

THE ADVOCATE!

"Keeping you in touch with our collective critical care team"

Every year, the CACCN hosts a national conference, offering attendees an opportunity to share, learn, and network. This year the conference is in our very own backyard. We have several of our team members doing talks, presentations, and completing posters to display. Here is a sample of their contributions this year.



September 16 - 18,
Halifax, Nova Scotia

Learning together: Post intensive care syndrome (PICS) awareness and action. An intensive care unit (ICU) led initiative to foster understanding of PICS and PICS-F in the post-ICU care team

Our very own frontline ICU healthcare professionals have provided a series of presentations to colleagues here at NSHA. This presentation will take it a step further, and allow our team to present on a national level describing the physical, psychological and cognitive impact, and the role of the multidisciplinary team in the prevention and mitigation of PICS and PICS-F.

Karen Webb-Anderson & Autumn Embree

Maintenance of clinical competence within situ simulations: A pronging example.

We take care of the most critically ill patients in our province, but some clinical competencies are rarely performed, which limits opportunities for nurses to gain experience. One of our 5.2 nurses will present in-situ simulation, which helps increase the critical care nurses' high acuity-low occurrence (HALO) knowledge and technical competence. This presentation will review processes, pearls and pitfalls learned from our own In-Situ Simulation Program.

Elinor Anne Anderson-Kelly & David Hersey

Deliberate practice for skills mastery learning in critical care nursing: CPR exemplar

This presentation by our very own CCNP instructors will introduce and explore an innovative pedagogy for achieving skills mastery learning in critical care nursing education as well as provide attendees with consideration for both the maintenance of competence and the development of skills expertise in critical care nursing practice.

Barb Fagan & Jeff Hawley



A pain in the butt: Preventing and treating pressure injuries in the intensive care unit with a joint registered nurse and physician team

A group of our very own nurses and a physician will describe a team-based approach that was developed to try to prevent and treat pressure injuries in the sickest patients. Using a variety of approaches including standardized wound photography, a simplified approach to pressure injury dressings using a 'basket system', like what we see in our ICU's now, and a specialized surface selection algorithm will be shared.

Jack Rasmussen, Lesley Bishop, Elinor Anne Anderson-Kelly & Karen Webb-Anderson



Friend or foe? Using chlorhexidine gluconate for oropharyngeal decontamination and the prevention of ventilator-associated pneumonia

Our ICU's are leading the way nationally with the removal of Chlorhexidine from our everyday care. With recent research completed by our team members, this presentation will identify knowledge base gaps in relation to CHG and VAP rates that make guidance for change a challenge. It will also describe how a team approach is addressing this conundrum and invite session participants to share their experiences.

**Karen Webb-Anderson, Meghan Mackenzie,
& Sarah Burgess**

Medical Assistance in death (MAiD) and organ donation, the journey of Nova Scotia's first patient to undergo MAiD and organ donation.

A team of our physicians, and members of our organ donation team will cover the journey of the first Medical Assistance in Death (MAiD) patient that donated organs in Nova Scotia. Topics that will be covered include the national guidelines for organ donation in the conscious patient and practical considerations from the perspective of the MAiD provider, organ donation organization, ICU bedside nurse and patient. The story and process this patient went through were captured in a documentary film over a period of almost two years at the request of the patient. The documentary trailer will be shared at the end of the talk.

**Janice Chisholm, Jennifer Hancock, Lisa Fillis Rochon,
and Sarah Sturge**

Fluid resuscitation in the intensive care unit: Choice of fluid, volume and targets

This presentation will use a case study approach to apply current intravenous (IV) fluid resuscitation evidence in critically ill patients. Recent evidence supports a more judicious approach be taken when considering composition, volume, and goals of IV fluid administration in the critically ill patient population.

Jeff Hawley & Barb Fagan



Integrating the 2018 PADIS clinical practice guidelines with the ABCDEF bundle

- This presentation will review integration of both the ABCDEF Bundle and the 2018 PADIS clinical practice guidelines update using a case study approach. Critical care nurses work collaboratively to integrate current evidence which informs their practice and thus improves patient and family outcomes.

