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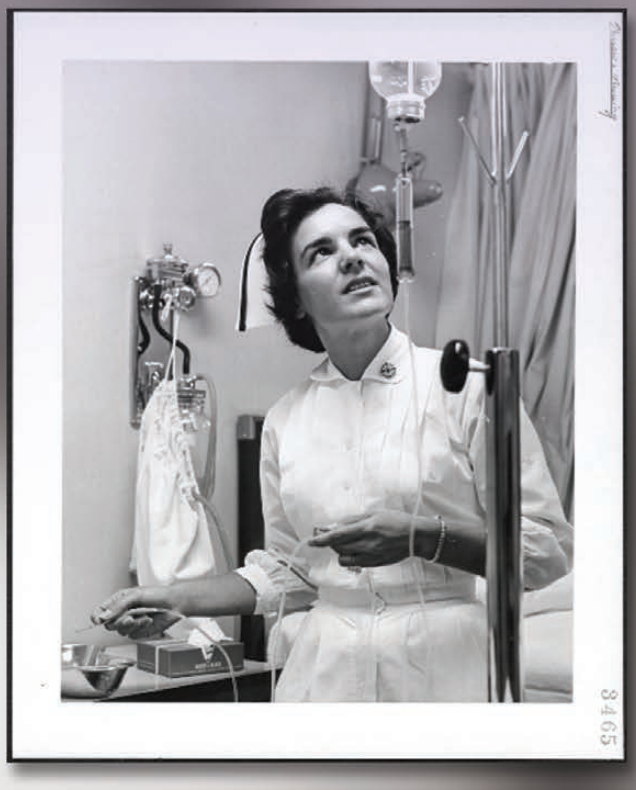

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About the cover photo

Title: Nurse Elaine Weese preparing a saline solution. Emergency Ward of Victoria Hospital, Toronto. Nurses and Nursing. Department of Citizenship and Immigration, Information Division

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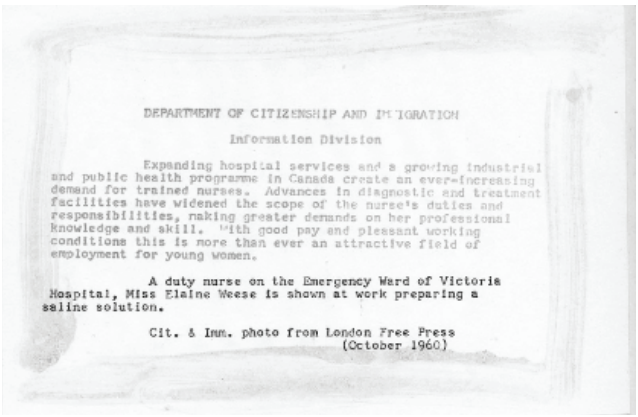

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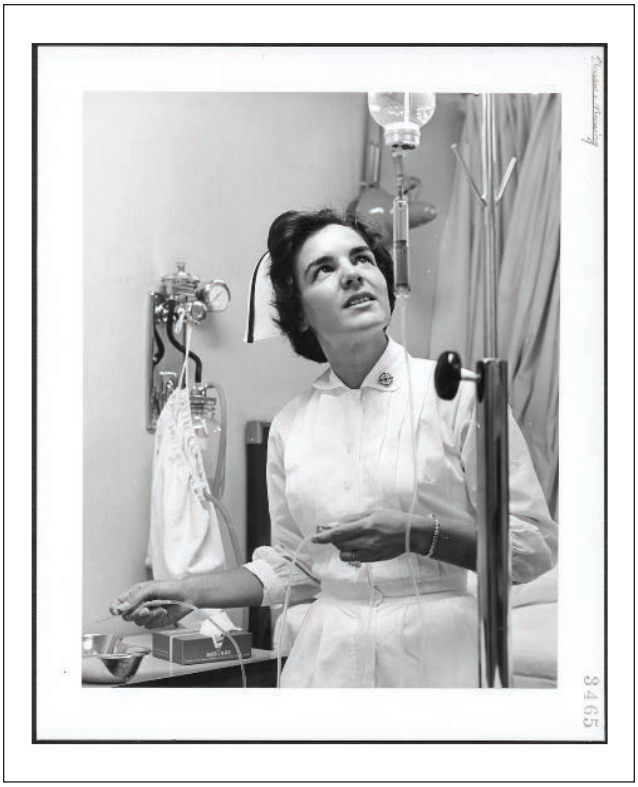
Expanding hospital services and a growing industrial and public health programme in Canada create an ever-increasing demand for trained nurses. Advances in diagnostic and treatment facilities have widened the scope of the nurse's duties and responsibilities, making greater demands on her professional knowledge and skill. With good pay and pleasant working conditions this is more than ever an attractive field of employment for young women.

A duty nurse on the Emergency Ward of Victoria Hospital, Miss Elaine Weese is shown at work preparing a saline solution.

Cit. & Imm. photo from London Free Press (October 1960)



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NENA Position Statement: Ultrasound Guidance for Peripheral Intravenous Cannulation

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Keywords: ultrasound, vascular access, nurse, protocol, emergency

Problem

Ultrasound guidance can increase peripheral vein cannulation success by nurses in the Emergency Department (ED). Unfortunately, ED nurses are not routinely trained to use ultrasonography for peripheral vein cannulation and may not have access to the required equipment.

Statement of Position

NENA believes that

1. Ultrasound guidance should be routinely used for peripheral intravenous (IV) insertions in patients with known or suspected difficult IV access
2. ED nurses should be trained to safely place ultrasound-guided IVs
3. EDs should provide access to point-of-care ultrasound machines, to the equipment needed to perform ultrasound-guided peripheral IVs, and ensure that their staff receives appropriate training.

Rationale

1. Intravenous cannulation is a commonly performed ED intervention, but approximately 12% of patients will have difficult-to-cannulate veins (Fields et al., 2014). These patients face delayed vascular access, laboratory investigation, and analgesia, with subsequent prolonged lengths of stay (Davis et al., 2021). In patients with known or anticipated difficult-to-cannulate veins; defined as two failed direct IV attempts, or an Adult Difficult Intra Venous Access Scale (A-DIVA) score greater than 2 (Van Loon, et al., 2019), ultrasound-guided IV insertions have been shown to decrease the number of IV attempts (Davis et al., 2021; Costantino et al., 2005; Costantino et al., 2010; Doniger et al., 2009; Bahl et al., 2016; İsmailoğlu et al., 2015; Vinograd, et al., 2019; Feinsmith et al., 2018), decrease time to successful IV placement (Costantino, et al., 2005; Doniger, et al., 2009; Bahl, et al., 2016; Vinograd, et al., 2019), improve patient satisfaction (Costantino, et al., 2005; Doniger, et al., 2009; İsmailoğlu, et al., 2015), prolong IV patency duration (Vinograd, et al., 2019), and decrease central venous catheter use (Shokoohi, et al., 2013).
2. Internationally, ED nurses have successfully and safely developed and employed ultrasound-guided peripheral vascular access programs (Bahl, et al., 2016; İsmailoğlu, et al., 2015; Feinsmith, et al., 2018; Miles et al., 2012; Brannam et al., 2004; Blaivas, & Lyon, 2006; Carter et al., 2015; Keyes et al., 1999). Similar first pass and overall cannulation success rates have been demonstrated in Canadian EDs (O'Dochartaigh, Ma et al., 2020; O'Dochartaigh, Picard et al., 2020b).
3. Research (Gottlieb et al., 2017) and consensus guidelines (RNAO, 2021; Gorski, et al., 2021; Moore, et al., 2019) have established best practice standards to support the adoption and

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use of ultrasound guidance for peripheral vein cannulation. Studies have shown that standardized education and training can ensure nurse competency (Feinsmith, et al., 2018; Miles et al., 2012; Edwards & Jones, 2018; Bell & Spencer, 2021) and that these programs can be nurse-led and implemented in departments without pre-existing expertise (e.g., Appendix 1; O'Dochartaigh, Ma et al., 2020; O'Dochartaigh, Picard et al., 2020). Compliance with these best practice standards requires small investments in specialized equipment, such as probe covers and longer-length IV cannulae (O'Dochartaigh, Ma et al., 2020; O'Dochartaigh, Picard et al., 2020, Gottleib, et al., 2017; RNAO, 2021; Gorski, et al., 2021; Pandurangadu et al., 2018).

