAS provider courses in Canada are nearing completion. The format for course delivery is expected to change:

- Development of an online learning platform for part of the course
- Face-to-face CTAS instructor-led sessions
- Course fees and instructor fees are expected to change
- Development of an updated course manual for course participants and CTAS instructors

Phases of the CTAS rollout

- The newly revised program is expected to roll out by early summer. At present, the CTAS revision team is working on the format for both the online learning component and face-to-face instructor-led sessions.
- CTAS instructors will be required to complete an update session (online) prior to teaching the newly revised CTAS course
- The CTAS course will be piloted in the spring and evaluated prior to being released in Canada
- CTAS instructors will receive updates through the NENA email or via CAEP

CTAS Instructors: Ontario

CTAS instructors in Ontario were transitioned to the CAEP/NENA program in the fall, 2017. More than 70 instructors completed the transition requirements. NENA would like to welcome you to the CAEP/NENA CTAS program! To contact the CTAS NENA rep, use **ctas@nena.ca**

Canadian Emergency Nursing Certification online prep course

More than 859 students from 21 countries have signed up online for this free program since Fall 2016. The program is designed to provide additional study materials for preparing to write the Canadian Emergency Nursing Certification exam. The program can be an option for any emergency nurse seeking continuing education opportunities. Contact **educationdirector@nena.ca** if you would like more information.

Course Updates

Emergency Nurses Pediatric Course – 5th Edition update:

The ENPC 5th revisions are ongoing. The ENPC 5th revision student manual is nearing completion. The team is developing online pre-course modules and the face-to-face instructor-led sessions. The working group anticipates the rollout in 2018.

TNCC 8th revision working group

TNCC is now in a revision cycle. More information will be forthcoming to TNCC instructors in 2018.

Canadian Concussion Collaborative (CCC)

The CCC website has excellent references for concussion assessment and care. Learn more about the up-to-date science in concussion management at **http://casem-acmse.org/education/ccc/**

Submitted by Margaret Dymond

Directrice du rapport sur l'éducation

Mise à jour de l'ÉTG

Révision ÉTG

Les révisions de l'ÉTG pour les cours actuels du fournisseur de l'ÉTG au Canada sont presque terminées. Le format de la livraison du cours devrait changer:

- L'élaboration d'une plateforme d'apprentissage en ligne pour une partie du cours
- Des séances de formation dirigées par un instructeur de l'ÉTG
- Les frais de cours et de l'instructeur devraient changer
- Élaboration d'un manuel de cours à jour pour les participants au cours et les instructeurs de l'ÉTG

Phases de lancement de l'ÉTG

- Le programme nouvellement révisé devrait être opérationnel au début de l'été. À l'heure actuelle, l'équipe de révision de l'ÉTG travaille sur le format de la composante d'apprentissage en ligne et des sessions dirigées par un instructeur en personne.
- Les instructeurs de l'ÉTG devront effectuer une séance de mise à jour (en ligne) avant d'enseigner le cours de l'ETG récemment révisé.
- Le cours sur l'ÉTG sera mis à l'essai au printemps et évalué avant d'être publié au Canada
- Les instructeurs de l'ÉTG recevront des mises à jour par courriel de la part de l'ANIIU ou du CAEP

Instruction de l'ÉTG : Ontario

Les instructeurs de l'ÉTG en Ontario ont été transférés au programme CAEP/ANIIU à l'automne 2017. Plus de 70 instructeurs ont rempli les exigences de transition. L'ANIIU aimerait vous souhaiter la bienvenue au programme ÉTG CAEP/ANIIU! Pour contacter le représentant ÉTG ANIIU, utilisez le courriel **ctas@nena.ca**

Cours de préparation en ligne pour le Certificat canadien en soins infirmiers d'urgence

Plus de 859 étudiants de 21 pays se sont inscrits à ce programme gratuit depuis l'automne 2016. Le programme est conçu pour fournir du matériel d'étude supplémentaire pour se préparer à passer l'examen l'obtention du Certificat canadien en soins infirmiers d'urgence. Le programme peut être une option pour toute infirmière et infirmier d'urgence cherchant des possibilités de formation continue. Contactez **educationdirector@nena.ca** si vous désirez en savoir plus.

Mise à jour de cours

Cours pédiatrique en soins infirmiers d'urgence (CPSIU) – Mise à jour 5ème édition :

Les révision 5ème édition du CPSIU sont en cours. La 5ème révision du manuel de l'étudiant pour le CPSIU est presque terminée. L'équipe travaille à l'élaboration de modules d'avant-cours en ligne et de séances en face à face dirigées par un instructeur. Le groupe de travail anticipe le lancement en 2018.

8ème groupe de travail sur la révision du TNCC

Le TNCC est maintenant dans un cycle de révision. Plus d'informations seront disponibles aux instructeurs de TNCC en 2018.

Collaboration Canadienne sur les Commotions cérébrales (CCC)

Le site Web CCC contient d'excellentes références sur l'évaluation et la prise en charge des commotions cérébrales. Apprenez-en davantage sur les nouvelles informations scientifiques dans le domaine de la gestion des commotions à **http://casem-acmse.org/education/ccc/**

Soumis par Margaret Dymond

NCAC Director's Report

Here we are preparing the NCAC Spring 2018 Report and there is snow on the ground. But, as the poet Percy Bysshe Shelley said, "O, wind, if winter comes, can spring be far behind?"

Your NCAC members (Dawn Paterson, Western Rep; Denis Bouchard, French Rep; Sharon Ramagnano, Central Rep; Maureen Doody, Eastern Rep; Val Lamb, EPICC Rep and myself, Monique McLaughlin, Chair) have been working on revising the Course Administration Manual to reflect the changes that ENA has made to its manual. We are also working on our contract with ENA to address many of the concerns that our Canadian TNCC/ENPC instructors and course directors have addressed in the delivery of those same courses here in Canada. As always, NCAC is committed to advocating for quality nursing education that is accessible to all nurses nationally. We believe that education should not be affected by the barriers of cost, geography and language.

With the Olympics being held at the time of writing and the "own the podium" sensibility, we are proud to be supporting EPICC, the NENA-sponsored CANADIAN course. EPICC will be both the preconference for the NENA Conference being held in Kelowna this April and also the CAEP Conference being held in Calgary in May. NCAC is also interested in connecting nurses across our great country. Please, if you haven't already, ask to join our Facebook Page TNCC ENPC EPICC (NCAC). It is a private group and it is a wonderful forum to share resources and highlight education that is happening across Canada. You can contact NCAC at **courses@nena.ca**

Hoping to see you in Kelowna. Happy spring.

Monique McLaughlin
NCAC Director

Rapport de la directrice du NCAC

Nous préparons présentement le rapport du printemps 2018 du NCAC et il y a de la neige au sol. Mais comme l'a dit le poète Shelley, « 0, Vent, Si vient l'hiver, le printemps peut-il être loin? » Vos membres du NCAC (Dawn Paterson, représentante occidentale; Denis Bouchard, représentant français; Sharon Ramagnano, représentante centrale; Maureen Doody, représentant de l'Est; Val Lamb, représentant de l'EPICC et moi-même, Monique McLaughlin, présidente) ont travaillé à la révision du manuel d'administration des cours pour refléter les changements apportés par l'ANIIU à leur manuel. Nous travaillons également sur notre contrat avec l'ANIIU pour répondre aux nombreuses préoccupations que nos instructeurs et directeurs de cours du TNCC / ENPC ont abordés dans la prestation de ces mêmes cours ici au Canada. Comme toujours, le NCAC s'engage à promouvoir une éducation infirmière de qualité accessible à tous les infirmiers et infirmières à l'échelle nationale. Nous croyons que l'éducation ne devrait pas être affectée par les barrières imposées par les coûts, la géographie et la langue. Avec les Jeux olympiques qui se tiennent présentement et la sensibilité « À nous le podium », nous sommes fiers de soutenir l›EPICC, le cours CANADIEN commandité par l'ANIIU. L'EPICC sera à la fois la pré-conférence pour la conférence de l'ANIIU, qui se tiendra à Kelowna en avril prochain, et la conférence CAEP qui aura lieu à Calgary en mai. Le NCAC est également intéressé à établir des liens entre les infirmiers et infirmières de notre grand pays. Si vous ne l'avez pas déjà fait, veuillez demander à rejoindre notre page Facebook TNCC ENPC EPICC (NCAC). Il s'agit d'un groupe privé contenant un excellent forum pour partager des ressources et mettre en valeur l'éducation qui se déroule partout au Canada. Vous pouvez contacter NCAC à **courses@nena.ca**. En espérant vous voir à Kelowna. Bon printemps.

Monique McLaughlin
Directrice du NCAC

Bouquets

Bouquets and a Big Thank you to Erin Musgrave and Thora Skelton for their tireless work on the CTAS National Working Group. Unheralded and unseen by patients and most users of Canadian CTAS, these nurses have been key in maintaining its integrity, in ensuring that instructor standards are met. They have worked hand in glove with CAEP physicians on revisions through their years of service, bringing practical nursing expertise to every discussion. They have brought attention to detail and expertise built on years of nursing to this role. They have done all of this in addition to full-time nursing jobs and a family life. This is one of our most important NENA functions. These nurses will be missed. Thank you, Erin and Thora, for your service to Emergency Nursing.

❧

To the 222 nurses who have shown a commitment to professional development and advancing emergency nursing excellence by acquiring or renewing Canadian Nurses Association (CNA) Emergency Nursing Certification (ENC(C)). Nurses who achieve certification help establish and maintain our specialty. Congratulations!

Director of Membership & Promotion report

I would like to take the opportunity to inform NENA members that our membership this year has been consistent at approximately 1,300 members from across the country. I am happy that this number is consistent, but we truly need to do more promotion of our professional organization, as there are many Canadian emergency nurses who do not know who we are and what NENA is. We must continue to strive to promote our organization. There are more than 30,000 Canadian nurses who identify as emergency nurses and we need to do a better job at letting them know we are here for them and that there are many benefits to be gained from membership in NENA.

The NENA BOD elections will be held at the annual NENA conference this year in Kelowna, April 20–22, with many positions available. The position of Director of Membership & Promotion on the NENA Board will be absorbed into all the NENA Board Member portfolios. We, as NENA members, must be the ambassadors of our association. This is OUR organization and growing it must be a priority if we are the 'voice of Emergency Nursing in Canada'.

I thank you, the NENA members, for giving me the opportunity to assist in the leadership of NENA for the past six years, as a member of the Board of Directors, first as the President of NENA-AB and then as the Director of Membership & Promotion. It has been a great learning experience and a true honour. I will continue to be an active member of NENA, a professional organization of and for emergency nurses! Spread the word and encourage your friends and colleagues to become members—there is nothing to lose and so much to gain through NENA membership.

Sincerely,
Pat Mercer-Deadman, RN, ENC(C)
NENA Director of Membership & Promotion

Directrice de la promotion et des services aux membres

J'aimerais profiter de cette occasion pour informer les membres de l'ANIIU que notre nombre adhésion a été constant cette année à environ 1 300 membres de partout au pays. Je suis heureux que ce chiffre soit constant, mais nous devons vraiment faire plus de promotion pour notre organisation professionnelle, car il y a beaucoup d'infirmiers et d'infirmières d'urgence au Canada qui ne savent pas ce qu'est l'ANIIU. Nous devons continuer à faire de notre mieux pour promouvoir notre organisation. Il y a plus de 30 000 infirmières et infirmiers canadiens qui s'identifient comme infirmiers et infirmières d'urgence et nous devons faire un meilleur travail pour leur faire savoir que nous sommes là pour eux et que l'adhésion à l'ANIIU comporte de nombreux avantages.

Les élections au conseil d'administration de l'ANIIU se tiendront cette année à la conférence annuelle de l'ANIIU à Kelowna, du 20 au 22 avril, avec de nombreux postes disponibles. Le poste de directeur/directrice de la promotion et des services aux membres, au sein du conseil de l'ANIIU, sera intégré à tous les portefeuilles des membres du conseil d'administration de l'ANIIU. En tant que membres de l'ANIIU, nous devons être les ambassadeurs de notre association. C'est NOTRE organisation et sa croissance doit être une priorité pour continuer à être la « voix des soins infirmiers d'urgence au Canada ».

