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THE OFFICIAL JOURNAL OF THE NATIONAL EMERGENCY NURSES' ASSOCIATION

ISSN 2293-3921 (Print) & ISSN 2563-2655 (Online) **VOLUME 44, NUMBER 2, FALL 2021**

Canadian Journal of Emergency Nursing is the official publication of the National Emergency Nurses Association, published twice annually by Pappin Communications, 1012 Snake River Line, Cobden, ON K0J 1K0. ISSN 2293-3921. Indexed in CINAHL.

Cover image credit: Evan Mitsui

PUBLICATIONS MAIL AGREEMENT NO. 41147033. RETURN UNDELIVERABLE CANADIAN ADDRESSES TO:
National Emergency Nurses' Association, P.O. Box 365, Chilliwack, B.C. V2P 6J4

Cover artist: Evan Mitsui

Evan is a staff photographer with CBC News. He grew up in Vancouver and lives in Toronto with his wife and young daughter. You can see more of his work on CBCNews.ca and on Instagram.

Artist's Statement:

Covering the pandemic as a photojournalist has been, paradoxically, quite freeing. My colleagues and I need to be out and about to do our jobs so, whereas most others were forced indoors, I feel quite fortunate to have been able to see the city (Toronto) change throughout the various phases of lockdown. In the early days, it wasn't uncommon to be the only person on what would normally be a busy downtown street. There were stresses, too, that came from working indoors, often in close proximity to confirmed and suspected COVID-19 patients. Access to places normally open to the public was also a challenge so I want to thank the healthcare providers and administrators who saw the value in showing what it was really like inside hospitals and congregate care settings that were, for a time, the epicentre of an unprecedented crisis. I look now to the misinformation and fear surrounding vaccines and can't help but wonder if allowing the public a more frequent look behind the curtain, as it were, wouldn't have at least helped restore some trust in our institutions.

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The Canadian Journal of Emergency Nursing plans to launch a new feature "Emergency Nursing Education Showcase" for the Spring 2022 issue. We plan to showcase a variety of scholarly work demonstrating the techniques and the outcomes of Emergency Nursing education. Do you have a unique education format that was developed to address education during the pandemic? Do you have education strategies others could benefit from? Are you or your students doing scholarly work such as case studies or research? We are keen to receive unique case presentations, trending situations / presentations or traditional emergency education material that could be published in the CJEN bi-yearly journal. We would like to hear from you!

For more information, please contact feature editors

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Appel à tous les enseignant(e)s et étudiant(e)s !

Le Journal canadien des infirmières d'urgence prévoit lancer une nouveauté « Exposé sur la Formation Infirmière d'Urgence » pour le numéro du printemps 2022. Nous prévoyons présenter une variété d'œuvres savantes démontrant les techniques et les résultats reliés à la formation infirmière d'urgence. Avez-vous une technique d'enseignement unique qui a été développée pour gérer la formation pendant la pandémie ? Avez-vous des stratégies d'enseignement dont d'autres pourraient bénéficier? Est-ce que vous ou vos étudiant.es effectuez des œuvres savantes telles que des études de cas ou des recherches ? Nous sommes ravis de recevoir des présentations de cas uniques, de nouvelles tendances ou du matériel relié à la formation infirmière d'urgence qui pourrait être publié dans le Journal canadien des infirmières d'urgence. Nous aimerions avoir de vos nouvelles !

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Examining frailty and multimorbidity in nursing research of older emergency department patients

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Emergency nurses and departments are currently challenged to adapt traditional models of care to better accommodate the complex physical and psychosocial needs of the growing geriatric population (American College of Emergency Physicians et al., 2014; Bullard et al., 2017). Health service demand and emergency department (ED) use is projected to parallel population ageing, considering geriatric syndromes drive patient-important health outcomes and service use in older adults (Costa et al., 2014; Mowbray, Zargoush, et al., 2020). Geriatric syndromes are physical or psychosocial conditions with complex and multifaceted etiologies frequently found in older persons, including functional decline, cognitive impairment, and frailty (Inouye et al., 2007).

Geriatric syndromes are infrequently assessed or documented by emergency healthcare providers and researchers (Carpenter, Griffey, et al., 2011), yielding a biased and limited understanding of the patient and system factors that influence patient-important outcomes in older ED patients. Worse patient outcomes and a greater risk for under-triage in older ED cohorts (Aminzadeh & Dalziel, 2002; Platts-Mills et al., 2010) underscore the need for additional geriatric and vulnerability assessment to accurately triage, assess and care for older adults seeking emergency care (Carpenter & Mooijaart, 2020).