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Énoncé de position de l'ANIIU sur l'accès veineux périphérique sous échoguidage

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Mots-clés : échographie, accès vasculaire, personnel infirmier, protocole, urgence

Enjeu

L'accès veineux périphérique sous échoguidage peut augmenter le taux de réussite de la canulation des veines périphériques par le personnel infirmier des services d'urgence. Toutefois, le personnel infirmier des urgences n'est pas systématiquement formé à l'utilisation de l'échographie pour la canulation des veines périphériques et n'a pas toujours accès à l'équipement nécessaire.

La position de l'ANIIU

L'ANIIU estime que :

1. L'échoguidage devrait être utilisé systématiquement pour l'installation de cathéters intraveineux (I.V.) périphériques chez les patients pour qui l'on sait que l'accès I.V. est difficile ou pour qui on le soupçonne.
2. Le personnel infirmier des services d'urgence devrait être formé à l'installation sécuritaire d'accès veineux périphériques sous échoguidage.
3. Les services d'urgence devraient fournir l'accès à des appareils d'échographie et à l'équipement nécessaire pour installer des accès veineux périphériques sous échoguidage et veiller à ce que le personnel infirmier reçoive une formation appropriée.

Justification

1. L'installation d'accès IV est une procédure courante dans les salles d'urgence, mais environ 12 % des patients ont des veines difficiles à canuler (Fields et coll., 2014). Des délais sont constatés chez ces patients à l'égard de l'obtention d'un accès I.V., des analyses de laboratoire et de l'administration de l'analgésie, ce qui prolonge la durée de leur séjour (Davis et coll., 2021). Chez les patients pour qui l'on soupçonne ou l'on sait que les veines sont difficiles à canuler, ce qui est définit par l'échec de deux tentatives d'accès I.V. directe ou par un score supérieur à 2 sur l'échelle A-DIVA (Adult Difficult Intra Venous Access Scale) (Van Loon et coll., 2019), 2019), il a été démontré que l'installation d'accès veineux sous échoguidage diminue le nombre de tentatives (Davies et coll., 2021 ; Costantino et coll., 2005 ; Costantino et coll., 2010 ; Doniger et coll., 2009 ; Bahl et coll., 2016 ; İsmailoğlu et coll, 2015 ; Vinograd, et coll., 2019 ; Feinsmith et coll., 2018), diminue le temps nécessaire pour réussir la pose d'une perfusion (Costantino, et coll., 2005 ; Doniger, et coll., 2009 ; Bahl, et coll., 2016 ; Vinograd, et coll, 2019), améliore la satisfaction des patients (Costantino, et coll., 2005 ; Doniger, et coll., 2009 ; İsmailoğlu, et coll., 2015), prolonge la durée de la perméabilité de l'accès I.V. (Vinograd, et coll., 2019) et diminue l'utilisation de cathéters veineux centraux (Shokoohi, et coll., 2013).
2. À l'international, le personnel infirmier des urgences a élaboré et utilisé avec succès et en toute sécurité des programmes d'accès veineux périphériques sous échoguidage (Bahl, et

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3. La recherche (Gottlieb et coll., 2017) et les lignes directrices (AIIAO, 2021 ; Gorski, et coll., 2021 ; Moore, et coll., 2019) ont établi des normes de meilleures pratiques pour favoriser l'adoption et l'utilisation de l'échoguidage pour la canulation des veines périphériques. Des études ont démontré que l'éducation et la formation standardisées peuvent assurer la compétence du personnel infirmier (Feinsmith, et coll., 2018 ; Miles et coll., 2012 ; Edwards et Jones, 2018 ; Bell et Spencer, 2021) et que ces programmes peuvent être dirigés par le personnel infirmier et mis en œuvre dans des services d'urgence sans expertise préalable (p. ex., annexe 1 ; O'Dochartaigh, Ma et coll., 2020 ; O'Dochartaigh, Picard et coll., 2020). Le respect de ces bonnes pratiques nécessite de petits investissements en termes d'équipements spécialisés tels que des gaines protectrices de sonde et des cathéters I.V. plus longs (O'Dochartaigh, Ma et coll., 2020 ; O'Dochartaigh, Picard et coll., 2020 ; Gottleib, et coll., 2017 ; AIIAO, 2021 ; Gorski, et coll., 2021 ; Pandurangadu et coll., 2018).

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We're open: Caring for the walking well in a rural emergency department

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Abstract

Emergency departments (EDs) are increasingly unable to cope with patient volume, leading staff to question the arrival of those seeking non-urgent care. However, these patients ideally should be afforded appropriate management and treatment. In 2014, the Carbonear General Hospital ED in Newfoundland and Labrador took decisive action, engaging front-line staff and shifting the focus of care away from *why* patients were visiting to prioritize *how* best to treat those who did. By 2019, the ED had not needed to resort to hallway medicine, despite a visit volume that increased to 30,000 patients over five years, and staff grew into a close-knit, quality improvement and community force. From this experience, it is evident that small investments in education and system redesign can shift attitudes toward ED care for patients, and provide support for primary care in the community. It has already started in one hospital — we're open for assistance with primary and non-urgent care.

The Walking Well

A mother awakes, startled by the sudden, unexpected cry of her daughter Julie who had previously settled for the night. Rushing to her side, she instantly feels the excessive warmth from beneath the bedsheets. With obvious concern, she bundles her child and, as any parent would, seeks immediate medical advice. With no after-hours physician office in her underserviced community, she has no choice but to visit the local 24-hour emergency department (ED).

In reality, a host of reasons have led Julie's mother to the local ED. The recent retirement of her long-term family doctor. The absence of an after-hours walk-in clinic. The acceptable perception that a child's fever is a potential medical emergency. Without the replacement of Julie's trusted family physician, her only access to primary care may truly be the local ED.

In today's digital age, patients are better informed about symptomatology, and more aware of illnesses that may be detrimental to themselves or their loved ones. In this era of declining primary care access, is the ED a suitable setting for the public to seek answers to their medical dilemmas?

Under the Canada Health Act, Canadians have guaranteed access to healthcare. However, for many, this promise is not a daily reality. In rural Canada, it is often impossible to recruit local family physicians and to truly incorporate specialty-trained primary care providers, such as nurse practitioners. Meanwhile, overloaded, and understaffed Canadian EDs, increasingly unable to cope with growing patient volume, are led to question the arrival of the walking well. Is Julie's visit nothing more than unwarranted strain on staff and resources? This does not have to be the case. As we demonstrate here, process improvements and innovation combined with efficient collaboration between nurse practitioners (NPs) and physicians can yield a more effective circle of care that can sustainably treat patients presenting to the ED with non-acute medical issues (i.e., Canadian Triage Acuity Scale 4 or 5 at triage).

The Reality of ED Care

Canadian EDs are facing serious issues related to overcrowding (Patey et al., 2019; Affleck et al., 2013) including worsening satisfaction, declining confidentiality, and some of the longest wait

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times versus peer countries (Affleck et al., 2013; Stoklosa et al., 2018). As ED staff grapple with increasing patient volumes, patients with non-acute medical issues are often considered to be detracting from the speed and quality of care for urgent cases (Durand et al., 2012). On the ground, this constant flow of patients creates a situation where ED patients are too often greeted by a swarm of individuals – masked, sleeping, coughing, sneezing, and waiting hours for care. Desperate patients and families then face extended wait times, as Canadian Triage Acuity Scale (CTAS) results conflict with their own perception of the acuity of their current presentation. In pain from an unknown cause, and with nowhere else to turn (Durand et al., 2012) their ED visit is understandably justified. Is there room for global healthcare improvement to precisely provide a front-line response to the situations, and allow patients like Julie and her mother to receive care more readily? We believe there is.

The way forward

Improving the efficiency and delivery of emergency medical services can significantly improve front-line healthcare access (Leung, et al., 2017; Patey et al., 2019). In an ideal ED paradigm, patients should be afforded appropriate management and treatment, regardless of acuity. Unfortunately, it is often the opinion of front-line practitioners, executives, and policymakers that patients with non-acute medical issues have no place in the ED (Durand et al., 2012). This misaligned attitude can lead to non-urgent apathy and contributes to a disregard toward patients presenting with non-acute medical issues (Patey et al., 2019; McConnell et al., 2016).