Barb Fagan & Jeff Hawley



Why are we Removing Chlorhexidine from our Oral Care Routine?



Bouadma & Klompas. Intensive Care Medicine (2018)

Evidence in Favor of Oral Care with Chlorhexidine

Evidence Against Oral Care with Chlorhexidine

Randomized Controlled Trials

A few randomized controlled trials have reported significant decreases in VAP rates

Presumed Mechanism: CXD lowers microbial burden in oropharynx, leading to lower probability of pulmonary inoculation with micro and macro-aspiration

Almost all randomized controlled trials have reported no significant impact in VAP rates

VAP is an imprecise diagnosis; high risk of ascertainment bias in open-label studies and misclassification bias in double-blind studies

Meta Analyses of Randomized Controlled Trials

Multiple meta-analyses have reported significantly lower VAP rates

No significant decrease in VAP rates on meta-analysis of double blind studies

Meta-analysis suggest higher mortality rates

Presumed Mechanism: micro and macro-aspiration of CXD leading to acute lung injury in some patients; allergic reactions including anaphylaxis may also contribute

Observational Studies

Multiple observational studies of VAP bundle implementations have reported lower VAP rates; many of these bundles have included oral care with CXD in addition to other prevention strategies

VAP bundle implementation studies are difficult to interpret – unclear which bundle components are contributing to observed effects and which are not. All studies unblinded, hence high risk of ascertainment bias

Observational studies that have tried to determine the individual effect of each bundle component have reported occasions between oral chlorhexidine and higher mortality rate

Others Changes to Our Admission PPO

Removal of Trazodone: Did you know that Trazodone is actually a medication used to treat depression? It is considered a sedating antidepressant and has not been studied for use in insomnia. It also has important potential side effects including hypotension, arrhythmias, and anticholinergic syndrome.

Dosing of Propofol: mg/kg/hr -> mcg/kg/min: To be consistent with anesthesia across the province, as well as corresponding rollout of the new Smart Pumps, Propofol will now be dosed in mcg/kg/min.

Changes to Analgesia/Sedation:

- Target RASS will be -1 to +1 unless otherwise stated
- Fentanyl continuous infusion lowered from 50 mcg/hr to 25 mcg/hr
- Intermittent Fentanyl order will be 25 – 100 mcg/hr IV direct q10min PRN instead of hand written dosing in range



Removal of Gravel: Delirium is a common clinical problem that is associated with increased morbidity, mortality and length of stay in the ICU. Many studies have shown that anti-cholinergic medications, such as Gravel can drastically increase the chances of developing delirium, especially in our fragile patient population. For this reason, Gravel has been removed, and Zofran (Ondansetron) will be the anti-emetic of choice.

Analgesia before Sedation Protocol

The following protocol will be introduced to physicians and front line staff, with an anticipated roll out date of Fall 2019. These types of tools will only aid us in decreasing our sedation and delirium numbers even more.