Je remercie tous les membres de l'ANIIU de m'avoir donné l'opportunité d'aider l'ANIIU au cours des 6 dernières années en tant que membre du Conseil d'administration, d'abord en tant que Présidente de l'ANIIU-AB et ensuite en tant que Directrice de la promotion et des services aux membres. Ce fut une grande expérience d'apprentissage et un véritable honneur. Je continuerai à être un membre actif de l'ANIIU, une organisation professionnelle pour les infirmiers et infirmières d'urgence! Passez le mot et encouragez vos amis et collègues à devenir membres, il n'y a rien à perdre et beaucoup à gagner en rejoingnant l'ANIIU.

Cordialement,
Pat Mercer-Deadman, RN, ENC(C)
Directrice de la promotion et des services aux membres de l'ANIIU

Where are nurses going with coding and machine learning?

By Maxwell Flitton

When computer programming first caught the public's eye, it was only for the few. In 1998, languages like C were mainstream and one had to do a lot to get a little done. Back then, in order to code you needed to understand how a computer worked. Math and algorithms were needed if you wanted the program to work effectively, and you had to consider concepts like memory management with the data that was being used. Not surprisingly, coders were mainly computer science, math, engineering and physics graduates. Computer hardware was also an issue. Tools were poorly supported by small communities resulting in errors when running (buggy), installing correct modules was complicated, and they crashed most of the time. Computing power was still relatively expensive compared to today's standards. However, this has all changed, in turn changing the attitude towards coding for some professions. Biologists who don't know anything about how a computer works, and have relatively poor math skills compared to other sciences (Gigerenzer et al., 2008) are now coding to effectively solve problems and automate procedures (Cardelli et al., 2017). Now it's time for nurses to fully utilize the power in their store-bought laptops to do the same.

First, for nurses to fully utilize the advancements that technology has to offer, we have to look at coding in a new light. To do this, let us first consider driving a car. In society, there are professional race car drivers. They make a living out of perfecting their driving skills, learning about the car and driving techniques, and putting the hours in so their skills and output are good enough for them to earn a living out of it. However, the car is a useful tool. When it became cheaper and easier to maintain with more support and buying options, the average citizen did not look at the professional race car drivers and conclude that driving was not for them. Yes, they would not be as good or as fast, but a small investment in lessons and a standard car would get them to work much faster than walking. The same goes for coding. We can look at the tech giants of Silicon Valley who were coding at the ages of 10 and dropped out of universities like Harvard and conclude that coding is not for us. But considering that the laptop in your house is powerful enough, and that there are programming languages that enable you to do amazing things without knowing anything about computers, coding is going the same way as the car. You don't have to be a childhood coder/genius to take full advantage of your computer.

The way this has happened is through a range of frameworks, modules, and levels of programming languages (elaborated on below). However, we must be careful—there are people out there promising that you will be the next Bill Gates without learning much and using these tools. This is about as likely as the average car driver competing in professional racing, some manage to do it, but the overwhelming majority simply use these tools to improve their life and workflow. To get grounding in this, the first concept that needs to be understood is 'levels of code'.

Levels of code

There are low and high levels of programming languages. Low levels are hard to code in; understanding of memory structure is needed and a bad coder will cause serious problems. In contrast, high levels do not require the coder to think about computer science concepts, as the language is already built on top of a low-level language. For instance, Python, a high-level language, is built on top of C. This means that all the memory management and communication with the hardware of the computer are already done. Instead, the coder focuses on the problem that they are trying to solve. This is achieved by breaking down every step of the problem and converting it into step-by-step instructions for the computer to process and carry out. In this high-level language, understanding the problem will give the coder more of an advantage than understanding memory management. High-level languages are not as powerful as their low-level counterparts, but they are still a lot faster than walking. Coding is a new field in terms of nursing, meaning that the examples are not present. However, the opportunities are numerous. Essentially, what is done with high-level programming languages is obtaining/creating data, processing data, pushing it, and storing it. From an entry to coding standpoint, nursing can be advanced to automating audits, generating reports, and easing the data entry process, as high-level languages have data input functions. A simple example from the author's past projects is a simple data processing project. The author was asked to help a team of doctors assessing the Great Britain athletic team. The medical data were on a hospital computer pulled from the main database onto an Excel file. The author wrote a simple script that went through the Excel file. It created an individual report for each athlete checking each column. If there were missing data in the column, they were highlighted in the athlete's report under the actions that need to be done, and a general report. The script took about 45 minutes to code, and it saved hours of admin. Rechecking for progress only required the data to be pulled again, and the script to be run again, taking less than a minute. Today, senior nurses write and evaluate protocols, evaluate how those junior nurses carry them out, and auditing practice. The future has senior nurses coding a simple high-level script that automates a process and evaluates the outcomes again and again, quickly and effortlessly.

Frameworks

Frameworks are where code can be placed. An example is a web framework. If a coder has mastered the basics of the Python programming language, for example, they may benefit from putting their program on the web for others to access and use, or for them to collect more data. This can introduce a host of problems. One example of such a complication is login credentials. Luckily, there are web frameworks. This means that the coder focuses on the code and the problem they are solving, and then pulls the login function from the framework when and where they need it. Frameworks require extra study and can get complicated. This

is where professionals start getting paid to code. However, with a couple of months of study, a rudimentary web app that can collect and store data can be developed.

Modules

The final concept that must be understood is modules. To illustrate this, let us look at robotic vision. There is a lot of math and logic involved in robotic vision and 3D mapping. Academics are working on it and you must understand all the math and logic if you want to make advancements in that field. However, if you just want to utilize the current technology for your project, a deep understanding is not needed. There is a robotic vision module that can be imported and simply used when needed (OpenCV, 2017). Because of this repackaging of functions, a tracking robot has been built with cheap hardware and minimalistic coding (RaspBerry Pi Org, 2017). Although it is not likely that nurses will be coding in robotics, it is a good demonstration of how powerful a high-level language can be when combined with a module. Right now, there are no dedicated nursing modules. This does not mean that a community cannot create one in the future. For nursing right now, a data processing module like Pandas is useful.

So, where does this leave nurses? Machine learning. Machine learning is not as abstract as it seems. Machine learning is where a number of variables are put into an algorithm. The algorithm then processes a large set of variables and outcomes known as training data. Once this is done, the machine-learning algorithm then goes through a series of processes and produces weights for each variable. This means every variable's effect on the outcome can be quantified. These weights are then tested for accuracy against another set of data. This is why machine learning has become so popular in industry. The public perception is that it is the backbone to artificial intelligence that produces software that learns and makes decisions based on inputs. This is true. However, machine learning is effective at processing numerous variables and calculating how much each variable affects the outcome. This can be exploited for exploratory research. One method is getting an outcome of interest. This can be something like a deterioration of a patient, an outcome in a waiting room, who is violent, or who had a cardiac arrest. An outcome associated with multiple variables is then put into a machine learning algorithm. Once the machine learning algorithm is finished, variable weights (a number multiplied by the value of the variable to contribute to the prediction) are produced from the machine-learning algorithm. The team can then focus on the variables with the biggest effect on the outcome. Sadly, machine learning seems to be a tool used on nurses, as opposed to being a tool for nurses. The only notable machine learning study that involved nurses was predicting which students would drop out of nursing courses (Moseley & Mead, 2008).

It is understandable why nurses are not taking charge of machine learning and using it to highlight areas of interest in all aspects of nursing. Once these areas have been highlighted, nurses can research deeper in order to understand these areas of interest more. The mathematics behind machine learning can be challenging. Combining this with code would only increase the challenge. However, like the robotic vision module, there is a machine-learning module that can be imported and used without having to code a machine-learning algorithm from scratch. This module has classification functions, functions that calculate the weights of variables, functions that interpret text data, etc. (Scikit-learn, 2017). Learning Python and using these modules will enable nurses to use basic machine learning algorithms to process large amounts of data to direct further research. This can be done with little to no math and no knowledge of how computers work. It's time for nurses to stop walking, and start driving.

If you're interested in learning how to code in Python follow my blog at **www.maxwellflitton.com** and visit **https://pythonforbiologists.com/** for math-free tutorials on how to code in Python.

About the author

I (Maxwell Flitton) am a nurse with seven years of accident and emergency experience at Charing Cross Hospital, London, England. I completed a physics degree in my spare time between 12-hour shifts and I am currently studying an MSc in physics and engineering in medicine at University College London, where my thesis is applying machine learning algorithms to dynamic vision sensors in surgical robotics. I code in Python, objective-C, and Swift. I like applying machine learning algorithms to data and have written my own app: Medical Matrix, which is now on the Apple app store. I am the co-founder of www.mygpevents.co.uk where I coded the backend data management. My main interests are data analysis and med tech development. I have spoken about coding at places like Imperial College London conferences and the Royal Society of Medicine and given talks to biomedical engineering students at University College Dublin on the practicalities of med tech design. In my spare, spare time I write code for a Financial Tech company in central London Holborn two days a week. I also like providing simple solutions that make clinicians' lives easier. For example, I coded some simple scripts that went through the databases of athletes in the Great Britain Olympic team and generated reports for each athlete. The result was that doctors could look at a simplified report of the athlete when assessing them. This solution took a couple of hours of coding.

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Où en sont les infirmiers et infirmières avec le codage et l'apprentissage automatique?

Par Maxwell Flitton

Quand la programmation informatique est apparue au grand public, seuls quelques-uns pouvaient y accéder. En 1998, des langues comme C étaient courantes et il fallait faire beaucoup de choses pour de petits objectifs. À l'époque, pour coder, vous deviez comprendre le fonctionnement d'un ordinateur. Les mathématiques et les algorithmes étaient nécessaires si vous vouliez que le programme fonctionne efficacement, et vous deviez considérer des concepts comme la gestion de la mémoire avec les données utilisées. Sans surprise, les codeurs étaient principalement des diplômés en informatique, en mathématiques, en ingénierie et en physique. Le matériel informatique était également un problème. Les outils étaient mal supportés par les petites communautés, ce qui entraînait des erreurs lors de l'exécution (instabilité), l'installation de modules corrects était compliquée, et tombaient en panne la plupart du temps. La puissance informatique était encore relativement couteuse par rapport aux normes actuelles. Cependant, tout a changé, surtout l'attitude envers le codage pour certaines professions. Les biologistes qui ne connaissent rien au fonctionnement d'un ordinateur et qui ont des compétences mathématiques relativement médiocres comparées à d'autres sciences (Gigerenzer et al., 2008) sont maintenant en mesure de coder pour résoudre efficacement des problèmes et automatiser des procédures (Cardelli et al., 2017). Maintenant, il est temps pour les infirmiers et infirmières d'utiliser pleinement la puissance de leurs ordinateurs portables achetés en magasin pour faire la même chose.

Premièrement, pour que les infirmiers et infirmières puissent utiliser pleinement les progrès de la technologie, nous devons envisager le codage sous un jour nouveau. Pour ce faire, essayons avant tout de faire une analogie avec la conduite automobile. Dans notre société, il y a des automobilistes et il y a des pilotes automobiles professionnels. Ils gagnent leur vie en perfectionnant leurs compétences de conduite, en apprenant tout sur la voiture et les techniques de conduite, et en passant des heures pour améliorer leurs compétences et leur performance afin d'en faire une carrière professionnelle. Cependant, la voiture est un outil utile. Quand il est devenu moins cher et plus facile à entretenir, avec plus de soutien et d'options d'achat, le citoyen moyen s'est très vite rendu compte que la conduite n'était pas faite que pour des pilotes automobiles professionnelles. Il est vrai que le citoyen moyen ne sera jamais aussi qualifié et n'ira jamais aussi vite que les pilotes automobiles, mais en investissant un peu dans des leçons de conduite et dans une voiture, le citoyen moyen est maintenant capable d'être plus efficace et d'aller au travail plus vite. La même chose vaut pour le codage. Nous pouvons regarder les géants de la technologie de la Silicon Valley qui codifient depuis l'âge de 10 ans et ont abandonné l'université, comme Harvard, pour en conclure que le codage n'est pas fait pour nous. Mais compte tenu du fait que l'ordinateur portable de votre maison est assez puissant et qu'il existe des langages de programmation qui vous permettent de faire des choses incroyables sans rien savoir des ordinateurs, le codage devient très similaire à la voiture. Vous n'avez pas besoin d'être un codeur / génie pour profiter pleinement de votre ordinateur.