In his thorough publication *No More Lethal Waits* (2016), Dr. Shawn Whatley states that Canadian "patients do not need to wait for care in EDs. They wait because departments cling to processes and thinking designed to produce waiting" (p.1). That is, long wait times are too often attributed to uncontrollable, external factors, such as overcrowding, patient age, sicker visitors, and inappropriate visits. If an ED team focuses instead on addressing controllable, internal factors using all available tools, such as innovation and process improvement strategies, it is possible to ameliorate attitudes and achieve efficient care for patients of all acuities.

Working Tired: Roger's Story

Another day, another dollar. Roger's mind raced; his gaze greeted by crowds of weary-eyed patients packing the waiting room. "We're at capacity again — but do you *all* need to be here?" he thought cynically. "If I had a dollar for every non-acute issue I've triaged today, I'd be a millionaire." The team was tired — fatigued from another shift on the front lines of emergency care and disappointed to see another capacity situation, exacerbated by non-acute visitors. "Well, nothing we can do about it," Roger thought to himself. "We've seen this again and again. People are getting older and sicker in our community — we can't prevent that. I want to be here for our town, but with the unending grind, I'm losing my passion to help."

Roger's thoughts were interrupted by the ping of his phone — the Chief was calling a meeting this week to "reimagine" the ED.

The experience of a rural ED

In 2014, the Carbonear General Hospital took action to improve the efficiency and delivery of emergency medical services for patients with non-acute medical issues, undertaken by a small rural team and with a unique approach to dealing with increased ED visits and overcrowding. This included 18 process improvements (See Table 1), ranging from an external review to more sophisticated actions, such as workshops, performance assessments, and the creation of a surge capacity protocol platform called SurgeCon (Patey et al., 2019). One of the first steps was an education session on Family Focus, delivered by the ED Chief to staff. This session focused on reinforcing three key topics: (1) providing quality ED care to all patients regardless of urgency; (2) treating all patients with respect; and (3) always considering the patient's visit to an ED to be necessary, as they may have no other option (Patey et al., 2019, p. 656). In essence, this session was designed to combat the stigma against individuals with non-acute medical issues who choose to visit the ED. Together, we shifted our departmental perspective toward providing everyone with care as though they are family or close friends (Patey et al., 2019). We engaged front-line staff through initiatives, such as education sessions, innovations, and new protocols to be part of the solution, as we shifted the focus of care away from *why* patients were visiting to prioritize *how* to best treat those who did. The result was a range of process improvements, from designating an independent NP workspace to implementing SurgeCon — an efficient, effective ED management platform (Patey et al., 2019). Beyond specific process improvements, we also focused on strengthening and supporting an everyday culture of teamwork, and embellished the ED with pictures and paintings to be more aesthetically pleasing to patients.

Our small community ED saw approximately 20,000 visits in 2014. The ED wait time average from triage to assessment by an emergency room physician was nearly two hours, with many patients waiting 8–10 hours for the care they required. These wait times led to departmental leadership worry that hallway medicine would become the norm. By 2019, after our process improvements were implemented, our ED still had not needed to resort to hallway medicine, despite a visit volume that increased to a staggering 30,000 patients a year. As shown in Table 2, the average wait to see an emergency room physician, length of stay, and left-without-being-seen rates have plummeted. Throughout this time, we have also observed anecdotal evidence that our team grew into a close-knit, quality improvement and community force. We are retaining physicians and nursing staff, and receiving large volumes of requests from learners and students eager to experience our unique ED culture.

The Meeting(s): Sarah's Story

Chief Sarah was hopeful the ED might finally proceed with some quality and process improvement work. This was the first of many meetings to galvanize a new culture — one that accepted the walking well and would drive important enhancements in departmental efficiency and effectiveness. The room was packed, and with each consecutive slide she saw her staff's expressions change from concern to optimism. An independent

Table 1

Implemented Process Improvements

Date	Process Improvement	Brief Description
October 2014	X32	An external review of the ED by a third party
February 2015	SuperTrack	Created an initial Low Acuity Flow Space for CTAS 4 and 5 patients
March 2015	ED Maintenance	Flipped the ED and reflected on what to fix next
April 2015	Family Focus Education Session	Highlighted the concept "Treat All Patients as Family" with the team
June 2015	Independent NP Workspace	Created an independent NP workspace to improve NP efficiency
August 2015	Physician Initial Assessment (PIA) Primary Focus Education Session	Team discussion regarding our primary goal as an ED — get patients in front of a provider
November 2015	Open PIA Data Performance Assessment	Reviewed and exposed physician PIA data
December 2015	SurgeCon	Developed the SurgeCon surge capacity protocol platform
January 2016	Redesign Triage Room	Redesigned the triage room to streamline efficiency of all aspects of triage
February 2016	Staff Flow Orientation	Created and taught a flow course for new staff
March 2016	ED Lock Down Procedures	Created ED Lock Down procedures to control ED capacity surges
April 2016	Temporary Admit Orders	New orders introduced allowing patients to be admitted directly to floor
January 2017	Implement HERO Doctor	Introduced a HERO doctor role — double coverage physician at peak hours
November 2017	PCP in Triage	Introduced PCP in triage, maximizing talent and a helping hand
December 2017	Nursing Bed Assignment	Switched to assigning RNs to patients instead of beds
March 2018	Easy NP Handover Procedures	Streamlined the ability of NP to consult a physician in higher-acuity scenarios
August 2018	Flow Nurse Role Creation	Separated flow nurse and charge nurse into separate roles
January 2019	SurgeCon Software	Digital implementation of the SurgeCon platform for surge capacity measurement

Note: For more details on these process improvements, see Patey et al., 2019.

Table 2

Mean Metrics, 2014 versus 2019

Metric	2014	2019
Mean Time to See Emergency Room Physician (minutes)	106.2	36.3
Mean Length of Stay (minutes)	203.8	125.9
Mean Left-Without-Being-Seen Rate (frequency)	12.6	4.9

NP workspace. A redesigned triage room. SurgeCon — an ED management platform. The team was starting to see the positive benefits from the difficult changes they would work so hard to complete.

Open for Assistance with Primary, Non-Acute Care

Patients come to the ED with one goal in mind — to see a provider who can answer their questions and alleviate their symptoms. Educating staff about the importance of redesigning EDs to position physicians and mid-level providers immediately in front of most patients is a strong step toward mitigating wait times and overcrowding (Patey et al., 2019). We must create systems that facilitate support for patients with non-acute medical issues, where front-line staff will gain an appreciation of the speed and quality of the care they provide to all patients. In our experience, fostering the culture to combat stigmatization of patients with non-acute medical issues is the biggest challenge — success in this endeavour is achieved only through persistence, and failures are to be expected along the way. Process improvement is an art, and as the COVID-19 pandemic continues to challenge our ED and others across Canada, EDs can and must engage their front line to build and maintain a culture of ED FLOW. As such, our team is developing a FLOW course for national audiences to help other EDs implement the enhancements outlined in this article. Small investments in education and system redesign will shift attitudes toward ED care for patients and support the increasing shortage of primary care in the community. It has already started in our hospital — we're open to patients who require non-acute care.

Epilogue: Julie's Story

Roger leans on a railing, seizing a moment to reflect as hospital lights pierce the darkness of a night few would hazard. We're open. The emergency department had no shortage of medical challenges that evening, but the recent efforts to strengthen collaboration and bolster departmental efficiency were keeping the workload manageable, and the team motivated. With stigma

toward patients with non-acute medical issues erased, and a new focus on how to best treat any visiting patient, they felt ready for anything and there for their community.

The sound of screeching tires and slamming doors broke the brief respite. With nowhere else to turn, Julie's mother bursts into the foyer, clutching her daughter beneath a rain-soaked jacket in a desperate search for care. To her astonishment, the waiting room feels warm — unexpectedly welcoming — and without hesitation, Roger and the team spring into action. With a redesigned room streamlining non-judgmental triage, and process improvements enabling more rapid access to a HERO doctor, mother and daughter leave treated, and relieved — walking well from the department that's always open.

Implications for Emergency Nursing Practice

1. ED patients' top concerns are for a provider to answer their questions and alleviate their symptoms.
2. We must acknowledge the physical, mental, and other support required by patients with non-acute medical issues.
3. While the Canada Health Act (Government of Canada, 1984) assures Canadians they will receive health care, rural communities face equitability issues on a daily basis.
4. Shift the focus of care away from *why* patients are visiting; instead, prioritize *how* to best treat those who do.
5. Small investments in education, patient flow and system redesign will shift attitudes toward ED care for patients and support the increasing shortage of primary care in the rural community.