More work to be done on our SAT/SBT

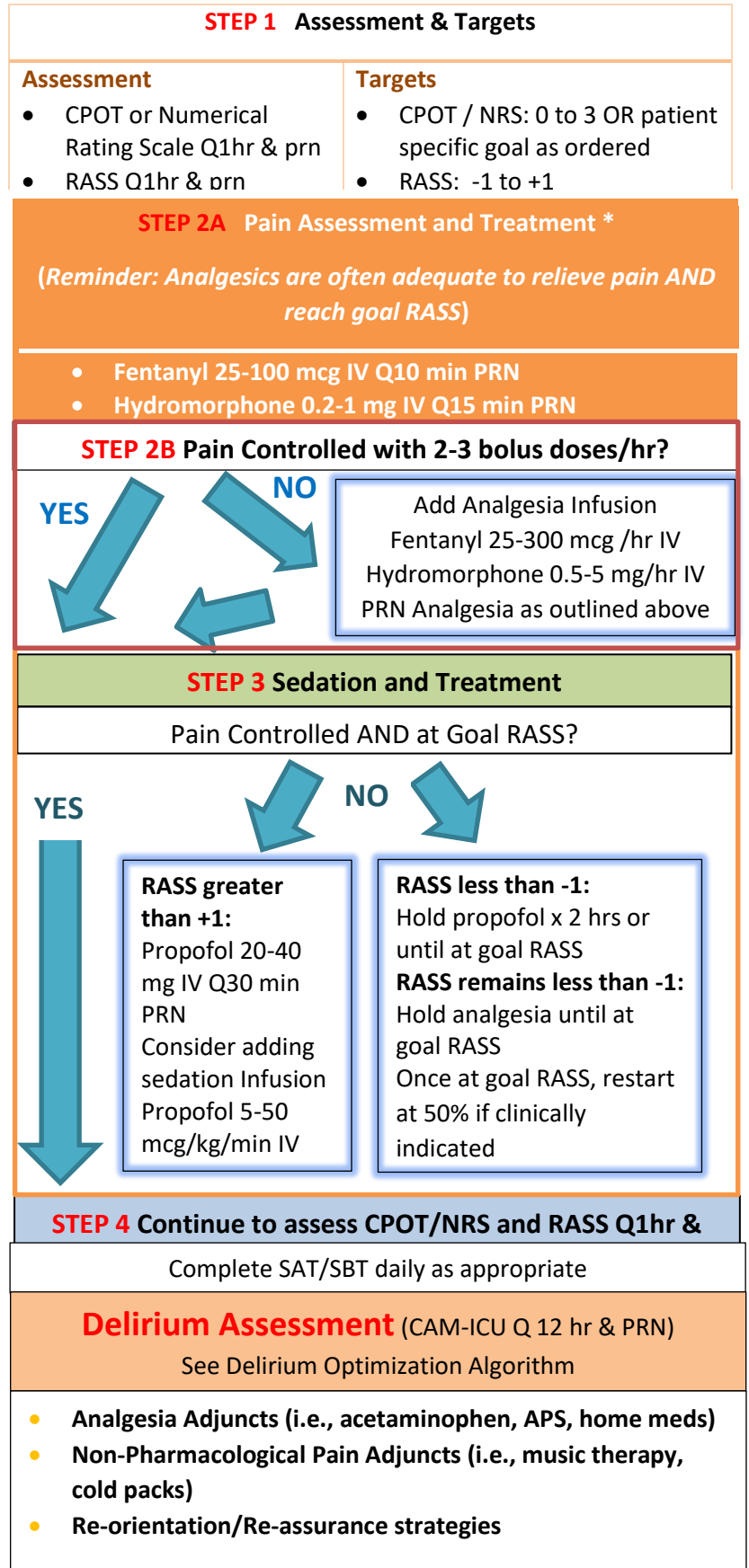
Considerable research has demonstrated that minimizing sedation with the goal to achieve comfortable wakefulness is preferred in most ICU patients, and associated with improved clinical outcomes.

A huge part of comfortable wakefulness is adequate pain control. We have improved our statistics dramatically when it comes to assessing pain at the bedside. Data from our chart audits show that our hourly assessment of our patients pain increased from 75% in 2018, to 92% in the first 2 quarters of 2019; that's an **18% increase**.

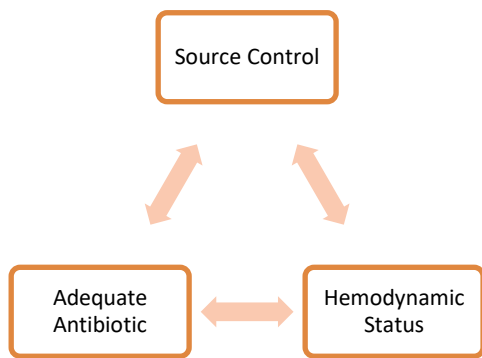
BUT what does this mean for our patients? Correlating with adequate pain management (comfortable wakefulness), we have seen a decrease in the use of our sedative medications.