Ceci s'est produit à travers une gamme de cadres, de modules et de niveaux de langages de programmation (développés ci-dessous). Cependant, nous devons faire attention - il y a des gens qui promettent que vous serez le prochain Bill Gates sans beaucoup apprendre et utiliser ces outils. C'est à peu près aussi probable que la possibilité d'un conducteur moyen de faire de la compétition automobile professionnelle, même si certains parviennent à le faire. Cependant, la majorité écrasante utilise simplement ces outils pour améliorer leur vie et leur flux de travail. Pour se faire une idée, le premier concept à comprendre sont les « niveaux de code ».

Niveaux de code

Il existe des niveaux bas et élevés de langages de programmation. Les niveaux bas sont difficiles à coder; la compréhension de la structure de la mémoire est nécessaire et un mauvais codeur causera de sérieux problèmes. En revanche, les niveaux élevés n'exigent pas du codeur de penser aux concepts de l'informatique, car le langage est déjà construit au-dessus d'un langage de bas niveau. Par exemple, Python, un langage de haut niveau, est construit au-dessus de C. Cela signifie que toute la gestion de la mémoire et la communication, avec le matériel de l'ordinateur, sont déjà effectuées. Au lieu de cela, le codeur se concentre sur le problème qu'ils tentent de résoudre. Ceci est réalisé en décomposant chaque étape du problème et en le convertissant en instructions étape par étape que l'ordinateur doit traiter et exécuter. Dans ce langage de haut niveau, comprendre le problème donnera plus d'avantages au codeur que de comprendre la gestion de la mémoire. Les langages de haut niveau ne sont pas aussi puissants que leurs homologues de bas niveau, mais ils sont encore beaucoup plus rapides. Le codage est un nouveau domaine en termes de soins infirmiers, ce qui signifie que des exemples ne sont pas présents. Cependant, les possibilités sont nombreuses. Essentiellement, ce qui est fait avec les langages de programmation de haut niveau, c'est d'obtenir / créer des données, de traiter des données, de les pousser et de les stocker. Du point de vue de l'entrée au codage, les soins infirmiers peuvent être avancés pour automatiser les audits, générer des rapports et faciliter le processus de saisie des données, car les langages de haut niveau ont des fonctions d'entrée de données. Un exemple simple, provenant de projets passés de l'auteur, est un projet de traitement de données simple. L'auteur a été invité à aider une équipe de médecins à évaluer l'équipe sportive de Grande-Bretagne. Les données médicales se trouvaient sur un ordinateur de l'hôpital. Elles ont été extraites de la base de données principale sur un fichier Excel. L'auteur a écrit un script simple qui a traversé le fichier Excel. Il a créé un rapport individuel pour chaque athlète, vérifiant chaque

colonne. S>il y avait des données manquantes dans la colonne, elles ont été mises en évidence dans le rapport de l'athlète sous les actions qui doivent être faites, et dans un rapport général. Il a fallu 45 minutes pour créer le script et a permis d'économiser de nombreuses heures en paperasse administrative. La revérification de la progression n'a nécessité que la récupération des données et l'exécution du script; ce qui a pris moins d'une minute. De nos jours, les infirmiers et infirmières chevronnés rédigent et évaluent des protocoles, évaluent la façon dont les infirmiers et infirmières subalternes les exécutent et font des vérifications. À l'avenir, les infirmières chevronnées seront en mesure de coder un script simple de haut niveau qui automatisera un processus et évaluera les résultats encore et encore; rapidement et sans effort.

Frameworks

Les « frameworks » sont là où l'on place le code (cadre de web). Par exemple, si un codeur maîtrise les bases du langage de programmation Python, il pourrait être utile de mettre son programme sur le web pour que les autres puissent y accéder et l'utiliser, ou pour collecter plus de données. Cependant, ceci peut introduire un grand nombre de problèmes. Les informations d'identification peuvent faire partie de l'un de ces problèmes. C'est pour cette raison que des « frameworks » sont mis en place. De cette façon, le codeur peut se concentrer sur le code et les problèmes à résoudre. Il lui suffit ensuite d'extraire la fonction de connexion à partir du « framework » quand il en a besoin. Les « frameworks » nécessite des connaissances supplémentaires et peuvent être complexes. C'est là où les professionnels sont payés pour coder. Cependant, avec quelques mois d'apprentissage, il est possible de créer une application web rudimentaire pouvant collecter et stocker des données.

Modules

Le concept final qui doit être compris est celui des modules. Pour illustrer cela, regardons la vision robotique. Il y a beaucoup de mathématique et de logique dans la vision robotique et la cartographie 3D. Les universitaires y travaillent et vous devez comprendre toutes les mathématiques et la logique si vous voulez faire des progrès dans ce domaine. Cependant, si vous voulez simplement utiliser la technologie actuelle pour votre projet, une compréhension profonde n'est pas nécessaire. Il existe un module de vision robotique qui peut être importé et simplement utilisé en cas de besoin (OpenCV, 2017). En raison de ce reconditionnement des fonctions, un robot de suivi a été construit avec du matériel bon marché et un codage minimaliste (RaspBerry Pi Org, 2017). Bien qu'il ne soit pas probable que les infirmiers et infirmières codent en robotique, c'est une bonne démonstration de la puissance d'un langage de haut niveau lorsqu'il est combiné avec un module. À l'heure actuelle, il n'y a pas de modules en soins infirmiers dédiés. Cela ne signifie pas qu'une communauté ne peut pas en créer un à l'avenir. Pour les soins infirmiers en ce moment, un module de traitement de données comme Pandas est utile.

Alors, où cela laisse-t-il les infirmiers et infirmières? L'apprentissage automatique n'est pas aussi abstrait qu'il n'y paraît. L'apprentissage automatique est l'endroit où un certain nombre de variables sont mises dans un algorithme. L'algorithme traite ensuite un grand ensemble de variables et de résultats connus sous le nom de données d'apprentissage. Une fois terminé, l'algorithme d'apprentissage machine passe ensuite par une série de processus et produit des poids pour chaque variable. Cela signifie que l'effet de chaque variable sur le résultat peut être quantifié. Ces poids sont ensuite testés pour leur précision par rapport à un autre ensemble de données. C'est pour cette raison que l'apprentissage automatique est devenu si populaire dans l'industrie. La perception du public est qu'il s'agit de l'épine dorsale de l'intelligence artificielle produisant un logiciel qui apprend et prend des décisions basées sur les intrants. C'est vrai. Cependant, l'apprentissage automatique est efficace pour traiter de nombreuses variables et calculer dans quelle mesure chaque variable affecte les résultats. Ceci peut être utilisé pour la recherche exploratoire. C'est une méthode qui reçoit un résultat présentant de l'intérêt. Il peut s'agir de quelque chose comme une détérioration d'un patient, un résultat dans une salle d'attente; une personne agressive ou qui a eu un arrêt cardiaque. Un résultat associé à plusieurs variables est ensuite placé dans un algorithme d'apprentissage automatique. Une fois l'algorithme d'apprentissage automatique terminé, des poids variables (un nombre multiplié par la valeur de la variable pour contribuer à la prédiction) sont produits à partir de l'algorithme d'apprentissage automatique. L'équipe peut alors se concentrer sur les variables ayant le plus grand effet sur le résultat. Malheureusement, l'apprentissage automatique semble être un outil utilisé sur les infirmiers et infirmières plutôt qu'un outil utilisé pour les infirmiers et infirmières. La seule étude notable sur l'apprentissage automatique impliquant des infirmiers et infirmières consistait à prédire quels élèves abandonneraient leurs cours de soins infirmiers (Moseley et Mead, 2008).

Il n'est pas compliqué de comprendre pourquoi les infirmiers et infirmières ne s'investissent pas dans l'apprentissage automatique et ne l'utilisent pas pour mettre en évidence les domaines d'intérêt de tous les aspects des soins infirmiers. Une fois ces domaines mis en évidence, les infirmiers et infirmières peuvent approfondir leurs recherches afin de mieux comprendre ces domaines d'intérêt. Les mathématiques derrière l'apprentissage automatique peuvent être difficiles. Combiner cela avec du code ne ferait qu'accroître le défi. Cependant, comme le module de vision robotique, il existe un module d'apprentissage automatique qui peut être importé et utilisé sans avoir à coder un algorithme d'apprentissage automatique. Ce module a des fonctions de classification, des fonctions qui calculent le poids des variables, des fonctions qui interprètent les données textuelles, etc. (Scikit-learn, 2017). L'apprentissage de Python et l'utilisation de ces modules permettront aux infirmiers et infirmières à utiliser des algorithmes d'apprentissage automatique de base pour traiter de grandes quantités de données afin de diriger d'autres recherches. Ceci peut être fait avec peu ou pas de connaissances en mathématiques et aucune connaissance dans le domaine du fonctionnement des ordinateurs.

Si vous désirez en savoir plus sur l'encodage Python, suivez mon blogue à **www.maxwellflitton.com** et visitez **https://python-forbiologists.com/** pour des tutoriels en mathématiques gratuits en rapport avec l'encodage Python.

Au sujet de l'auteur

Je suis un infirmier avec sept ans d'expérience en accident et en urgence à l'hôpital de Charing Cross. J'ai complété un diplôme de physique dans mon temps libre, entre des quarts de travail de 12 heures, et j'étudie actuellement pour obtenir une maîtrise en physique et ingénierie en médecine à la University College de Londres, où ma thèse applique des algorithmes d'apprentissage automatique aux capteurs de vision dynamiques en robotique chirurgicale. Je code en Python, objective-C, et swift. J'aime appliquer des algorithmes d'apprentissage automatique aux données et j'ai écrit ma propre application: Medical Matrix, qui est maintenant sur l'App Store d'Apple. Je suis le co-fondateur de www.mygpevents.co.uk où j'ai codé la gestion de données de backend. Mes intérêts principaux sont l'analyse de données et le développement de technologies médicales. J'ai parlé de codage à des endroits comme les conférences de l'Imperial College de Londres et de la Royal Society of Medicine et j'ai donné des conférences aux étudiants en génie biomédical de l'University College Dublin sur les aspects pratiques de la conception de technologie médicale. Dans mon temps libre, j'écris du code pour une entreprise spécialisée en technologie financières dans le centre de Londres Holborn deux jours par semaine. J'aime aussi fournir des solutions simples qui facilitent la vie des cliniciens. Par exemple, j'ai codé quelques scripts simples qui ont traversé les bases de données des athlètes de l'équipe olympique de Grande-Bretagne et généré des rapports pour chaque athlète. Grâce à cela, les médecins ont été en mesure de consulter un rapport simplifié de l'athlète lors de leur évaluation. Cette solution a pris quelques heures de codage.

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Understanding British Columbia's opioid-related public interest during the crisis: A Google Trends-based exploration of online health information-seeking behaviour

By C. Patterson, BSc, MD, and M.J. Douma, RN, MN, ENC(C), CCNC(C), CCN(C)

Introduction

Over the past two decades, opioid-related morbidity and mortality have escalated to a public health emergency (Ayers, Ribisl, & Browstien, 2011). Canada has the second highest per capita opioid consumption in the world (British Columbia Drug Overdose & Alert Partnership Report, 2014). In Canada, non-prescription opioids are the second most commonly misused substance among adolescents and adults, following cannabis (Burritt, 2015). As of 2016, the opioid-rated death rates in Alberta and British Columbia were more than 14 per 100,000 population, higher than homicides, suicides, breast and colon cancers (Busse, Craigie, Juurlink, Buckley, Wang, Couban, et al. 2017). The Canadian guidelines for opioid use were updated in 2017 to reflect concerns over opioid use (Canadian Pharmacists Association, 2017). In response to increasing overdoses, provincial governments have taken to increasing naloxone access. Alberta, Ontario, Nova Scotia, the Northwest Territories and the Yukon have made naloxone free and accessible to all at pharmacies or community distribution sites (CCENDU, 2016; Fischer, Kurdyak, Goldner, Tyndall, & Rehm, 2016). Healthcare professionals, such as emergency department staff, are searching for information to address the escalating crisis.