About the authors

Paul Norman, BN, RN, works as a registered nurse for emergency services in Eastern Health, Newfoundland Canada. Paul is currently the director of nursing research at Carbonear Institute for Rural Reach and Innovation by the Sea (CIRRIS) and co-founder of SurgeCon Innovations. Holding a bachelor's degree in Nursing from Memorial University's Centre for Nursing Studies, he has more than 10 years of experience working in Emergency Nursing and Critical Care.

Christopher Patey, BSc (Hon), MD, CCFP, FCFP, FRRMS, is a family physician who truly loves the practice of rural emergency medicine. He is always eager to implement positive change initiatives with a primary goal to improve emergency care. An Assistant Professor with Memorial University Medical School in St. John's, Newfoundland, he has a secondary goal to expand rural emergency research with a focus on improving community access and health.

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Paul Norman – First Author

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Conflict of Interest

I, Christopher Patey, hereby declare that we, the authorship team, have no conflicts of interest to declare related to this manuscript.

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CLINICIAN'S CORNER

Meeting family care needs during resuscitative procedures and cardiac arrest in the emergency department

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Background

Emergency nurses in Canada provide care to many thousands of critically ill and injured patients, and their families, each year (Rowe et al., 2020). Unfortunately, some Emergency Department (ED) patients and families report a lack of psychosocial and emotional caring (Gordon et al., 2010). Many resuscitative processes and procedures have been described as dehumanizing and traumatic for families (De Stefano et al., 2016; Jang & Choe, 2019). Significant negative emotional and physiological impacts may remain after hospitalization for the patient and their loved ones, whether receiving care for medical, (Davidson & Harvey, 2016) trauma, (McGahey-Oakland et al., 2007) or cardiac arrest presentations (Leske et al., 2013). Families of patients who survive (and those who do not survive) have reported persistent negative psychological effects weeks and months after receiving care in the ED (Jang & Choe, 2019; Keyes et al., 2014; Sawyer et al., 2020).

A systematic review on the topic of patient and family-centred emergency care suggests there are ways to combat negative care experiences and that nurses can greatly influence patient and family satisfaction and outcomes (Redley et al., 2003). A more recent review focused specifically on cardiac arrest care has identified five domains of family care needs: i) focusing on the patient survival, ii) collaboration of the resuscitation team and family, iii) consideration of the family's context, iv) family post-resuscitation needs, and v) dedicated policies and procedures (Douma et al., 2021). The purpose of this article is to provide an evidence-based summary of approaches EDs and ED nurses can adopt to help meet family care needs during resuscitative procedures, including cardiac arrest care.

Eight strategies for providing family-centred care during resuscitative procedures and cardiac arrest

1. Focus first on taking care of the ill or injured patient

Families want their loved ones to receive the best care possible. In situations where personnel are limited, families do not want to distract or impede care provision. For resuscitation, this means providing up-to-date evidence-based care, available guidelines and tools (Wyckoff et al., 2022). Only when their loved one's care needs can be met, do their needs also become a priority (Loch et al., 2023).

In large urban EDs, where there are numerous staff members to support resuscitation, spiritual care staff, social workers, and nurses can be assigned to liaise with and support families. In resource-limited settings, this will usually fall to the primary nurse.

2. Offer and support family presence or absence

Family presence during emergency department resuscitation has been researched since the 1980s (Doyle et al., 1987), and numerous professional organizations support this practice (Oczkowski, Mazzetti, Cupido, & Fox-Robichaud, 2015; Oczkowski, Mazzetti, Cupido, Fox-Robichaud, et al., 2015; Vanhoy et al., 2017). Research has repeatedly demonstrated that family presence

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improves family-oriented outcomes, does not worsen patient outcomes, and is an ethically justifiable practice (Clark et al., 2013; Jabre et al., 2013; Oczkowski, Mazzetti, Cupido, & Fox-Robichaud, 2015; Toronto & LaRocco, 2019). Family-centred cardiac arrest care project collaborators (https://osf.io/fxp5g/) advise that family members in the ED should be given the option of being present during cardiac arrest care. If they choose not to be present, they should be supported by a family liaison or support person outside the room in the hallway, a waiting area, or a purpose-built family room. (Douma et al., 2021).

The importance of a family liaison or support person to respond to questions and attend to family care needs has been identified across multiple studies (Larsson et al., 2013; Perman et al., 2018; Stewart, 2019; Tíscar-González et al., 2019) including during the COVID-19 pandemic (Gabbie et al., 2021) and aeromedical transport (Kirby et al., 2022). Noteworthy support needs of family members include being prepared for what they will see, receiving frequent updates (regarding what has happened, what is happening now and what happens next), providing somewhere to charge mobile devices, calling support persons, and receiving a cup of tea or a blanket (Carlsson et al., 2022; Steffen et al., 2020). The assignment of a family liaison or support person should be done assertively, and not left as an afterthought. Too frequently there is a diffusion of responsibility, where one or multiple staff may share some responsibility, yet the family's care needs are unmet.

3. Allow for closeness between family and patient

More than presence, such as watching from metres away in the resuscitation bay, some families will seek closeness with their ill or injured family member. The degree of physical proximity they seek will be based on their individual preferences (Stewart, 2019). Some families will want to actively care for their loved one by talking to them, touching them, praying and having religious ceremonies (Carlsson et al., 2022; Othman et al., 2020; Twibell et al., 2015). Emergency department staff should support such family requests, especially when they do not disrupt care processes. The experience of being supported by nursing staff to be close to their family member was described by family members as compassionate, (Jang & Choe, 2019) respectful, (Weslien et al., 2005) supportive, (Maxton, 2008) and empathetic (Carlsson et al., 2022).

4. Share information, communicate, and share decision making

As part of routine practice, emergency department staff should be prepared to frequently share information with family members. When multiple family members are present, it can be helpful to assign a single-family contact person to update and avoid duplication of effort. Numerous studies have identified information as the primary need of patients and families when receiving care (Holm et al., 2012; Hung & Pang, 2011; Illum, 2012; King et al., 2019):

- What is known? for example:
  - Working diagnosis, including what diagnoses are likely versus unlikely
  - Diagnostic imaging and laboratory results
- What remains unknown? For example:
  - Definitive diagnosis
  - Prognosis
- Who is providing care? for example:
  - Names and roles of members of the care team
- What are the care priorities right now? For example:
  - Symptom management
  - Resuscitative procedures
  - Transport to definitive care
  - Identification of reversible causes of cardiac arrest
- What happens next? For example:
  - Admission to an intensive care unit
  - Transfer to the cardiac catheterization suite or operating theatre
  - Post-mortem care
- What happened? Why did this happen?
  - 911 was called for…
  - An artery in the brain broke open and blood accumulated between the brain and the skull causing pressure…
  - Right now, we don't know why this happened, but that will be a priority of the team in intensive care…

Some families will want to have a role in their loved one's care. These families will want to communicate with emergency department staff, (Carlsson et al., 2022) be listened to (Edwardsen et al., 2002), and share information relevant to the patient's care (McGahey-Oakland et al., 2007). Participating in decision-making with physicians and nurses about the patient's care, including treatment decisions and termination of resuscitation efforts, has been identified as a shared decision-making priority of some families. (Carlsson et al., 2022; Cole et al., 2021; Jang & Choe, 2019; Stewart, 2019)

5. Consider the family context

It is important to consider the patient and family's context and culture, which may influence their care preferences. Authors from Saudi Arabia wrote a brief directive detailing an Islamic cultural perspective of family presence during resuscitation, describing strong extended family engagement and passionate expressions of grief (Othman et al., 2020). Moreover, a qualitative study from the Basque region in Spain found family members were fearful and resistant to being present during resuscitation, which led to the authors recommending healthcare workers assess each case independently, and that families must be integrated into decision-making (Tíscar-González et al., 2019). It is impossible to know each family's culture and preferences, thus each family should be approached individually, respecting their unique perspectives and preferences.

Another aspect of family context is the patient's goals for their care, quality of life and prognosis. In some settings, ED nurses can lead goals of care conversations, in others ED nurses advocate for and facilitate these discussions. Research supports the premise that families want the natural end of life to be respected (Cole et al., 2021; Schmidt & Harrahill, 1995). Resuscitation should not be the default action, nor should protocols and laws make resuscitation mandatory (Cole et al., 2021). In some cases, families involved in resuscitation research have identified that the best care for their family member was holding hands and telling them they are loved, especially in light of futile resuscitation procedures (Mawer, 2019).