Frailty and multimorbidity are two succinct and informative geriatric-sensitive measures to consider in clinical and academic settings. These measures can be screened for within minutes and provide foreknowledge of patient complexity and vulnerability to inform clinical decision-making (Carpenter, Bassett, et al., 2011; Elliott et al., 2017, 2020; Sasseville et al., 2019). Policymakers and health researchers value and benefit from the assessment and documentation of these measures, as they inform policy development and population-level health system planning (Griffith et al., 2018; Muscedere et al., 2016).

Frailty is a multidimensional syndrome characterized by a heightened vulnerability to adverse health events and a diminished physiologic reserve inhibiting homeostatic recovery from stressors (Fried et al., 2001; Rockwood et al., 2005). Age has proven to be a strong predictor of health service use and outcomes in the general population. However, in older ED patients, the prognostic value of age is limited and likely confounded by frailty and geriatric complexity (Mowbray, Brousseau, et al., 2020). Frailty is most commonly measured using one of two methods, a health deficit accumulation index or a phenotypic model.

Health deficit accumulation indices estimate frailty by dividing the current number of health deficits over all possible health deficits measured and presented as decimals (Rockwood et al., 2005; Rockwood & Mitnitski, 2012). On the other hand, phenotypic measurements determine frailty by screening for specific assessment indicators or formal support needs, like assistance with walking (Fried et al., 2001). Phenotypic models are more commonly used in clinical practice settings, likely due to their ease of implementation. However, health deficit accumulation models, like the ED frailty index (Brousseau et al., 2018), may be better suited for research purposes, as they allow investigators to examine the full granularity of data. Additionally, when utilizing a health deficit accumulation model to operationalize frailty, it is recommended that nursing and emergency researchers leave the index in its natural continuous state when possible to avoid (i) a loss of information, (ii) an increased type-one error rate (i.e., false-positive findings), and (iii) the arbitrary creation of a dichotomy in the data (e.g., frail versus not frailty), which often results in decreased statistical power and generalizability of study findings (Altman & Royston, 2006; Austin & Brunner, 2004).

Multimorbidity is prevalent in older persons and is defined as the coexistence of two or more chronic diseases (Marengoni et al., 2011). Like frailty, multimorbidity is strongly associated with

ISSN: 2293-3921 (print) | ISSN: 2563-2655 (online) | https://doi.org/10.29173/cjen147
Print publisher: Pappin Communications http://pappin.com | Online publisher: University of Alberta www.library.ualberta.ca/publishing/open-journals

health service use and outcomes in older persons (Marengoni et al., 2011). While these conditions often exist in parallel, their measures can diverge significantly, suggesting that they offer unique prognostic value when determining patient outcomes and clinical therapies. For example, a patient with hypertension, hypercholesteremia, and gout, would be classified as multimorbid. However, it is unlikely they would be categorized as more frail or vulnerable than patients with stage III congestive heart failure as the sole diagnosis. This illustration suggests that frailty is influenced more by the severity and interaction of chronic health conditions than the count.

Information on patient diagnoses can be found in virtually all medical and administrative records, facilitating retrospective calculation of multimorbid status. This likely explains why studies are more prone to evaluate and report associations with multimorbidity in older persons (Griffith et al., 2018). On the other hand, frailty often requires the direct assessment of geriatric syndromes and functional capacity by a nurse or healthcare provider in the ED to support valid measurement (Hubbard & Story, 2014). Despite strong recommendations for frailty and vulnerability screening in the ED by the American College of Emergency Physicians (ACEP), the American Geriatric Society (AGS), the Emergency Nursing Association (ENA), and the Society for Academic Emergency Medicine (SAEM) (American College of Emergency Physicians et al., 2014), few emergency departments or institutions have adopted this practice as a standard of care. A lack of data and challenges in the retrospective calculation are barriers that may explain why frailty is often missing from ageing and emergency research.