Introducing Google Trends

In addition to providing information on opioid-related morbidity and mortality, and access to take-home naloxone programs in Canada, the internet search engine Google provides relevant data for analysis by emergency department personnel. Google Trends has previously been used to monitor the public's health-seeking behaviour (Fischer, Murphy, Rudzinski, & MacPherson, 2016). Furthermore, Google search data has been used to describe present and future behaviour (Goel, Hofman, Lahaie, Pennock, & Watts, 2010). Examples include tracking communicable disease outbreaks and, more recently, examining the popularity of electronic nicotine delivery systems and illicit mephedrone use across the United States (Health Canada, 2018, International Narcotics Control Board, 2017).

The aim of this paper is to describe how Google Trends can be used by emergency department personnel to explore important health-related phenomena. Our exploration includes i) an analysis of internet search and news queries related to fentanyl and naloxone, as well as ii) a basic correlational analysis of queries for fentanyl and naloxone with British Columbian mortality data. We hope to demonstrate how open data can augment surveillance initiatives, describe the public's interest in health-related topics and their knowledge-seeking behaviour.

Methods

Data sources

Data were obtained from Google Trends (www.google.ca/trends), a real-time, cost-free database. Google Trends web and news search data related to fentanyl and naloxone were accessed on September 1, 2017. Data were extracted from January 2012 to the end of July 2017 and limited to British Columbia search volume. Mortality data from 2012 to 2017 were obtained from the report issued by the Coroner's Office of British Columbia (COBC) for the number of deaths in which fentanyl was i) detected, or ii) implicated as a sole cause of death between 2014 and 2017 (http://www2.gov.bc.ca/gov/content/safety/public-safety/death-investigation/statistical-reports).

Search strategy and data format

Search data output from Google Trends is provided as a relative search volume (RSV) that is scaled to the period of highest search volume in the requested time period (RSV 100). All other search volumes are reported as a relative volume of the reported maximum (for example, 50% of maximum search proportion would appear as 50). The data category "health" was selected, and fentanyl- and naloxone-related searches were compared simultaneously on the same RSV scale. The generic name of each drug was used as a search term in combination with search term modifiers suggested by Google. Related search terms were automatically generated by Google Trends and included in this analysis for both web and news searches.

Statistical analysis

Google Trends data were downloaded for basic statistical analysis (including Pearson's correlations) using Microsoft Excel (Redmond, Washington, USA). An exemption from institutional ethics review was obtained due to the open source nature of the data used for analysis.

Results

Fentanyl web search results

From January 2012 to August 2014, fentanyl was infrequently searched, with an RSV of less than 10. Searches for fentanyl rose to an RSV of 27 in March 2015. Fentanyl web search volume peaked in August 2015, indicating the highest relative proportion of searches for fentanyl, or naloxone, from January 2012 to July 2017. The RSV for fentanyl remained elevated but stable (fluctuating between an RSV of 15 to 37) from September 2015 to August 2016 and then jumped to an RSV

of 81 in September 2016. The British Columbian cities with the highest fentanyl search volumes from January 2012 to the end of July 2017 were Maple Ridge (RSV of 100), followed by Delta (RSV of 84), Kamloops (RSV of 81), and Kelowna (RSV of 81). See Figure 1 for a graph of fentanyl versus naloxone search volume.

Fentanyl news search results

News searches related to fentanyl remained low (mean RSV of four) from Jan 2012 to July 2015, with a single spike to an RSV of 13 between July and December 2013. In August 2015, there was a spike in fentanyl-related news searches to an RSV of 100. Since then, fentanyl-related news search volumes have remained consistently elevated (RSV from 11 to 72, mean of 32, an increase of 889%) from September 2015 through July 2017. See Figure 2 for a graph of fentanyl versus naloxone news search volume.

Naloxone web search results

Search results for naloxone were low from February 2012 to January 2016. From January 2016 to July 2017 the mean RSV for naloxone searches was nine and the RSV did not drop below four.

Search volume for naloxone has remained elevated from January 2016 to July 2017. The cities with the highest search volumes for naloxone were Kelowna (RSV of 100), Vancouver (RSV of 65), Surrey (RSV of 55) and Victoria (RSV of 54).

Naloxone news search results

News searches for naloxone remained consistently low (RSV of three) over the search period. It was not possible to analyze news search data for naloxone by location due to low search volumes.

Related search terms

Google Trends data output includes a list of related search terms that are searched in conjunction with the chosen key word. Related search terms for both fentanyl and naloxone included spelling variations, queries on effects, side effects and addiction. The top related searches for fentanyl included 'fentanyl patch' (RSV of 10), 'fentanyl overdose' (RSV of 10), 'Vancouver fentanyl' (RSV of 10), 'what is fentanyl' (RSV of five), and 'fentanyl effects' (RSV of five). Interestingly other related terms reported by Google included 'fentanyl in weed', 'fentanyl laced weed', 'fentanyl in marijuana', 'fentanyl abuse' and 'carfentanil'. Related search terms suggested for naloxone over the same period include 'narcan' (RSV of 60), 'naloxone kit' (RSV of 20), 'fentanyl' (RSV of 10), and 'narcan kit' (RSV of five).

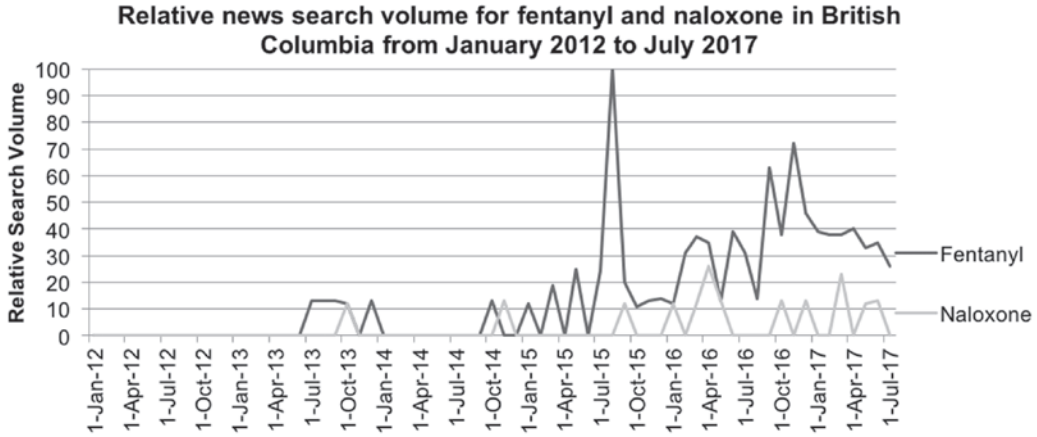

Figure 1: Relative web search volumes for fentanyl, oxycodone, and naloxone from Jan. 1, 2012, to July 1, 2017. Data source: Google Trends (www.google.com/trends)

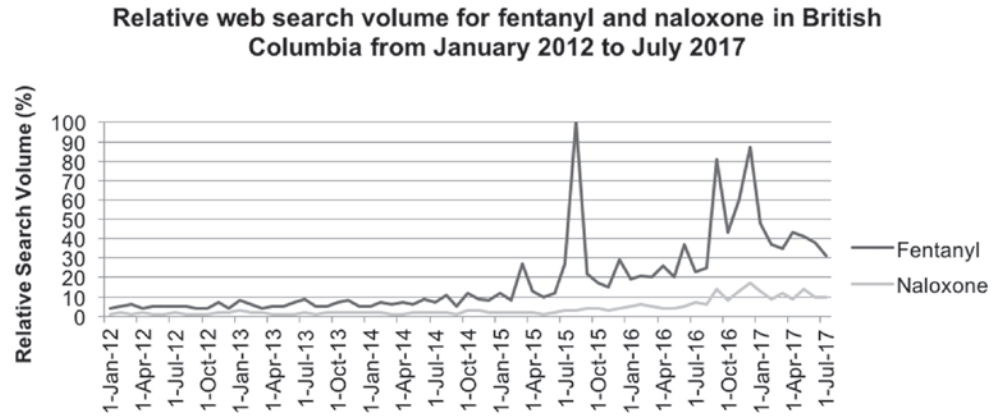

Figure 2: Relative news search volumes for fentanyl, oxycodone, and naloxone from Jan. 1, 2012, to July 1, 2017. Data source: Google Trends (www.google.com/trends)

Fentanyl, naloxone and BCCO data exploration

The number of deaths in which fentanyl was either the sole cause, or was detected on toxicology screening in combination with other drugs has been increasing steadily from 2008. However, a lack of reliable standardized data across the country makes fentanyl mortality difficult to comment on. Data from 2012 to 2016 are available from Saskatchewan, Alberta, and British Columbia. However, only British Columbia has reported mortality rates monthly (see Table 1 for data).

Google web and news search volumes for fentanyl were strongly correlated (Pearson 0.92). Naloxone-related web search volumes and BCCO mortality data are also strongly correlational (Pearson 0.92). However, Google web and news search volumes for fentanyl and naloxone were only moderately linearly correlated to BCCO mortality data from January 2012 to July 2017 (Pearson 0.7 and 0.67, respectively). There was minimal correlation between web and news search volumes for naloxone (Pearson 0.40).

Discussion

Web and news search results

Internet search queries for fentanyl did not increase significantly until August 2015. This information, along with the high correlation (Pearson 0.96) between RSVs for fentanyl in web searches and news, and the lower correlation between fentanyl-associated mortality and web searches (0.70), may suggest that internet searches for fentanyl may be driven more by news output from media than mortality rates. The increase in web searches for naloxone from August 2015 to July 2017 was not associated with a rise in news searches. The strong correlation between web searches for naloxone and increases in mortality (Pearson 0.92) over the study period, and the evident interest in naloxone despite an absence of media attention, may represent increase in health information-seeking behaviour and not a response to news and media. However, this is conjecture on our part and requires validation.

Table 1: Monthly Fentanyl-Related Mortality in British Columbia From January 2012 to July 2017

Date	2012	2013	2014	2015	2016	2017
Jan	0	5	5	20	46	102
Feb	0	3	5	8	29	101
Mar	0	6	9	8	48	112
Apr	1	8	8	12	48	117
May	1	3	8	8	37	106
Jun	1	2	6	11	43	95
Jul	0	1	3	14	40	73
Aug	1	4	8	15	37	
Sept	1	2	9	15	41	
Oct	0	4	13	16	53	
Nov	4	6	6	12	106	
Dec	3	6	11	12	129	
Total	**12**	**50**	**91**	**151**	**657**	**706**

The August 2015 spike in fentanyl-related search volume coincides with well-publicized and tragic deaths. These include 17-year-old Jack Bodie (King, Fraser, Boikos, Richardson, & Harper, 2014) and young parents Hardy and Amelia Leighton who orphaned their two-year-old child after a toxic ingestion of fentanyl (Sienuid & Woo, 2015). High-profile deaths have previously been shown to influence health-related news and internet searches (Waszak & Kawalec, 2017). These events require sensitivity, but also represent an important opportunity for timing health promotion campaigns and fundraising, when public interest is highest.

Related search terms

The British Columbia Centres for Disease Control report that prior to 2014, fentanyl patches were the most common source of misused fentanyl and that the extraction of patch contents for intravenous injection, the most common route of administration.(16) This may explain 'fentanyl patch' being one of the most commonly used related search terms. Additional search terms, 'fentanyl overdose', 'fentanyl laced weed' and 'carfentanil' represent poignant topics for health care professionals to address in their patient teaching and programming. The related search terms for naloxone (including 'narcan dose' and 'narcan kit'), suggest searchers are likely seeking information on reversing opioid overdose.