6. Debrief and summarize events

A valuable tool for emergency department staff is patient and family debriefing. It can be combined with a bedside handover when the patient is transferred, admitted, or has died in the emergency department. The debriefing is not an operational one, (not to reflect on the care processes and identify opportunities for improvement); instead, the purpose of the debriefing is three-fold: i) to address information needs; ii) to address the psycho-emotional needs of the patient and family, and express empathy; and iii) to conclude the care experience with compassion while promoting family self-care. Families have credited debriefing with helping them process the care received (Jang & Choe, 2019).

The debriefing does not need to be lengthy or onerous. The treating nurse and physician can recap what happened to the patient, what is known about the diagnosis, what was done in the emergency department, and what happens next (Redley et al., 2019). In concluding the debriefing, the care team should identify where the family can go for more information or any additional care needs. Receiving important information in written format may help improve recall, considering the brevity of interactions and the potential for misunderstanding during an emergency (Hoek et al., 2020). Resources developed by patient representative organizations are often well received and valued by patients and families (Steffen et al., 2020).

7. Future care needs, empowering self-care, and follow-up

If the patient is admitted to the hospital or transferred to another facility, there may be no follow-up care needs to address by ED staff. However, if the patient dies in the ED, staff should identify to whom the family can turn for additional support. This can be communicated through formal discharge summaries, instructions to follow up with a family physician, or suggesting resources such as Canadian Heart and Stroke Caregiver Support Resources (Heart and Stroke, 2022), the Sudden Cardiac Arrest Foundation (Jampel, 2020), or www.mygrief.ca, depending upon the reason for seeking care. Staff should endeavour to empower self-care. Emergency departments should identify local grief, trauma, and bereavement resources in their community, to which they can point patients' families.

8. Supportive policies and procedures

Clinical governance documents, such as policies and procedures, that support family-centred care are required. (McGahey-Oakland et al., 2007; Twibell et al., 2015) Directives that support family-centred care help prevent staff and family conflict about visitation, presence, and expectations of care. They help clarify the expectations of staff and families, while simultaneously supporting both parties to achieve their goals.

Conclusion

Providing family-centred care during resuscitative procedures and cardiac arrest is essential for improving patient outcomes and addressing the psychosocial and emotional needs of patients and their families. Emergency nurses and ED staff can provide compassionate and comprehensive care by focusing on patient care, supporting family presence/absence, involving families in decision-making, addressing their needs, and implementing supportive policies/procedures. It is crucial to recognize that each family's needs and preferences may differ and that a tailored approach will lead to the most successful outcomes. By adopting these evidence-based strategies, EDs can create an environment that fosters both patient and family satisfaction and improves overall care experiences.

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Matthew J. Douma conceptualized the manuscript topic and completed the first draft.

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Kar Lin Su – editing

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Katherine E Smith – multidisciplinary team focused editing

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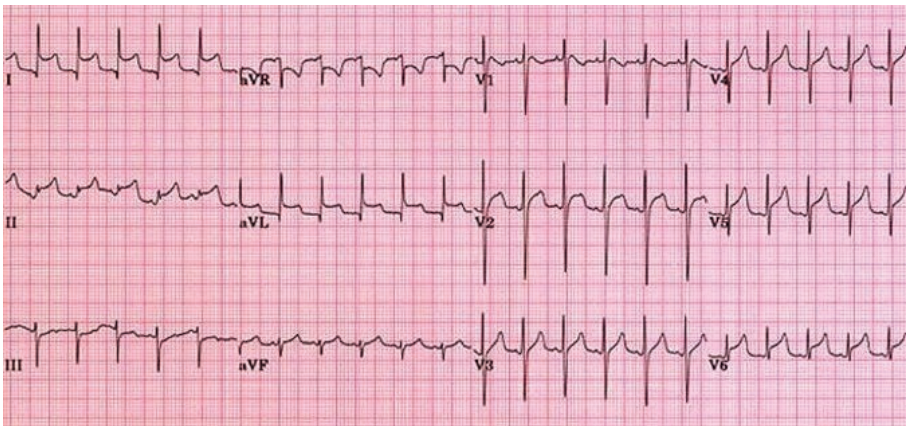
ENC(C) Questions

Cardiac (Rhythm Interpretation)

1. A 35-year-old female patient presents to the emergency department (ED) with a four-day history of "sharp pain" in her chest. Upon further assessment, you learn that the chest pain seems to be worse on deep inhalation, but not related to exertion. It is aggravated in supine position, but alleviated when leaning forward. You obtain a 12-lead electrocardiogram (ECG), which reveals the following:

Figure 1



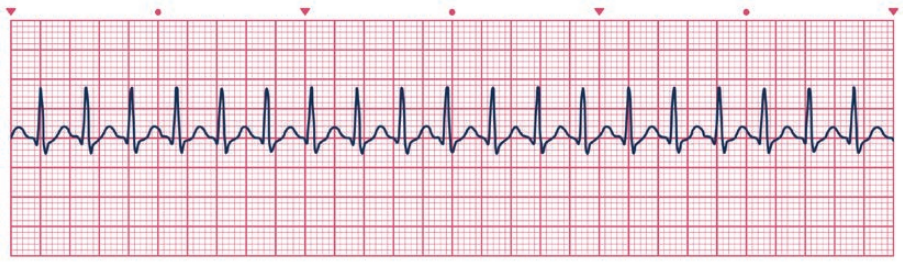
Note: Media App from the University of North Carolina (UNC; n.d.) https://apps.media.unc.edu/crashcart/Resources/HeartRhythms.html

Given the patient's history and ECG findings, she is **most** likely experiencing

A. an anterior myocardial infarction
B. pericarditis
C. a lateral myocardial infarction
D. endocarditis

2. A 40-year-old male patient arrives in the ED via ambulance. He is pale, diaphoretic, and "not feeling so good." His vital signs are: BP 88/60 mmHg, HR and rhythm as you see below (Lead II), RR 26 breaths/minute, SpO_2 93% on 4 L O_2 via nasal prongs.

Figure 2



Note: Media App from the University of North Carolina (UNC; n.d.) https://apps.media.unc.edu/crashcart/Resources/HeartRhythms.html

The **most** appropriate **initial** intervention would be

A. defibrillation at 200 Joules (J)
B. Valsalva manoeuvrez
C. cardioversion at 100 J
D. adenosine 6 mg intravenous (IV) push

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Obstetrics

3. A woman who is 28 weeks pregnant has sustained blunt abdominal trauma when hit repeatedly in the abdomen by her partner.

   Which of the following statements are correct regarding abdominal trauma in pregnancy?
   A. a hematocrit of 0.34 indicates significant blood loss
   B. a fetal heart rate of < 110/min or > 160/min is often an early indirect sign of maternal distress
   C. if amniotic fluid is present in the vaginal secretions, the pH will be 4.6 to 6.0
   D. increasing fundal height indicates a possible placenta previa

4. You are assisting with a precipitous delivery in the ED. On assessment you discover the umbilical cord protruding from the vagina.

   Which of the following interventions will you anticipate? Choose all that apply, there is more than one correct answer.
   A. apply gentle traction on the umbilical cord to straighten out the cord and normalize circulation
   B. instruct the mother to push to accelerate delivery and relieve pressure on the cord
   C. elevate the mother's hips to reduce pressure on the cord
   D. prepare to administer a tocolytic to inhibit labour until the cord can be corrected

Toxicology

5. A 0-year-old male arrives at the ED with impaired motor coordination, ataxia, slowed reaction time, slurred speech, and visual changes including blurred vision, emesis, and signs of dehydration. His friends state that he was getting more intoxicated. They are unsure of what he drank. The emergency nurse suspects
   A. ethanol poisoning
   B. methanol poisoning
   C. ethylene glycol poisoning
   D. isopropyl alcohol poisoning

6. A 78-year-old patient has been diagnosed with a right fractured hip. For pain management a regional nerve block is performed. The patient becomes acutely confused with a seizure and is hypotensive and bradycardic following the nerve block. ACLS measures are initiated including atropine, pacing, and a vasopressor infusion. The toxicologist is consulted. The emergency nurse anticipates the following intervention is
   A. intralipid therapy intravenously
   B. glucagon 1mg intravenous (IV)
   C. calcium gluconate 1 gram IV
   D. epinephrine 1mg IV