According to the QEII ICU Drug Usage data, our Propofol use has decreased substantially. Overall the ICU's spent \$63000, or 6504 doses of 100 ml bottles of Propofol in 2017/18, compared to just over \$41000, or 5559 doses in 2018/19; that is a \$22000 cost savings, which equates to over 900 bottles of Propofol. According to our Charge Nurse Data, CAM-ICU + days have dropped from 31% in 2017/2018 to 27% in 2019.

Not only did this aid in decreasing our delirium rates, it also saved our department money. Kudos to all of our allied health teams that are helping improve patient care on a daily basis.



September is Sepsis Awareness Month



SEPSIS TREATMENT

- Measure lactate level. Re-measure if initial lactate is >2 mmol/L.
- Obtain blood cultures prior to administration of antibiotics
- Begin rapid administrations of 30 ml/kg a balanced crystalloid for hypotension or lactate ≥ 4 mmol/L
- Apply vasopressors if patient is hypotensive during or after fluid resuscitation to maintain MAP ≥ 65 mmHg.

★ Administer broad spectrum antibiotics ★

Dosing of Beta-Lactams for Critically Ill Patients

(Presented by Dr. Meghan MacKenzie & Dr. Volker Eicchorn at Dept. Grand Rounds about the dosing of beta-lactam antibiotics)

Beta-lactam antibiotics (e.g, penicillins, carbapenems, cephalosporins) exhibit **time-dependent** antibacterial activity; that means **efficacy is related to the absolute duration that the antibiotic remains above the minimum inhibitory concentration [MIC] of the pathological organism of interest.**

The Society of Critical Care Medicine recommends that dosing strategies of antimicrobials be optimized based on pharmacokinetics (PK) and pharmacodynamic (PD) principles in patients with sepsis or septic shock. One way to optimize beta-lactam antibiotics is to give them over a longer duration of time, i.e., as a prolonged infusion. This ensures that the concentration of the antibiotic stays over the MIC for the duration of the dosing interval.

A meta-analysis, in Lancet Infectious Diseases (2018), found a mortality benefit when prolonged or continuous infusions were used instead of intermittent dosing strategies of beta-lactam antibiotics in septic patients.

Guidelines from France (Critical Care 2019), suggest that:

- We should be targeting free plasma concentrations 4-8x the MIC for 100% of the dosing interval in critically ill patients.
- Higher daily doses should be administered at the onset of treatment and prolonged or continuous infusions should be utilized.
- We should be systematically, and daily, assessing the many sources of PK variability when prescribing beta-lactam antibiotics to critically ill patients.

In summary, although the evidence is flawed, a recent meta-analysis suggests a different dosing strategy may provide a mortality benefit, and international guidelines recommend administration of beta-lactams by continuous or prolonged infusion. Based on this literature, a quality project examining our local MICs and PK calculations, we will be changing the way we administer Pip-Tazo to the following:

For all critically ill patients initiated empirically on piperacillin-tazobactam (we currently do not need to change the way we dose other antibiotics):

Piperacillin-Tazobactam (Pip-Tazo)

- 3.375 g IV loading dose (over 30 minutes) followed IMMEDIATELY by**
- 3.375 g IV (over 6 hours) every 6 hours**

Smart Pumps

Why do we need Smart Pumps?

Did you know that parenteral medication errors are 3x more likely to cause harm or death, compared to other error types? 79% of parenteral medication errors are associated with IV administration (Phelps PK, 2017). In one study, a total of 426 medications were observed infusing through an IV pump. Of these, 285 (66.9%) had one or more errors associated with their administration (Husch et al, 2005). With the majority of hospitalized patients receiving infusion therapy, Nova Scotia's clinical community has the opportunity to increase patient safety through the adoption of smart pump technology.

What are the benefits of Smart Pumps?

Drug Limits: Every drug has a hard and soft limit. A soft limit can be overridden after acknowledging an alert and confirming a new dose. A hard limit, defined by NSHA's IV Manual with clinical expertise, cannot be overridden or exceeded.