Fentanyl, naloxone and BCCO data explorations

The strong linear correlation between Google web and news search volumes for fentanyl may represent the seriousness and news-worthiness of the fentanyl crisis. The equally strong relationship between naloxone web search volumes and BCCO fentanyl-related mortality data is a noteworthy finding of our exploratory research. Logically one may conclude that, as more deaths occurred, interest in preventing additional deaths increased, but the statistical testing performed cannot add weight to this claim. This is an interesting hypothesis that requires further testing.

Limitations

This paper has significant limitations, as all Google Trends data are generated as a proportion of total search volume, meaning there is a lack of concrete data on the number of searches conducted, limiting the comparisons that can be drawn. Additionally, the lack of standardized data on fentanyl-related mortality across provinces severely limits the conclusions that can be drawn. Finally, as web searches still generate some media content, it is difficult to fully differentiate between news-seeking and health-seeking behaviour solely through Google Trends. Our exploratory research is limited to being descriptive and hypothesis generating.

Conclusions

In conclusion, although the scope of this study was limited, it has demonstrated how Google Trends can be used to access up-to-date search volume data. Interest in fentanyl and naloxone was described. Finally, there is potential to improve health-seeking utility of Google web queries by including information on fentanyl overdose first aid with searches for fentanyl or naloxone.

About the authors

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Comprendre l'intérêt public de la Colombie-Britannique lié aux opioïdes durant la crise: une exploration axée sur Google Trends sur le comportement en matière de recherche de l'information en ligne concernant la santé

Par C. Patterson, BSc, MD, and M.J. Douma, RN, MN, ENC(C), CCNC(C), CCN(C)

Introduction

Au cours des deux dernières décennies, la morbidité et la mortalité liées aux opioïdes ont dégénéré pour devenir une urgence en santé publique (Ayers, Ribisl et Browstien, 2011). Le Canada a la deuxième plus forte consommation d'opioïdes par habitant au monde (BC Drug Overdose & Alert Partnership, 2014). Au Canada, les opioïdes sans ordonnance sont la deuxième substance la plus souvent utilisée par les adolescents et les adultes, après le cannabis (Burritt, 2015). En 2016, les taux de mortalité des opioïdes en Alberta et en Colombie-Britannique étaient supérieurs à 14 pour 100 000 habitants, soit plus que les homicides, les suicides, les cancers du sein et du côlon (Busse, Craigie, Juurlink, Buckley, Wang, Couban, et al. 2017). Les lignes directrices canadiennes sur l'utilisation des opioïdes ont été mises à jour en 2017 pour tenir compte des préoccupations relatives à l'utilisation des opioïdes (Association des pharmaciens et pharmaciennes du Canada, 2017). En réponse à l'augmentation des surdoses, les gouvernements provinciaux ont pris l'habitude d'augmenter l'accès à la naloxone. L'Alberta, l'Ontario, la Nouvelle-Écosse, les Territoires du Nord-Ouest et le Yukon ont rendu la naloxone gratuite et accessible à tous dans les pharmacies ou les centres de distribution communautaires (CCENDU, 2016, Fischer, Kurdyak, Goldner, Tyndall et Rehm, 2016). Les professionnels de la santé, tels que le personnel des services d'urgence, sont à la recherche d'informations pour faire face à l'escalade de la crise.

Présentation de Google Trends

En plus de fournir de l'information sur la morbidité et la mortalité liées aux opioïdes et sur l'accès aux programmes de naloxone à emporter au Canada, le moteur de recherche Internet Google fournit des données pertinentes dans l'analyse du personnel des urgences. Google Trends a déjà été utilisé pour surveiller le comportement du public en matière de santé (Fischer, Murphy, Rudzinski et MacPherson, 2016). De plus, des données de recherche Google ont été utilisées pour décrire le comportement actuel et futur (Goel, Hofman, Lahaie, Pennock et Watts, 2010). Les exemples comprennent le suivi des éclosions de maladies transmissibles et, plus récemment, l'examen de la popularité des systèmes électroniques d'administration de nicotine et de l'utilisation illicite de méphédrone aux États-Unis (Santé Canada, 2018, International Narcotics Control Board, 2017).

Le but de cet document est de décrire comment Google Trends peut être utilisé par le personnel des urgences pour explorer d'importants phénomènes liés à la santé. Notre exploration comprend : i) une analyse de la recherche sur Internet et des nouvelles concernant le fentanyl et la naloxone, ainsi que ii) une analyse corrélationnelle de base des demandes de fentanyl et de la naloxone avec les données sur la mortalité en Colombie-Britannique. Nous espérons démontrer comment les données ouvertes peuvent augmenter les initiatives de surveillance, décrire l'intérêt du public vis-à-vis des sujets liés à la santé et leur comportement en matière de recherche des connaissances.

Méthodes

Sources de données

Les données ont été obtenues à partir de Google Trends (www.google.ca/trends), une base de données en temps réel et gratuite. Les données de recherche sur le Web et les nouvelles de Google Trends liées au fentanyl et au naloxone ont été consultées le 1er septembre 2017. Les données ont été extraites de janvier 2012 à la fin de juillet 2017 et se limitaient au volume de recherche de la Colombie-Britannique. Les données sur la mortalité de 2012 à 2017 proviennent du rapport du Bureau du coroner de la Colombie-Britannique (COBC) sur le nombre de décès où le fentanyl a été détecté, ou ii) comme cause unique de décès entre 2014 et 2017 (http://www2.gov.bc.ca/gov/content/safety/public-safety/death-investigation/statistical-reports).

Stratégie de recherche et format des données

Les données de recherche provenant de Google Trends sont fournies sous la forme d'un volume de recherche relative (VRR) qui est mis à l'échelle à la période du volume de recherche le plus élevé selon la période de temps demandée (VRR 100). Tous les autres volumes de recherche sont indiqués en tant que volume relatif du maximum signalé (par exemple, 50 % de la proportion de recherche maximale apparaîtraient comme 50). La catégorie de données « santé » a été sélectionnée et les recherches liées au fentanyl et à la naloxone ont été comparées simultanément sur la même échelle VRR. Le nom générique de chaque médicament a été utilisé comme terme de recherche en combinaison avec les modificateurs de termes de recherche proposés par Google. Les termes de recherche associés ont été générés automatiquement par Google Trends et inclus dans cette analyse pour les recherches sur le Web et les actualités.

Analyses statistiques

Les données Google Trends ont été téléchargées pour une analyse statistique de base (y compris les corrélations de Pearson) en utilisant Microsoft Excel (Redmond, Washington, États-Unis). Une exemption de l'évaluation éthique institutionnelle a été obtenue en raison de la nature à source ouverte des données utilisées pour l'analyse.

Résultats

Résultats des recherches web sur le Fentanyl

De janvier 2012 à août 2014, le fentanyl a été rarement consulté, avec un VRR inférieur à 10. Les recherches sur le fentanyl ont atteint un VRR de 27 en mars 2015. Le volume de recherche sur le fentanyl a atteint un sommet en août 2015, indiquant une plus forte proportion de recherche sur le fentanyl, ou la naloxone, de janvier 2012 à juillet 2017. Le VRR sur le fentanyl est demeuré élevé mais stable (fluctuant entre 15 et 37 VRR) de septembre 2015 à août 2016, puis a atteint un VRR de 81 en septembre 2016. Les villes de Colombie-Britannique ayant les plus gros volumes de fentanyl, de janvier 2012 à la fin de juillet 2017, étaient Maple Ridge (VRR de 100), suivie de Delta (VRR de 84), de Kamloops (VRR de 81) et de Kelowna (VRR de 81). Voir la figure 1 pour un graphique du fentanyl par rapport au volume de recherche sur la naloxone.

Résultats des recherches de nouvelles sur le Fentanyl

Les recherches de nouvelles liées au fentanyl sont restées faibles (VRR moyen de quatre) de janvier 2012 à juillet 2015, avec un seul pic VRR de 13 entre juillet et décembre 2013. En août 2015, il y a eu un pic de recherche de nouvelles liées au fentanyl (VRR de 100). Depuis lors, les volumes de recherche liés au fentanyl sont demeurés constamment élevés (VRR de 11 à 72, moyenne de 32, soit une augmentation de 889 %) de septembre 2015 à juillet 2017. Voir la figure 2 pour un graphique sur le fentanyl contre le volume de recherche de nouvelles sur la naloxone.

Résultats des recherches web sur la naloxone

Les résultats de la recherche pour la naloxone étaient faibles de février 2012 à janvier 2016. De janvier 2016 à juillet 2017, le VRR moyen pour les recherches sur la naloxone était de neuf et le VRR n'était pas inférieur à quatre.

Le volume de recherche pour la naloxone est demeuré élevé de janvier 2016 à juillet 2017. Kelowna (VRR de 100), Vancouver (VRR de 65), Surrey (VRR de 55) et Victoria (VRR de 54)).

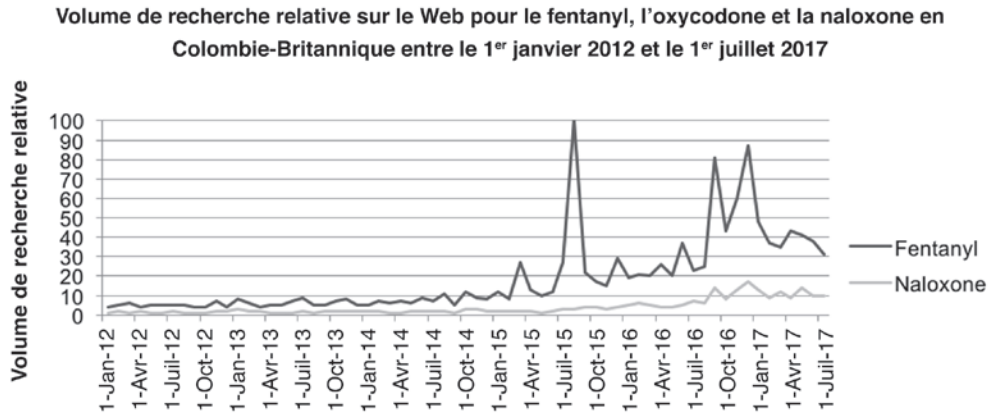

Figure 1: Volume de recherche relative sur le Web pour le fentanyl, l'oxycodone et la naloxone entre le 1er janvier 2012 et le 1er juillet 2017. Source de données: Google Trends (www.google.com/trends)

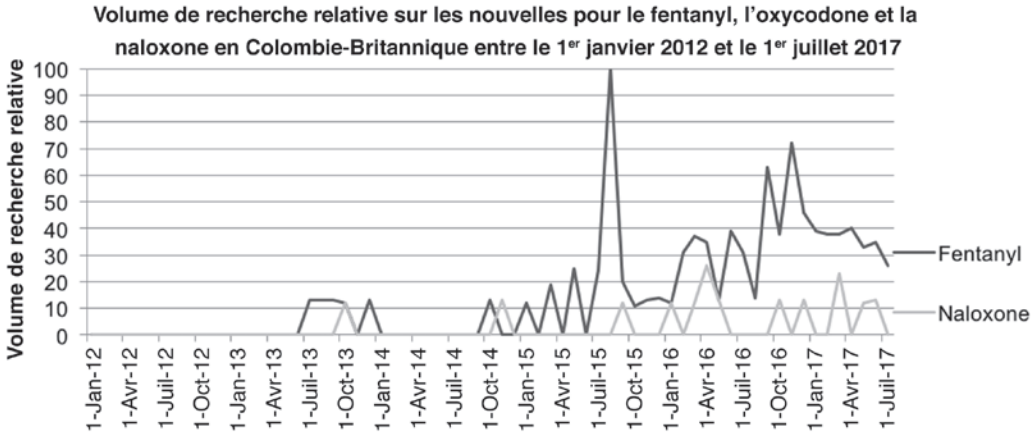

Figure 2: Volume de recherche relative sur les nouvelles pour le fentanyl, l'oxycodone et la naloxone entre entre le 1er janvier 2012 et le 1er juillet 2017. Source de données: Google Trends (www.google.com/trends)

Résultats des recherches de nouvelles sur la naloxone
Les recherches de nouvelles sur la naloxone sont demeurées systématiquement faibles (VRR de trois) au cours de la période de recherche. Il n'a pas été possible d'analyser les données de recherche de nouvelles pour la naloxone par lieu en raison de faibles volumes de recherche.