7. A 3-year-old child presents to triage with their parents. The parents report the child found an open bag of a chemical the parents use for pest control in the garage and was sprinkling "fairy dust" around the grass. Parents report the child started to act strangely, is coughing up a lot of saliva, and has profound diarrhea. The highest priority for the emergency nurse is
   A. continue to triage, take vital signs, and complete registration
   B. immediately take the child to the resuscitation room
   C. page the medical toxicologist
   D. don personal protective equipment (PPE)

Answers with rationales

1. Correct answer is B

Rationale: Pericarditis is a disorder of the heart wall, specifically the pericardium. It is most often idiopathic or caused by viral infection, leading to inflammation of the pericardium, which manifests as diffuse ST-segment elevation without Q waves on an ECG. Symptoms, such as sharp chest pain, typically develop over several days and are aggravated by respiratory movements (i.e., inhalation) as intrathoracic pressure increases, irritating the cardiac wall. Exertion may worsen chest discomfort, but it is not a precipitating factor, such as in acute coronary syndrome. Gravity aggravates the cardiac wall when lying flat; however, leaning forward expands the thoracic cavity and lessens frictional irritation (Brashers, 2019, p. 1088). In myocardial infarction (MI), chest discomfort is unaffected by body position or ventilation; however, exertion may precipitate chest discomfort, such as during an exercise stress test. ECG findings in anterior and lateral ST-segment elevation MI would present with ST elevation in leads V1–V4 and V5-V6-aVL-aVF, respectively (Foley & Sweet, 2020, pp. 239–242). Endocarditis involves inflammation of the innermost lining of the heart, the endocardium, of which the cardiac valves are composed. Infectious causes (e.g., group A beta-hemolytic Streptococci) are the most common culprit, leading to sequelae such as rheumatic heart disease and cardiac hypertrophy (Brashers, 2019, pp. 1091–1095). Thus, ECG findings related to endocarditis are typically due to valvular disease or atrial/ventricular hypertrophy, presenting with increased R wave voltage in lateral leads and ST depression/T wave inversion in leads V5–V6 (Burns & Buttner, 2021).

2. Correct answer is C

Rationale: In this scenario, the patient's rhythm is supraventricular tachycardia (SVT) with a rate of 210–240 bpm and evidence of hemodynamic instability (i.e., hypotension, pallor, diaphoresis, complaint of "not feeling so good"). The key here is determining whether the tachycardia is causing the serious signs or symptoms; if so, cardioversion should not be withheld. Therefore, cardioversion at 100 J (or dosage recommended by manufacturer) is the recommended intervention (American Heart Association [AHA], 2020, pp. 81–86). Adenosine may be considered if preparing for cardioversion, time permitting, but it would be inappropriate to delay cardioversion in this case. Defibrillation is 1st-line treatment for lethal rhythms (i.e., ventricular fibrillation, pulseless ventricular tachycardia [VTach]) and polymorphic VTach (i.e., Torsades de pointes) only. Valsalva manoeuvres slow down the heart rate by stimulating the vagus nerve (parasympathetic nervous system), such as by asking a patient to "bear down" or blow through the end of a syringe. They are first-line treatments for stable patients in regular SVT or paroxysmal SVT (AHA, 2020, pp. 81–82).

3. Correct answer is B

Rationale: For the pregnant trauma patient, a fetal heart rate of < 110/min or > 160/min is often an early indirect sign of maternal distress (Jain et al, 2015; Repasky, 2020). Vaginal bleeding and increasing fundal height indicate a possible abruptio placenta rather than placenta previa (Repasky, 2020). Dilutional anemia in pregnancy can cause inaccurate assessment of bleeding so the hematocrit level is slightly low but is more likely a normal physiologic response to pregnancy (Repasky, 2020; Sakamoto, et al., 2019). Amniotic fluid typically has a pH of 7.1–7.3, while normal vaginal secretions have a pH of 4.5–6.0 (Olarinoye et al, 2021).

4. Correct answer is C

Rationale: A prolapsed umbilical cord is a true obstetric emergency. Cord compression can cause fetal distress and even death (Bush et al., 2022). The most appropriate answer is to position the mother to relieve pressure on the cord and instruct her not to push to avoid further compression (Jordan, 2020). The physician may attempt to relieve pressure on the cord by lifting the presenting fetal part until a c-section can be performed. Other appropriate actions might include assessing for fetal distress and covering the cord with moist sterile gauze to keep it from drying out (Jordan, 2020). Pulling on the cord can cause damage. Unless the cervix is fully dilated, it is more likely that an immediate c-section will be performed rather than risk fetal distress with a prolonged vaginal delivery (Bush et al., 2022). A tocolytic would not be indicated.

5. Correct answer is B

Rationale: Methanol poisoning can be difficult to distinguish from ethanol ingestion, ethylene glycol ingestion, or isopropyl alcohol ingestion, or if they are co-ingested together or other co-ingestions. Early signs and symptoms of methanol poisoning are similar to ethanol intoxication — unsteady gait, slurred speech, central nervous system sedation. Methanol metabolites can specifically damage the retina and lead to visual disturbances including swelling of the optic disc leading to permanent blindness if not treated. The toxic metabolites also affect the central nervous system and may lead to hypoxia and acidosis. Ethylene glycol poisoning metabolites target the kidney leading to renal failure and acidosis. It may not be possible to get an accurate history to determine the toxin ingested. Lab work may include toxic alcohols to determine the type of alcohol ingested. Treatment is based on the clinical stability of the patient and if methanol poisoning is confirmed, fomepizole is the antidote. If fomepizole is not available, ethanol can be used. Hemodialysis may be used for severe poisoning. There is little role for gastrointestinal (GI) decontamination in this situation.

6. Correct answer is A

Rationale: Glucagon 1 mg is provided to patients IM if they are hypoglycemic and have an altered LOC, cannot swallow a source of glucose, and an IV cannot be established. Glucagon IV is an option for an overdose of calcium channel blockade or beta blockade, but the dose needed is higher and to be used only when routine ACLS measures for symptomatic bradycardia are not meeting the end goals of resuscitation. Calcium gluconate IV would be administered for hypocalcemia, calcium channel blocker overdose, and in hyperkalemia. Epinephrine 1 mg IV is the cardiac arrest dose and not the dose for route direct IV when a patient has a pulse.

Intravascular administration of local anesthetics such as lidocaine or bupivacaine inadvertently can cause cardiovascular collapse and seizures. Injecting the local anesthetic at the site of injury can cause local absorption into the vasculature. Frequent assessments including vital signs, GCS, and sensory and motor function following a regional nerve block are required to assess for local anesthetic toxicity.

Think about what local anesthetics do when injecting the skin around a laceration prior to wound approximation — it numbs the area for comfort during the procedure. If the local anesthetic is given into the intravascular space, the symptoms will be systemic. The initial signs of local anesthetic toxicity include dizziness, drowsiness, and slurred speech, circumoral numbness followed by seizures, coma, severe hypotension, and possibly death.

Support the patient's vital signs, cardiovascular, and respiratory with ACLS measures. If there is a lack of response, consult a medical toxicologist at the local poison control centre. The medical toxicologist will provide suggestions on next steps — possibly intralipid therapy.

Intralipid therapy may reverse the local anesthetic toxicity by redistribution of the local anesthetic away from the site of injection to decrease absorption or by enhancing metabolism within the cardiac cells. The dosing recommendation is usually an IV direct dose of intralipid followed by an infusion over about 30–60 minutes.

Any procedure involving injection of local anesthetics can predispose patients to local anesthetic toxicity. Most poison control centres will have a resource available for health practitioners. Consult with your local medical toxicologist when managing these patients.

7. Correct answer is D

Rationale: The highest priority is for the emergency nurse to don PPE to avoid exposure of a potential cholinergic exposure. The emergency nurse is at high risk of exposure as are the parents. Do not continue to triage or touch the child as residue from the chemical agent may be still present on the child's skin and clothing and possibly the parents. The parents and possibly the triage nurse may have been exposed to the same chemical as the child and may develop the same symptoms. Safety of the emergency team and anyone else in the triage area is a high priority. Paging the medical toxicologist is an option; but, at present, decontamination procedures are needed.

This is an example of a chemical, biological, radiological, nuclear (CBRNE) exposure. Follow local protocols for decontamination and emergent medical needs of the victims. Each ED must have an action plan on where/who/how/what occurs when patients arrive, even if they are unannounced.