Drug Library with Clinical Profiles: A clinical profile is a list of intravenous drugs and fluids required for a type of patient (Critical Care, Maternal, etc.) in a drug library. The drug libraries are stored in the smart pump's memory. Clinical profiles have established concentrations, dose limits and clinical advisories for every drug, nutrient or fluid.

Alarms: To help ensure you are administering safe infusion therapy practices, the smart pump will trigger alarms when certain best practices are deviated from.

Standardized Care: Standardizing the infusion therapy pumps across the province will trigger discussions regarding how we administer medications, including the use of pre-printed orders and clinical practice guidelines.

Data Analytics: The New Smart Pumps will allow NSHA to track several Key Performance Indicators, such as overrides, alarms, use of 'Drug X' option, the improved usability and develop quality improvement programs for infusion therapy.

Ease-of-Use: The new Smart Pumps are light, stackable and have a longer battery life. They come with a SafeClip that automatically clamps the line to avoid risk of free-flow. The pumps also have a preventative maintenance warning, letting you know when you contact BioMedical Team.



NSHA will be using the following two Smart Pumps:



Syringe Pump



Large Volume Pump



Leadership Corner

Cynthia Isenor, Health Services Director, Critical Care Central Zone



I was honored to have been asked to write this note for Leadership Corner, and felt it was a particularly timely request considering that we have just concluded our National Critical Care Nursing Conference, **Dynamics 2019**, right here in Halifax. **“Choose your own path”** was this year’s theme and boy, did we show our national colleagues how we chose our path of compassionate, evidence-based care here in 5.2 and 3A ICUs! Our teams showcased the amazing work that they do every day, during 5 different oral presentations and 1 poster presentation, from such diverse topics as pressure ulcer prevention, practicalities of proning, and PICS/PICS-f awareness and prevention! I was so incredibly proud to be a member of this team and to see our colleagues highlight what we do so very well: *to provide care for patients and their families always, but in particular when they are at their most vulnerable*. We have all been drawn to Critical Care for different reasons; for some it is for adrenalin rush, for others it is for the knowledge that there is nothing they can’t handle, and for others still it’s the world class, focused care that we are so privileged to provide in the ICU. I am drawn to Critical Care time and time again due to our commitment to continuous improvement in care delivery; we simply **live** evidenced-based practices! This is **our** path... but have we chosen Critical Care or has it chosen us?? I feel blessed to work with such a dynamic and phenomenal team of individuals! I want to thank you for the work you do every day for the people of Nova Scotia, and for your continued dedication toward fostering excellence in Critical Care.



Dr. Tobias Witter, Site Chief

3A saw the arrival of its new manager, Stewart Candow, who comes to us from General Surgery; while he’s been on 3A for a few months now, he has finally been fully and officially released from prior duties and is now with us full time. Please join me in welcoming Stewart! Stewart has already been a part of several new changes, including the recent requirement for photo ID to access 3A ICU, which will be locked on a 24/7 basis due to recent security concerns.

Further, we have acquired new disposable bronchoscopes, allowing us to have the ability to perform bronchoscopy on a 24/7 basis, without downtimes due to cleaning or repair. The fairly rapid change was necessary due to repeated damage to the bronchoscope on 5.2, with fairly high costs to repair. Further tweaks to the setup of the current bronchoscopic monitor are planned, mainly with the addition of a second, larger screen to allow a learner or assistant better visualization.

Up next: demonstrations of the new infusion pumps (syringe and volumetric) will be taking place on 5.2, with a planned implementation of these pumps early in the New Year. This will be accompanied by a major practice change that will improve patient safety. Stay tuned.

Provincial Update

Dr. Ward Patrick, Senior Medical Director & Tanya Penney, Senior Director

This past year has been a busy and productive one for the Critical Care Program. The work has been, and continues to be, focused on network integration of all critical care units, standardization of processes and care, recruitment and retention, and the development of quality care frameworks. Many of the initiatives that we have been working on promise to be a major step forward in the safe care of Nova Scotia's critically ill.