Termes de recherche connexes
La sortie de données Google Trends inclut une liste de termes de recherche connexes qui sont recherchés conjointement avec le mot clé choisi. Les termes de recherche connexes pour le fentanyl et la naloxone comprenaient des variations orthographiques, des questions sur les effets, les effets secondaires et la dépendance. Les recherches les plus fréquentes sur le fentanyl comprenaient « timbre fentanyl » (VRR de 10), « surdose de fentanyl » (VRR de 10), « Vancouver fentanyl » (VRR de 10), « qu'est-ce que le fentanyl » (VRR de cinq) et « effets du fentanyl »(VRR de cinq).

Fentanyl, naloxone et exploration des données BEP
Le nombre de décès dans lesquels le fentanyl était soit la seule cause, soit détecté lors du dépistage toxicologique en association avec d'autres médicaments, a augmenté régulièrement depuis 2008. Cependant, le manque de données normalisées fiables à travers le pays rend la mortalité du fentanyl difficile à commenter. Les données de 2012 à 2016 sont disponibles en Saskatchewan, Alberta et en Colombie-Britannique. Cependant, seule la Colombie-Britannique a déclaré des taux de mortalité mensuels (voir le tableau 1 pour les données).

Les volumes de recherche sur le Web et les nouvelles sur Google pour le fentanyl étaient fortement corrélés (Pearson 0,92). Les volumes de recherche sur le Web liés à la naloxone et les données de mortalité BEP sont également fortement corrélatives (Pearson 0.92). Cependant, les volumes de recherche sur le Web et les nouvelles sur Google pour le fentanyl et la naloxone n'étaient que modérément linéairement corrélés aux données de mortalité BEP, de janvier 2012 à juillet 2017 (Pearson 0,7 et 0,67, respectivement). Il y avait une corrélation minimale entre les volumes de recherche sur le Web et les nouvelles pour la naloxone (Pearson 0,40).

Tableau 1 : Mortalité mensuelle liée au fentanyl en Colombie-Britannique de janvier 2012 à juillet 2017

Date	2012	2013	2014	2015	2016	2017
Jan.	0	5	5	20	46	102
Févr.	0	3	5	8	29	101
Mars	0	6	9	8	48	112
Avr.	1	8	8	12	48	117
Mai	1	3	8	8	37	106
Juin	1	2	6	11	43	95
Juill.	0	1	3	14	40	73
Août	1	4	8	15	37	
Sept.	1	2	9	15	41	
Oct.	0	4	13	16	53	
Nov.	4	6	6	12	106	
Déc.	3	6	11	12	129	
Total	**12**	**50**	**91**	**151**	**657**	**706**

Discussion

Résultats des recherches sur le web et les nouvelles
Les recherches sur Internet pour le fentanyl n'ont pas augmenté significativement jusqu'en août 2015. Cette information, avec la forte corrélation (Pearson 0.96) entre les VRR du fentanyl dans les recherches sur le Web et les nouvelles, et la corrélation plus faible entre la mortalité associée au fentanyl et les recherches sur le Web (0,70), peut suggérer que les recherches sur Internet pour le fentanyl peuvent être davantage motivées par les informations des médias que par les taux de mortalité. L'augmentation des recherches sur le Web pour la naloxone entre août 2015 et juillet 2017 n'a pas été associée à une augmentation des recherches de nouvelles. La forte corrélation entre la recherche de naloxone sur le Web et l'augmentation de la mortalité (Pearson 0,92) au cours de la période étudiée et l'intérêt manifeste pour la naloxone en dépit de l'absence d'attention médiatique peuvent représenter une augmentation du comportement en matière de recherche de l'information et non une réponse aux nouvelles et médias. Cependant, c'est une conjecture de notre part et nécessite une validation.

La hausse du volume de recherche liée au fentanyl en août 2015 coïncide avec des décès tragiques et très médiatisés. Il s'agit notamment de Jack Bodie, 17 ans (King, Fraser, Boikos, Richardson et Harper, 2014) et de jeunes parents, Hardy et Amelia Leighton, qui ont rendu orphelin leur enfant de deux ans après une intoxication au fentanyl (Sienuid & Woo, 2015). Il a déjà été démontré que les décès médiatisés influencent les nouvelles liées à la santé et les recherches sur Internet (Waszak et Kawalec, 2017). Ces événements exigent de la sensibilité, mais représentent également une opportunité importante pour le calendrier des campagnes de promotion de la santé et la collecte de fonds, surtout lorsque l'intérêt du public est le plus élevé.

Termes de recherche connexes
Les Centers for Disease Control de la Colombie-Britannique signalent qu'avant 2014 les timbres de fentanyl étaient la source la plus courante de fentanyl mal utilisé et que l'extraction du contenu du timbre pour l'injection intraveineuse était la voie d'administration la plus courante (16). Ceci peut expliquer que le « timbre de fentanyl » soit l›un des termes de recherche connexes les plus couramment utilisés. Des termes de recherche supplémentaire, comme « surdosage de fentanyl », « fentanyl marijuana attachée » et « carfentanil », représentent des sujets d›intérêt pour les professionnels de la santé à aborder dans leur enseignement et leur programmation. Les termes de recherche connexes à la naloxone (y compris la « dose de narcane » et le « trousse de narcane») suggèrent que les chercheurs sont probablement à la recherche d'informations sur les manières d'inverser le surdosage d'opioïdes.

Fentanyl, naloxone et explorations des données BEP

La forte corrélation linéaire entre les volumes de recherche sur le Web et les nouvelles sur Google pour le fentanyl pourrait représenter la gravité et la médiatisation de la crise du fentanyl. La relation toute aussi forte entre les volumes de recherche sur le web de la naloxone et les données de mortalité liées au fentanyl BEP est une conclusion notable de notre recherche exploratoire. Logiquement, on peut conclure que, comme plus de décès ont eu lieu, l'intérêt pour la prévention de décès supplémentaires a augmenté, mais les essais statistiques effectués ne peuvent pas ajouter de poids à cette allégation. C'est une hypothèse intéressante qui nécessite d'autres essais.

Limites

Ce document présente des limites importantes, car toutes les données de Google Trends sont générées en proportion au volume total de recherche, ce qui signifie qu'il existe un manque de données concrètes sur le nombre de recherches effectuées, ce qui limite les comparaisons possibles. De plus, le manque de données normalisées sur la mortalité liée au fentanyl dans les provinces limite considérablement les conclusions qui peuvent en être tirées. Enfin, comme les recherches sur le Web génèrent encore un certain contenu médiatique, il est difficile de faire la différence entre un comportement en matière de de recherche de l'information et un comportement en matière de recherche de santé uniquement à travers Google Trends. Notre recherche exploratoire se limite à être descriptive et génératrice d'hypothèses.

Conclusions

En conclusion, bien que la portée de cette étude ait été limitée, elle a démontré comment Google Trends peut être utilisé pour accéder à des données de volume de recherche à jour. Les intérêts vis-à-vis du fentanyl et de la naloxone ont été démontrés. Enfin, il est possible d'améliorer l'utilité des requêtes sur le Web de Google en matière de santé en incluant des informations sur les premiers secours en cas de surdosage de fentanyl avec des recherches sur le fentanyl ou la naloxone.

Au sujet des auteurs

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Why are new graduate nurses leaving the profession in their first year of practice and how does this impact on ED nurse staffing? A rapid review of current literature and recommended reading

By Michael Sandler, RN, BSN, CNCC(C)

Key messages

- Job demands such as heavy workload, high job stress, poor nursing-medicine relationships, lack of leadership or supervision and bullying lead to burnout and predict intent to leave.
- Newly graduated nurses perceive significant stress in their first year of practice regardless of context and background factors, such as hospital level (referral, rural, etc.) or the amount of experience they gained in their last clinical practicum.
- New graduate nurses' work behaviour is a complex process, influenced by their attitudes toward their work, personal characteristics, job opportunities, and workplace attributes. Several characteristics are significant in predicting satisfaction, organizational commitment and intent to leave over and above work attitudes.
- New graduate nurses' intent to leave correlates to their self-image and understanding on what it means to be a nurse.
- New graduate nurses' intent to leave decreases as they reach their second year of practice.
- Adequate support resources significantly reduced new graduate nurses' intent to leave.

Definitions

A new graduate nurse is defined as a nurse who has graduated from an accredited nursing school in the last two years and is licensed.

Intended audience

This review is most relevant for hospital administrators, emergency department unit managers and staff

Method of research collection

A literature search of CINAHL and MEDLINE was conducted after a brief exploration of the current literature. CINAHL was searched using the terms: new graduate nurses, personal retention, job satisfaction, and work environment. MEDLINE was searched, using the terms job satisfaction, health personnel, retention psychology and new graduate nurs*.

A total of 139 articles were reviewed for appropriateness. One hundred and thirty-two were discarded. Six articles were used for this review. A subsequent second search was conducted with ED nursing as a modifier and a further 12 articles were reviewed to provide recommendations relevant to the emergency department (ED) nursing environment.

Limitations of the research

1. This summary includes solutions targeted to the issues of new graduate ED nurse retention.
2. Generally, surveys are subject to selection bias.
3. Most of the research included in this review was conducted in North America, leading to a geographical bias.
4. Some of the foundational research on this was conducted in the 1970s and not included in this review.

Background

The attrition rate of new graduate nurses remains higher than in other areas of the nursing workforce (Kramer, Brewer & Maguire, 2013). This is concerning given the significant resources that are needed to transition new nurses into practice. Further, the nursing workforce is not currently able to absorb the added human resource losses. Previous research has established that up to 18% to 30% of new graduates will leave their current position for a different practice environment or the profession all together in the first year and up to 37%–57% will leave in their second year of practice. High turnover rates can have a lasting negative impact on staff morale, work productivity, and even patient outcomes (Chandler, 2012).

Evidence

The most common causes of new graduate nurses increasing "intent to leave" included interpersonal violence, workplace stress, feelings of incompetence and low confidence related to practice, unit workload and interdisciplinary relationships. An important finding that emerged as a primary reason for new graduates leaving practice altogether was interpersonal violence within nursing and then between nursing and other healthcare professionals, such as doctors.

1. Multiple dimensions of graduate nurse self-concepts rise significantly in the second half of the graduate year and nurses who report a strong self-concept correlate with a strong predictor of graduate nurse retention.
2. Poor work environments, poor nursing supervision, and difficult physician relations along with high workload, inadequate staffing, and time pressures lead to stress that is cited as a primary reason to leave.
3. Job demands predicted burnout and subsequently poor mental health. Job resources predicted work engagement and lower turnover intentions. Burnout was also a significant predictor of turnover intent.

4. Newly licensed registered nurses' work behaviour is a complex process, influenced by their attitudes toward their work, personal characteristics, job opportunities, and workplace attributes. Several characteristics are significant in predicting satisfaction (ethnicity, gender) and organizational commitment (patient load, mandatory overtime, shift, and unit type) and intent to stay (income, age) over and above work attitudes.
5. The level of anxiety and stress experienced by new graduate nurses is extraordinary. In the acute care clinical environment, graduate nurses' responsibility is overwhelming. Stress in the clinical practice environment is one of the many contributing factors that influences new graduate nurses' intention to quit in their first 12 months of nursing practice.
6. Newly graduated nurses perceived a lot of stress and nearly one-third of them intended to quit during their first three months of clinical practice. Background factors such as hospital level (referral, rural, etc.) and the nurses' experience in their last clinical practicum are the best predictors of the intention to quit as new grads.

Bottom line

Each setting will have a different collection of predictors of intent to leave that intersect to affect the new graduate negatively. Resources should be placed strategically to enhance support and reduce these predictors. Targeted solutions based on best practice and evidence should be explored to support new graduate nurses.