Toxidromes are a group of symptoms that can occur after a toxic exposure that fall into certain categories. The child's symptoms are suggestive of a cholinergic exposure, such as a pesticide in the garage. A simple mnemonic can help identify this toxidrome — SLUDGE

S = Salivation
L = Lacrimation
U = Urination
D = Defecation
G = Gastrointestinal symptoms — abdominal cramps, diarrhea
E = Emesis

The treatment begins with decontamination and institution of basic and advanced life support. The antidote for cholinergic poisoning is atropine. The atropine dose for children is 0.05 mg/kg IV and for adults it is 2 to 5 mg IV. Further dosing may be needed until pulmonary signs and symptoms are resolving. Consult local poison control for further guidance.

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Look for supplemental materials such as author interviews and podcasts at www.CJEN.ca

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Questions de révision pour la CSU(C)

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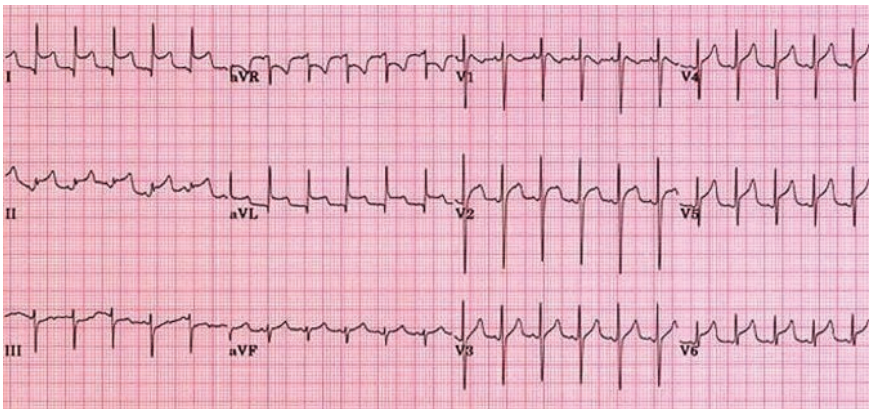
1. Une femme âgée de 35 ans se présente au service des urgences pour une douleur aiguë à la poitrine qui dure depuis quatre jours. Suite à un examen approfondi, vous apprenez que la douleur thoracique semble s'aggraver lors d'une inspiration profonde, mais qu'elle n'est pas liée à l'effort. La douleur s'aggrave en position couchée et s'atténue lorsqu'elle se penche vers l'avant. Vous effectuez un électrocardiogramme (ECG) à 12 dérivations, qui révèle les éléments suivants :

Figure 1



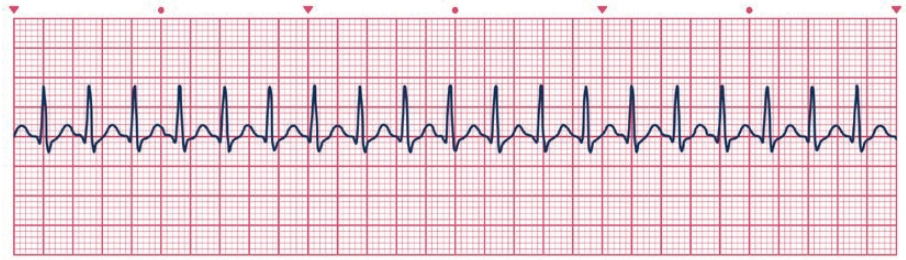
Note: Media App, University of North Carolina (UNC; n.d.) https://apps.media.unc.edu/crashcart/Resources/HeartRhythms.html

Selon les antécédents de la patiente et les résultats de l'ECG, il est très probable qu'elle souffre :

A. d'un infarctus du myocarde antérieur
B. d'une péricardite
C. d'un infarctus latéral du myocarde
D. d'une endocardite

2. Un patient âgé de 40 ans arrive aux urgences en ambulance. Il est pâle, diaphorétique et ne se sent pas très bien. Ses signes vitaux sont les suivants : TA 88/60 mmHg, FC et rythme comme vous le voyez ci-dessous (II dérivations), FR 26 respirations/minute, SpO2 93 % sous 4 L d'O_2 administré par des pinces nasales.

Figure 2



Note: Media App, University of North Carolina (UNC; n.d.) https://apps.media.unc.edu/crash-cart/Resources/HeartRhythms.html

La **<u>première</u>** intervention la **<u>plus</u>** appropriée serait :

A. défibrillation à 200 joules (J)
B. manœuvre de Valsalva
C. cardioversion à 100 J
D. 6 mg d'adénosine par bolus intraveineux (IV)

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3. Enceinte de 28 semaines, une femme a subi un traumatisme abdominal contondant après avoir été frappée à plusieurs reprises dans l'abdomen par son conjoint. Parmi les affirmations suivantes, lesquelles sont justes concernant les traumatismes abdominaux pendant la grossesse ?
   A. Un hématocrite de 0,34 indique une perte de sang importante
   B. Une fréquence cardiaque fœtale de < 110/min ou > 160/min indique souvent un signe indirect précoce de détresse maternelle
   C. Lorsqu'il y a présence de liquide amniotique dans les sécrétions vaginales, le pH se situe entre 4,6 et 6,0
   D. L'augmentation de la hauteur utérine indique la possibilité d'un placenta prævia.

4. Vous assistez à un accouchement précipité aux urgences. Lors de l'évaluation, vous découvrez que le cordon ombilical ressort du vagin. Parmi les interventions suivantes, lesquelles prévoyez-vous ? Il y a plus d'une bonne réponse. Choisissez toutes celles qui s'appliquent.
   A. Exercer une légère traction sur le cordon ombilical pour le redresser et rétablir la circulation
   B. Encouragez la mère à pousser pour précipiter l'accouchement et soulager la pression sur le cordon ombilical
   C. Surélever les hanches de la mère pour réduire la pression sur le cordon
   D. Vous vous préparez à administrer un tocolytique pour empêcher l'accouchement en attendant de pouvoir corriger l'état du cordon ombilical.

5. Un homme âgé de 20 ans arrive aux urgences avec des troubles de la coordination motrice, une ataxie, un délai de réaction, des troubles de l'élocution et de la vision, ainsi que des vomissements et des signes de déshydratation. Ses amis précisent qu'il était de plus en plus intoxiqué, mais ils ignorent ce qu'il a bu. Le membre du personnel infirmier des urgences soupçonne :
   A. Intoxication à l'éthanol
   B. Intoxication au méthanol
   C. Intoxication à l'éthylène glycol
   D. Intoxication à l'alcool isopropylique

6. Les parents d'un enfant de 3 ans se présentent au service de triage avec leur enfant. Ils signalent que l'enfant a trouvé un sac ouvert contenant un produit chimique dans le garage que les parents emploient pour lutter contre les parasites et qu'il saupoudrait de la « poussière de fée » sur le gazon. Les parents affirment que l'enfant a commencé à agir bizarrement, qu'il crache beaucoup de salive et qu'il a une diarrhée profonde. La priorité la plus élevée pour le personnel infirmier des urgences est de :
   A. poursuivre le triage, mesurer les signes vitaux et procéder à l'inscription
   B. transporter immédiatement l'enfant en salle de réanimation
   C. appeler le toxicologue
   D. enfiler son ÉPI

Réponses et justifications :

1. Réponse : B

Justification : La péricardite est une affection de la paroi cardiaque, qui se situe plus précisément au niveau du péricarde. Elle est souvent idiopathique ou causée par une infection virale, entraînant une inflammation du péricarde qui se manifeste par un sus-décalage diffus du segment ST sans ondes Q à l'ECG. Une douleur thoracique aiguë se développe généralement sur plusieurs jours et est aggravée par les mouvements respiratoires (c'est-à-dire l'inhalation). Comme la pression intrathoracique augmente, elle irrite la paroi cardiaque. L'effort peut aggraver l'inconfort thoracique, mais n'est pas un catalyseur, comme dans le cas du syndrome coronarien aigu. La gravité aggrave la paroi cardiaque en position couchée ; inversement, le fait de se pencher en avant élargit la cavité thoracique et atténue l'irritation causée par le frottement (Brashers, 2019, p. 1088). Dans le cas d'un infarctus du myocarde (IM), l'inconfort thoracique n'est pas affecté par la position du corps ni par la ventilation ; cependant, l'effort peut précipiter l'inconfort thoracique, par exemple pendant une épreuve à l'effort. L'ECG d'un infarctus du myocarde avec sus-décalage du segment ST antérieur et latéral présente un sus-décalage du segment ST dans les dérivations V1-V4 et V5-V6-aVL-aVF, respectivement (Foley et Sweet, 2020, pp. 239–242). L'endocardite est une infection ou une inflammation de l'endocarde (couche interne du cœur), dont les valves cardiaques sont composées. Les causes infectieuses (par exemple, les streptocoques bêta hémolytiques du groupe A) sont les plus fréquentes, occasionnant des séquelles telles que la cardiopathie rhumatismale et l'hypertrophie cardiaque (Brashers, 2019, pp. 1091–1095). Par conséquent, les résultats de l'ECG liés à l'endocardite sont généralement dus à une maladie valvulaire ou à une hypertrophie auriculaire ou ventriculaire, se traduisant par une augmentation de la tension de l'onde R dans les dérivations latérales et une dépression ST ou une inversion de l'onde T dans les dérivations V5–V6 (Burns et Buttner, 2021).