We are pleased to share with you some highlights:

➤ **Standardized order sets**

- These will ensure that all patients presenting with critical illness in our province will receive the same treatment, regardless of the site to which they are admitted.
- Under the stewardship of Dr. Volker Eicchorn and Cynthia Isenor, and in partnership with Think Research, this multidisciplinary and multisite working group is proud to announce that the first five order sets have been completed and will be implemented in the fall of 2019.

➤ **Smart Pump Technology**

- The province is moving toward a new system that will make intravenous medication administration safer for our patients, in large part due to decreased drug errors. A multidisciplinary, multi-site clinical group led by Dr. Tobias Witter and Karen Webb-Anderson has built a robust provincial drug library.
- Stay tuned for the upcoming pilot rollout!

➤ **Provincial Critical Care Database**

- This will allow us to look at the care in all critical care units of our province. Dr. Osama Loubani has been instrumental in the development of this database at all stages of its development.
- Once we have objective data, we will start to roll out interventions based on evidence in order to reduce mortality with the ultimate goal of improving all care for all patients.

➤ **CBRH Physician Model Changes**

- Working with DHW Physician Services, we have been able to increase the complement of attending physicians; which often was 1:21. As you can imagine, this created challenges to workload and recruitment and retention.
- The changes have attracted new physicians to the area and along with the Redevelopment project bodes well for an exciting new level of care that will be offered to critically ill patients in the Eastern Zone.

➤ **Accreditation**

- The last accreditation cycle noted the excellent Early Mobility work that was being done in our Level 1 ICUs in Halifax. Led by front line nursing and physiotherapy staff and supported by the Departmental Quality Team, it was deemed a "Leading Practice" and recommended for provincial adoption. We now have an initiative underway to move that model out to the other ICU's in the province.

➤ **Quality Improvement**

- Dr. Sarah McMullen and Jane Berlemont (Manager, VRH ICU) have taken the co-lead chair positions for the Provincial Quality Improvement Council. The Quality group have given us the structure and the guidance to allow us to embark on some very exciting work within our Program.



Fall 2019 – Comings and Goings

Welcome to CCNP Grads Arielle Detraz, RN, Sarah Kaulback, RN, Carole MacDonald, RN, Gavrielle MacDonald, RN, Rory McNabb, RN, Madison Miller, RN, Starla Walton-Blois, RN, Jasmine Winmill, RN, Kristin Bohan, RN, Desiree Burke, RN, Mengzhu Fan, RN, Stephanie Peters, RN, Molly Stewart, RN, Robyn Wile, RN.

Welcome to Julia Melly, Unit Clerk on 3A, Danielle Snow, RN on 5.2. Kristen Kaupp from Pharmacy, Sherry Porter in to the CNE role, Karolynn Holland in to the Quality Lead role.

Welcome back to Avery Kaye, RN on 5.2 and Bethany Gaudet, RN on 3A

Congratulations and farewell to Jackie Bond, Unit Aide, Pamela Carruthers, RN, Robert Chisholm, RN, Caroline Kerr, Unit Clerk, on their retirements.

Congratulations and farewell to Lucie Appleby, Samantha Landry, Emily Hart, Melissa Kelly, and Lily Barton, Ashley Brophy, Channing Bishop, and Nickie Bordage, who left the Critical Care Department to pursue new opportunities.

Congratulations to the following people on MLOA: Liz Hobson (son); Rachel MacDougall (daughter); Rachel Rizcallah (daughter).

Comfort and Care Grants

The QEII Foundation Comfort & Care Grant program is established to provide funds to enhance care for patients and their families. The application process is open to all QEII employees. Our ICUs submitted 3 applications, and received funding towards all three applications!

The 3 Wishes Project received funding for two bedside sleeper chairs (one each for 3A and 5.2), and two Night Sky projection lamps.

5.2 received funding for an iPad to assist with patient communication, as well as partial funding (offset by a private donation) for new waiting room furniture.