Targeted ED findings

1. Research suggests that the total cost to mentor three new graduate nurses to the ED using an extended residency is approximately $90,000, providing a savings of more than $100,000 compared to the cost of $192,000 to recruit three new staff.
2. New graduate nurses who participated in a targeted ED residency program suggested that six months was an appropriate length of program to meet objectives and develop the required skills to provide high-quality patient care.
3. A dedicated supernumerary mentor for new graduate ED nurses led to better patient care outcomes, increased staff morale, better inter-professional relationships, and more overall unit efficiency including increased patient flow through the department.
4. To be successful, new graduate nurses in the ED require access to strong clinical and administrative leadership. Ensure accessible leadership, management and governance structures are in place. Create smaller teams, as part of the larger overall structure to foster increased support for new graduate emergency nursing practice (Evans, Hughes, & Ward, 2017; Turner & Goudreau, 2011; Betts, 2003).

About the author

I (Michael Sandler) am a passionate nurse educator with an interest in promoting, transport and rural and remote nursing, addressing and/or expanding scope of practice issues, and improving the care received by patients throughout B.C. I relocated to the beautiful B.C. interior to take on the role of Clinical Practice Educator (CPE) for the High Acuity Response Team (HART), which is an innovative practice that addresses the provision of mobile intensive care to rural hospitals that do not have critical care services in an effort to stabilize and sustain patient care and, when necessary, transport patients to a higher level of care. The practice was recognized as a Promising Practice by the Health Council of Canada using the Health Innovation Portal Evaluation Framework. I also have the pleasure of chairing Association of Registered Nurses of British Columbia's (ARNBC) Rural and Remote policy table, a joint effort by the B.C. Ministry of Health and ARNBC to bring a nursing focus to rural and remote healthcare issues, including improving nursing services to rural and remote communities. In my personal time, I am completing graduate studies in nursing at University of British Columbia-Okanagan.

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'Char-cola'—Using cola to increase the palatability of activated charcoal: A review of the literature

By Christopher Picard, CD, BSN, RN, ENC(C), and Gel Cortiguierra, BScN, RN

Activated charcoal (AC) is a porous carbon product formed by superheating carbon compounds. The process results in small particles with an exceptionally large surface area. The large surface area is clinically useful for its ability to bind with drugs, chemicals, and organic compounds. This binding or "adsorption" is useful in the clinical context because when ingested it binds with toxins and prevents gastric absorption, leaving the AC-bound chemicals to be excreted in feces (AACT/EAPCCT, 2005). Activated charcoal has been recognized as a gastric decontaminant since the early 1800s (Juurlink, 2015), and is still the most commonly used agent for GI decontamination in acute poisoning (Watson 2005). It's used for a wide variety of poisonings and is generally quite safe; but getting patients, especially pediatric patients, to consume the medication orally can be difficult. This article will review the use of AC in poisoning: which ingestions it is useful for, the evidence to support its use, typical dosing of AC, and we offer evidence-based suggestions on how flavouring agents can increase palatability and patient adherence.

AC will bind with most drugs. It is effective for most poisonings. However, the adsorption process relies on weak binding and factors such as toxin volume, temperature, solubility/ionization of the toxin, pH, and the presence of other gastric contents. For this reason it's easier to describe when AC is ineffective, or requires multiple doses, than it is to create an exhaustive list of drugs it will bind to. Strong ions, heavy metals and alcohols are generally not well adsorbed to AC (Olson, 2010; AACT/EAPCCT, 2005). Substances not well adsorbed by AC can be recalled by the "PHAILS" mnemonic: **P**esticides, **H**ydrocarbons, **A**cids and **A**lkalis, **I**ron, **L**ithium, and **S**olvents (Davis & Anderson, 2017). Although single dose AC is the norm, occasionally multiple doses of AC may be given to select patients (Eddleston et al., 2008). Drugs that may require multiple dose AC (MDAC) administration can be recalled by the mnemonic "ABCD": **A**ntimalarials (quinine) and **a**minophylline (theophylline), **B**arbiturates (phenobarbital) and **B**eta-blockers (nadolol), **C**arbamazepine, and **D**apsone (Stephen et al., 2001).

The evidence to support AC use is of relatively low quality. Conducting randomized controlled trials (RCT) on poisoned patients is ethically and logistically challenging. As a result, the use of AC is not well supported with RCT evidence. In-vitro studies show that AC will strongly bind to common toxins (Juurlink, 2016). AC has also been shown to decreases serum levels with sub-toxic drug ingestions in volunteer studies when compared to control (Olson, 2010; Juurlink, 2016). These studies have shown AC to be effective in reducing rates of drug absorption by 30–63% depending on the drug and time of AC administration (Olson, 2010). A meta-analysis of volunteer studies found that AC reduced drug absorption by an average of 38% if administered within one hour, and that it continued to be effective at four hours with a median reduction of 27.4% (Jürgens, Hoegberg, & Graudal, 2009). Although AC has shown to be effective at reducing absorption rates and decreasing serum drug levels, the two randomized controlled trials that have assessed AC have not shown a mortality benefit (Cooper, Le Couteur, Richardson, & Buckley, 2005; Eddleston et al., 2008). The RCTs should be interpreted with caution. In one, half the patients were poisoned with pesticides (and are likely not generalizable to pharmaceutical overdoses) (Eddelston et a., 2008), and in the other the patients were toxic with either acetaminophen, which has a direct antidote, or, benzodiazepines, which tend not to be actively treated (Cooper et al., 2005). Both studies had large numbers of patients with delays greater than four hours to AC administration.

The outcomes of case reports are generally positive and show several clinically significant, non-mortality, benefits of AC including: reduction in serum drug levels (AACT/EAPCCT, 2005); reductions in toxin-specific complications such as QTc intervals (Friberg, Isbister, & Duffull, 2006), hepatotoxicity (Chiew et al., 2017), rates of delirium (Page, Duffull, Whyte, & Isbister, 2008), and antidote dose requirement (Chiew et al., 2017). While the efficacy is a topic for debate, the general safety of AC is not, with complications tending to be outweighed by the potential benefits of judicious AC administration (Juurlink, 2016).

Although there is some disagreement on the efficacy of AC, it is generally agreed upon that the sooner AC can be administered after poisoning, the better the adsorption will be (AACT/EAPCCT, 2005). Usual doses of activated charcoal are 0.5-1g/kg for pediatric patients and typical initial adult doses of 50–100g with additional 50g doses potentially given every four hours (AACT/EAPCCT, 2005; Chiew et al., 2015). The evidence suggests that AC should not be given by nasogastric tube or used in patients who cannot maintain their own airway, because of the risk for AC aspiration and resultant pneumonitis (AACT/EAPCCT, 2005). The risks and benefits of AC should also be weighed for patients with, or at risk for GI perforation, as it may obscure endoscopic investigation of the stomach (AACT/EAPCCT, 2005). Ultimately, regional practice may be guided by specific institutional policies, and individual dosing may vary between patients and toxins. Clinical judgment is required.

Most patients will tolerate AC orally, but palatability, especially in pediatric patients, can present a significant barrier to timely

ingestion. A number of studies have examined the addition of flavouring agents to address this issue. The majority of these studies have investigated the palatability of mixing AC with flavouring agents such as yogurt, juice, milk or cola (Dagnone, Matsui, & Rieder, 2002; Skokan, Junkins, Corneli, & Schunk, 2001; Cheng & Ratnapalan, 2007; Groth Hoegberg, Christophersen, Christensen, & Angelo, 2005). Of the four studies identified, only one examined palatability for adults, and compared AC and yogurt versus AC and water, and found there to be no difference in palatability between the two mixtures (Groth Hoegberg et al., 2005). Pediatric studies, conversely, have consistently found cola to be the preferred mix for AC in terms of flavour, ease of swallowing, and overall preference (Dagnone et al., 2002; Skokan et al., 2001; Cheng & Ratnapalan, 2007).

There are concerns that the addition of flavouring agents could change the adsorptive capacity of AC (Scharman & Krenzelok, 1994). Research into this question has proven these concerns unfounded. In-vitro studies have evaluated the effects of adding ice cream, yogurt, or food mixtures on the adsorptive capacity of AC and the effect on clearing toxins, and have concluded that although food can impair AC adsorption of toxins by approximately 11–26% (Groth Hoegberg et al., 2005), the AC was still able to provide effective decontamination and clinical effect (Groth Hoegberg et al., 2005). Furthermore, when AC is mixed at concentrations greater than 5:1 the impairment of adsorption approached insignificance (AC 92% adsorption, AC and food 90%), suggesting that in a clinical setting the use of a flavouring agent or the contents of the stomach will have little effect on the action of AC. Moreover, when cola-AC was compared to cola-water mixtures in volunteer studies the cola-AC combination was not statistically different in its capacity to prevent acetaminophen absorption (Rangan et al., 2001).

AC is a generally safe drug, it's cheap, and can effectively bind with a great many toxins. But administering it in a timely way can be a challenge. Improving AC palatability by using cola as a flavouring agent improves patient satisfaction, and may increase patient compliance. Improving its flavour with additives is within an emergency nurse's scope of practice, is well supported by research, and should be considered whenever administering the medication. Anecdotally, we have seen dramatic improvements in AC compliance in both the pediatric and adult populations when AC is mixed with cola. For children there is an improvement in flavour, the fizz is fun, and the colour of the cola doesn't change with the addition of AC. For adults there is less of a chance that allergies or aversions to dairy will present a barrier to using it as an additive. From a nursing perspective, cola is a clear winner as it's shelf stable, and readily available wherever there is a vending machine.

About the authors

Christopher Picard, CD, BSN, RN, ENC(C), has worked in tertiary, rural, and remote areas, as an emergency nurse, and in pre-hospital, clinical and austere roles domestically and abroad, as a medic with the Canadian Forces. He currently works as an emergency nurse at the Royal Alexandra Hospital in Edmonton, AB. His research interests are trauma care, evidence-based practice and knowledge translation.

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Simplifying wound care options in the ED: An initiative to enhance familiarity with dressing selections

By Cheryl Swanson, RN, BN, ENC(C), Alanna Payment, RN, BN, BSc, ENC(C), and Denise Joubert, RN, BN

Introduction

The Emergency Department (ED) is an environment where a variety of patient populations present at the same time. In one shift, ED nurses are caring for patients across the continuum of care. We see patients of all ages, presenting with varying levels of acuity and, at times, with little warning. ED patients can present requiring active resuscitation or chronic illness management. Our patients may have sustained an injury, have an infection needing treatment, or have an exacerbation of an underlying condition. They may present with a chronic wound requiring attention. This wide array of patient populations presents a challenge in selecting appropriate wound care options, as we do not always become familiar and adept with all types of complex wounds presenting to the ED.

Although standardized wound education is a regional initiative and provided to all nurses during hospital orientation in the Winnipeg Region (WRHA, 2015a), ED nurses become familiar with the wound types that most commonly present in their area (lacerations, abrasions, cellulitis, burns, frostbite, etc.). Another factor that can complicate thorough wound assessments can be the patient's presenting condition. Those patients who present with life-threatening conditions must have their care prioritized, which may result in a wound being treated with a basic dressing until further care of that wound can be provided. Ongoing skin assessments and communications during handover become crucial to addressing the wound care needs of our patients.

Background

In our department, we identified a need to review the available wound supplies, as the inventory of dressing selections had not been reviewed recently by clinical staff. The purpose of the review was to identify if there were dressings that could be removed (were not indicated, or not used at all), as well as consideration for which types we should be adding to our inventory.

At our hospital, when we have a complex or unfamiliar wound, our process is to consult the Wound and Skin Care Coordinator/clinical expert for guidance. This process assists nurses in best practice wound care management. However, this clinical expertise is not available 24/7, and may have multiple units requesting a consult, which need to be prioritized. Relying on one individual for wound care guidance produces a gap when the resource is not readily available for staff. We identified the need to provide a unit-based resource at point of care to assist with the selection of dressing choices.