2. Réponse : C

Justification : Ce scénario révèle que le patient présente une tachycardie supraventriculaire (TSV) avec une fréquence de 210–240 bpms et des signes d'instabilité hémodynamique (hypotension, pâleur, diaphorèse, plainte de « ne pas se sentir très bien »). Il faut déterminer si la tachycardie est à l'origine des signes ou symptômes graves. Si c'est le cas, la cardioversion ne doit pas être différée. Ainsi, la cardioversion à 100 J (ou la posologie recommandée par le fabricant) est l'intervention recommandée (American Heart Association [AHA], 2020, pp. 81–86). Si le temps le permet, l'adénosine peut être envisagée lors de la préparation de la cardioversion, mais il serait inapproprié de retarder la cardioversion dans ce cas. La défibrillation est le traitement de première ligne pour les troubles de rythme graves (fibrillation ventriculaire, tachycardie ventriculaire sans pouls) et les tachycardies ventriculaires polymorphes (torsades de pointes) uniquement. Les manœuvres de Valsalva ralentissent le rythme cardiaque en stimulant le nerf vague (système nerveux parasympathique), par exemple en demandant à un patient de « s'appuyer » ou de souffler dans le bout d'une seringue. Elles constituent le traitement de première ligne pour les patients stables souffrant de TVS régulière ou paroxystique (AHA, 2020, pp. 81–82).

3. Réponse : B

Justification : Chez la patiente enceinte victime d'un traumatisme, un rythme cardiaque fœtal < 110/min ou > 160/min est souvent un signe indirect précoce de détresse maternelle (Jain et coll., 2015 ; Repasky, 2020). Les saignements vaginaux et l'augmentation de la hauteur utérine indiquent la possibilité d'un décollement du placenta plutôt que d'un placenta prævia (Repasky, 2020). L'anémie par hémodilution pendant la grossesse peut fausser l'évaluation de l'hémorragie ; par conséquent, si le taux d'hématocrite est légèrement bas, il s'agit plus probablement d'une réaction physiologique normale à la grossesse que d'un indicateur d'une hémorragie importante (Repasky, 2020 ; Sakamoto, et coll., 2019). Le liquide amniotique a généralement un pH variant entre 7,1 et 7,3, tandis que les sécrétions vaginales normales ont un pH de 4,5 à 6,0 (Olarinoye et coll., 2021).

4. Réponse : C

Justification : Le prolapsus du cordon ombilical constitue une urgence obstétricale sérieuse. La compression du cordon peut provoquer une détresse fœtale et même la mort (Bush et coll., 2023). Pour répondre au mieux à la situation, il convient de positionner la mère de manière à soulager la pression sur le cordon et de lui demander de ne pas pousser pour éviter toute compression supplémentaire (Jordan, 2020). Le médecin peut tenter de soulager la pression sur le cordon en soulevant la partie exposée jusqu'à ce qu'une césarienne puisse être réalisée. On peut également évaluer la détresse fœtale et recouvrir le cordon d'une gaze stérile humide pour éviter qu'il ne se dessèche (Jordan, 2020). Tirer sur le cordon peut avoir des conséquences néfastes. Sans dilatation complète du col de l'utérus, il est plus probable qu'une césarienne soit pratiquée immédiatement plutôt que de risquer une détresse fœtale par un accouchement vaginal prolongé (Bush et coll., 2023). Un tocolytique ne serait pas indiqué.

5. Réponse : B

Justification : L'intoxication au méthanol peut être difficile à distinguer de la consommation d'éthanol, d'éthylène glycol ou d'alcool isopropylique, ou encore s'ils sont ingérés en même temps ou si d'autres substances ont été consommées. Les signes et symptômes précoces de l'empoisonnement au méthanol sont similaires à ceux de l'intoxication à l'éthanol : démarche mal assurée, troubles de l'élocution, sédation du système nerveux central [Nekoukar et coll., 2021, Sivilotti, 2022]. Un élément clé concernant la plainte principale est un trouble de la vision. Les métabolites du méthanol sont particulièrement susceptibles d'endommager la rétine et d'entraîner des troubles de la vue, notamment un gonflement du disque optique qui, en l'absence de traitement, peut conduire à une cécité permanente [Nekoukar et coll., 2021]. Les métabolites toxiques altèrent également le SNC et peuvent provoquer une hypoxie et une acidose. Les métabolites de l'empoisonnement à l'éthylène glycol ciblent les reins, menant à l'insuffisance rénale et à l'acidose [Nekoukar et coll., 2021. Sivilotti, 2022]. Il est parfois impossible d'obtenir une anamnèse précise pour déterminer la toxine consommée. Les analyses de laboratoire peuvent porter sur les alcools toxiques afin de déterminer le type d'alcool ingéré. Le traitement dépend de la stabilité clinique du patient ; si l'empoisonnement au méthanol est confirmé, l'antidote est le fomépizole [Sivilotti, 2021]. Si le fomépizole n'est pas disponible, on peut recourir à l'éthanol. En cas d'intoxication grave, l'hémodialyse peut être recommandée [Sivilotti, 2021]. Dans ce contexte, la décontamination gastro-intestinale [GI] est peu utile.

6. Réponse : D

Justification : Il s'agit d'un exemple d'exposition chimique, biologique, radiologique et nucléaire [CBRNE]. Les indices contenus dans la question sont les symptômes après l'exposition au produit chimique. L'ensemble de ces symptômes est connu sous le nom de toxidromes. Ce sont des symptômes qui peuvent survenir après une exposition à un produit toxique et qui se répartissent en plusieurs catégories. Les symptômes de l'enfant révèlent une exposition cholinergique, par exemple à un pesticide dans le garage. Une mnémotechnique simple peut aider à identifier ce toxidrome appelé *SLUDGE* [Bird, 2022].

S = Salivation
L = Lacrimation [larmoiement]
U = Urination
D = Defecation (défécation)
G = Gastrointestinal symptoms — abdominal cramps, diarrhea (Symptômes gastro-intestinaux — crampes abdominales, diarrhée]
E = Emesis [vomissements]

La priorité pour le personnel infirmier d'urgence est de revêtir un équipement de protection individuelle [ÉPI] afin d'éviter toute exposition à une contamination cholinergique potentielle. Le personnel infirmier d'urgence court un risque élevé d'exposition, de même que les parents. Ne poursuivez pas le triage et ne touchez pas l'enfant, car des résidus de l'agent chimique peuvent être encore présents sur la peau et les vêtements de l'enfant, voire même des parents. L'enfant, ses parents et peut-être même le personnel infirmier de triage peuvent avoir été exposés au même produit chimique que l'enfant et présenter les mêmes symptômes. La sécurité de l'équipe d'urgence et de toute autre personne se trouvant dans la zone de triage est une principale priorité. Il est possible d'appeler le toxicologue médical, mais pour l'instant, des procédures de décontamination sont nécessaires. Respectez les protocoles régionaux de décontamination et de prise en charge des besoins médicaux urgents des victimes. Chaque service d'urgence doit disposer d'un plan d'action indiquant où, qui, comment et quoi faire lorsque des patients arrivent, même à l'improviste.

Une fois l'ÉPI en place, le traitement commence par la décontamination et la mise en place d'une assistance vitale de base et avancée. L'antidote de l'intoxication cholinergique est l'atropine [Bird, 2022]. La dose d'atropine pour les enfants est de 0,05 mg/kg IV f et pour les adultes de 2 à 5 mg IV. D'autres doses peuvent être nécessaires jusqu'à ce que les signes et symptômes pulmonaires cessent [Bird, 2022]. Consultez le centre antipoison de votre région pour de plus amples informations.

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