In January of 2017, we collaborated with our Wound and Skin Care Coordinator to ensure we had the expertise required to provide input prior to making decisions about unit-specific dressing inventory.

Methods

To plan for the review, we went to other areas of the hospital to see how their dressing supplies were organized. One of the surgical units had arranged their dressings by category (absorbent, acrylic) which seemed intuitive, allowing for dressings with similar functions to be grouped together. Next, we completed an initial review of all wound care supplies being stocked in the department. This process helped us identify which dressing selections we needed to discuss with the wound and skin expert. A second review was then completed in collaboration with the Wound and Skin Care Coordinator to provide further direction with respect to specific dressing choices.

Process & knowledge gaps

Our dressing supplies were organized in individual folders in a drawer of our mobile wound cart (see Figure 1—wound care supplies: before).

Figure 1.

We found this folder arrangement method to be effective. However, the dressings were not in any order. This was a barrier to nurses finding an appropriate dressing for a patient. We identified that visual aids, such as colour coding the folders (see

Figure 2.

Figure 2—wound care supplies: after) to group similar dressings together, could assist the nurses in identifying dressings by category (absorbent, non-adherent, acrylic, antimicrobial, etc.).

The Clinical Educator and one of the Clinical Resource Nurses for the ED initially met to review the dressing inventory and highlight those wound care products/dressings that we needed to learn more about. This prompted us to invite our Wound and Skin Coordinator at the time to one of these meetings. Through this collaborative review process, we could identify dressings that we were unfamiliar with due to their infrequent usage in the ED, as well as dressings that did not comply with regional best practice wound care guidelines. We also received suggestions about what products we might want to include that we had not been using at the time (Joubert, D., personal communication, January 2018). We found this to be an extremely helpful review.

In some instances, we found multiple sizes of the same dressing, and quotas were not related to usage. Some folders were overstocked. We needed to decipher what some of the dressings might be used for, and if we were stocking some that would not be required in our setting. We were able to reduce a number of wound dressings that would likely not be used in our setting (some examples were a chlorhexidine-based dressing and a colloid-based dressing). Reducing the total number of dressings was key, to remove dressings that might be chosen inappropriately for a wound because they were simply available or easy to apply. For example, there were several dressings within the same category (i.e., absorbent dressing) but different brands. Having multiple dressings that perform the same function is unnecessary and could lead to confusion. We streamlined the wound care box to only hold one type of this dressing. Decreasing the number of choices also helps with being able to promote the most common selections available and have nurses focus on those choices versus ones that are less appropriate or remotely indicated.

In addition to suggesting dressings that would likely not be used in our areas, our Wound and Skin Care Coordinator also recommended dressings that we should add to our supplies. An example of a product that we added based on the advice of our Wound and Skin Care Coordinator is a zinc oxide hydrophilic paste. This type of product can be used on exudating wounds in areas difficult to dress (coccyx) (Coloplast Canada, n.d.). Another suggestion we received was for a foam-based product that could be used for sacral ulcers that can be peeled back for skin assessments while in use (Molnlycke, n.d.).

Knowledge transfer & intervention

Organizing the wound care dressings was one step. However, we also wanted to find a way to promote an awareness of the different dressings that were available in our department and the indications for their use. There is a link between a nurses' awareness and use of evidence-based guidelines (Gillespie, Chaboyer, Allen, Morely, & Nieuwenhoven, 2013). Our regional standardized wound care education (WRHA, 2015a) does ensure all nurses receive the same information. The challenge becomes how to transfer this information into practice to foster both the appropriate bedside dressing selections and individual nurse's familiarity with a variety of dressing options. In their survey, Gillespie et al. (2013) found that acute care nurses self-reported relying on wound and skin specialist nurses as their primary source of information for managing acute wounds (Gillespie, Chaboyer, Allen, Morely, Nieuwenhoven, 2013).

Anecdotally, many of us in the ED often defer to a clinical expert for direction on the right dressing choice for a complicated wound. In January 2017, we decided to start a simple initiative entitled *Dressing of the Month* (see Figure 3—dressing of the month poster).

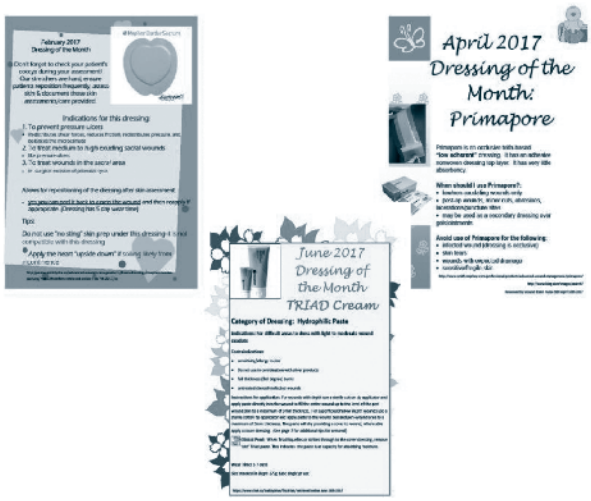

Figure 3.

The purpose of this initiative was to highlight one dressing every month in a poster format that was emailed to nurses, as well as posted in the department. These posters were also reviewed by our Wound and Skin Care Coordinator at the time for accuracy of content prior to posting for staff. Monthly posters provided quick highlights of a dressing, its indications and the sizes stocked in the department. A photo was included for a visual aid in identifying the product. We also had one of the dressings available with the poster for the month. We started our first monthly highlight with a dressing that was already familiar to staff (a non-adherent silicone dressing with petrolatum), but highlighted other indications for its use (i.e., frostbite wounds).

In February, we highlighted a foam-based dressing that is in the shape of a heart, and at the same time reinforced the need to include a skin assessment on our patients to prevent pressure ulcers. Although comprehensive references are very helpful, nurses are often having to make a choice about a dressing with little time, or are referring to nurses with experience to guide their choices. It can be a challenge to find quick tips within a multiple-page document when the user is not familiar with the categories of dressings.

In reviewing the wound care reference document that is available throughout our hospital (WRHA, 2015b), we further identified the need to have some quick reference tips at point of selection to make it easier for nurses to choose the best dressing option. A template was developed to place in each dressing folder that would provide consistent information for dressing selections (see Figure 4—wound care template).

Wound care product template

Category of dressing:

Indications:

Instructions for application:

Wear time:

Sizes stocked in dept:

Figure 4.

This reorganization of supplies has allowed us to streamline what wound care products we stock. Ongoing education of different products will be required to assist nurses in choosing the best option for a wound. Anecdotally we have received feedback from staff who like the monthly dressing highlights, as well as some staff who have commented that the coloured folders help them find dressings a little easier. The collaboration with our Wound and Skin Care Coordinator was an essential component of this initiative. It allowed us to simplify our wound care options, start highlighting the dressings that were available, as well as introduce new options.

Conclusion

We identified a need to review our wound care supplies to increase nurses' awareness of dressing selections available while removing barriers to obtaining the most appropriate dressing in a timely manner. To enhance knowledge transfer of the various dressing selections, we incorporated a dressing of the month initiative, and a template for quick reference information, which will be placed at the point of dressing selection. A brief literature search was unable to provide specific results related to the organization of wound care supplies in an ED, as well as any educational initiatives aimed at knowledge transfer with respect to wound care in the ED setting.

In reviewing annual usage reports from 2016 versus the usage in 2017, we could compare the types of dressings selected pre-initiative versus post initiative. Based on usage reports, non-adherent dressings accounted for 84% (2016) and 80.4% (2017) of total dressing selections in our department and foam-based dressing category increased from 0.4% to 2.92% in 2017 (St. Boniface Annual Usage Comparison Reports for Emergency Department, obtained January 2018). See Figure 5—ED Dressings by Category for additional details.

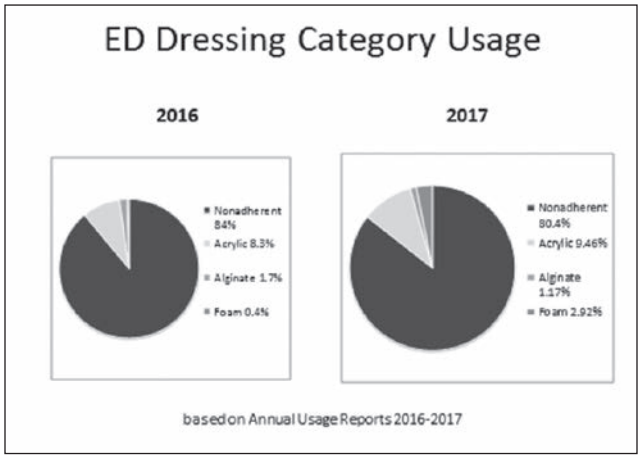

Figure 5.

The scope of this initiative did not include evaluating a wound for accuracy of dressing selection. However, based on the types of wounds we do see (burns, abrasions, lacerations) it seems reasonable that the non-adherent category would be a high-usage selection for our area.

Within this category, we could identify which dressing selections were chosen based on the usage reports obtained. It is interesting to note that, overall, the top three dressing selections (all non-adherent category) remained the same from the previous year. Despite the top selections remaining the same, we noticed that with the introduction of some new dressings within that category, we have seen usage start with the new product introduced. See Figure 6—Non-adherent Dressing Selections.

Although usage reports provide quantities of materials allocated to our department inventory, they do not reflect those products that have been discontinued, or products that have changed due to contract requirements, etc., but it does provide us with an overall snapshot of our wound care usage.

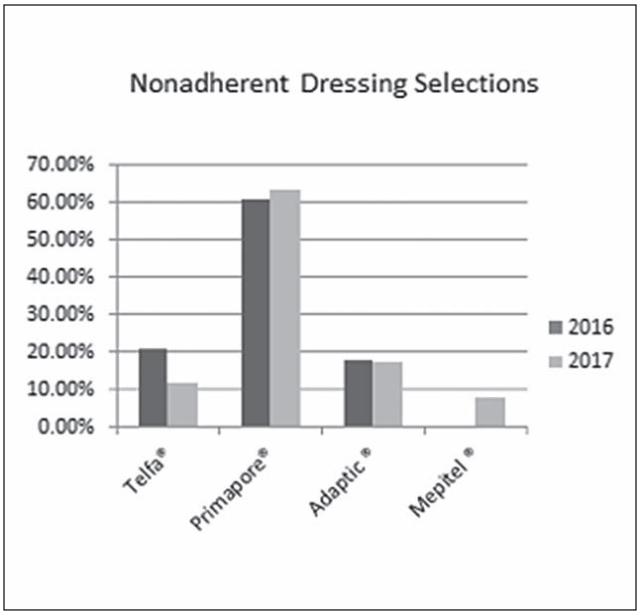

Figure 6.

Future Implications

Assessing individual nurses' knowledge of wound dressings was not in the scope of this project.

It would be interesting to study whether this format improves accuracy of dressing selection choices in the ED. Evaluation of dressing selection for individual wounds would provide more information regarding appropriateness of the selections made. Tracking usage patterns over time for particular dressings will continue to provide insight into trends for what dressings are being utilized within the department as well as assist in determining quotas for particular dressings. Usage patterns could also be used to determine cost effectiveness strategies when more than one dressing might be appropriate for a wound.

About the authors

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Cheryl Swanson has been a registered nurse for over 25 years with the majority of her career in the emergency department. She has experience working in both U.S. and Canadian emergency departments, and has been the Clinical Educator of St. Boniface Emergency Department for the last 15years. She enjoys playing volleyball, cross-country skiing and camping in the summer.

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Alanna Payment has been a registered nurse for 11 years working in the areas of medicine, emergency and intensive care nursing. She has spent the last 7 years in the ED at St. Boniface Hospital. Her personal interests include travelling and scuba diving.

Denise Joubert, RN, BN, Wound and Skin Care Coordinator, St. Boniface Hospital, Winnipeg, Manitoba.

Denise Joubert held the position of Wound and Skin Care Coordinator at St. Boniface Hospital until retiring in the fall of 2017 to enjoy her well-deserved retirement.

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