The examination of frailty is essential to facilitate accurate statistical estimates and a contextualized understanding of the patient profile and ED-specific outcomes. Where possible, nursing and emergency researchers focused on geriatric care should aim to collect or analyze data on patient frailty, using one of the many valid instruments available, such as the Clinical Frailty Scale (Rockwood et al., 2005; Theou et al., 2021), Fried's phenotypic model (Fried et al., 2001), or the ED Frailty Index (Brousseau et al., 2018), to name a few. If interested in the unique prognostic value of frailty or multimorbidity, uncontaminated measures are needed to prevent overfit statistical models and poor external validity (Theou & Searle, 2018). In other words, it is essential to ensure that the selected frailty measure does not take into account co-morbid status and vice versa. The author offers an additional word of caution against frailty measures that base calculations on a single assessment, diagnosis, or laboratory value (e.g., grip strength or sarcopenia), as these measures do not capture the multidimensional nature of frailty.

Emergency nurses and researchers should also avoid the use of frailty scales that leverage documented diagnoses alone to determine frailty status, such as the Hospital Frailty Risk Score (Gilbert et al., 2018). While diagnoses are a convenient metric to leverage, there are concerns in administrative and hospital data regarding the accuracy of diagnostic and procedural codes (O'Malley et al., 2005). Certain diagnostic codes and procedures are directly linked with quality metrics, billing and other clinician-important outcomes and, therefore, are more accurately documented. Additionally, frailty and other geriatric syndromes are less commonly assessed and likely underrepresented in medical records, highlighting a potential selection bias for retrospective data abstraction.

In summary, emergency nurses and researchers should aim to assess, or measure, frailty and multimorbidity in their clinical and academic practice, as these measures have exceptional prognostic value. Age alone is an uninformative characteristic in older persons. As the largest body of emergency clinicians, nurses provide the majority of direct bedside care and documentation for older ED patients, highlighting a unique opportunity for emergency nursing research and leadership moving forward.

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Analyse de la fragilité et de la multimorbidité dans la recherche infirmière sur les patients âgés admis aux urgences

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Les infirmières et les services d'urgence sont actuellement mis au défi d'adapter les modèles de soins traditionnels pour mieux répondre aux besoins physiques et psychosociaux complexes de la population gériatrique croissante (American College of Emergency Physicians et coll., 2014 ; Bullard et coll., 2017). On projette que la demande de services de santé et l'utilisation des services d'urgence seront parallèles au vieillissement de la population, compte tenu du fait que les syndromes gériatriques déterminent les résultats de santé importants pour les patients et l'utilisation des services chez les personnes âgées (Costa et coll., 2014; Mowbray et coll., 2020). Les syndromes gériatriques sont des pathologies physiques ou psychosociales aux étiologies complexes et variées, fréquemment rencontrées chez les personnes âgées, notamment le déclin fonctionnel, les troubles cognitifs et la fragilité. (Inouye et coll., 2007).

Les syndromes gériatriques sont rarement évalués ou documentés par les fournisseurs de soins de santé d'urgence et les chercheurs (Carpenter, Griffey, et coll., 2011), donnant lieu à une compréhension biaisée et limitée des facteurs relatifs aux patients et au système qui influencent les résultats importants pour les patients âgés aux urgences. Les moins bons résultats des patients et le risque accru de sous-triage dans les populations âgées aux urgences (Aminzadeh et Dalziel, 2002 ; Platts-Mills et coll., 2010) soulignent la nécessité d'une évaluation gériatrique et de vulnérabilité supplémentaire afin de trier avec précision, d'évaluer et de soigner les adultes âgés qui ont besoin de soins d'urgence (Carpenter et Mooijaart, 2020). La fragilité et la multimorbidité sont deux indices succincts et informatifs de sensibilité gériatrique à envisager dans les milieux cliniques et universitaires. Ces mesures peuvent être dépistées en quelques minutes et permettent de connaître la complexité et la vulnérabilité du patient afin de guider la prise de décision clinique. (Carpenter, Bassett, et coll., 2011 ; Elliott et coll., 2017, 2020 ; Sasseville et coll., 2019). Les décideurs et les chercheurs dans le domaine de la santé estiment et bénéficient de l'évaluation et de la documentation de ces mesures, car elles contribuent à l'élaboration des politiques et à la planification du système de santé en ce qui concerne la population. (Griffith et coll., 2018 ; Muscedere et coll., 2016).

La fragilité est un syndrome pluridimensionnel caractérisé par une vulnérabilité accrue aux événements indésirables pour la santé et une réserve physiologique réduite qui empêche la récupération homéostatique à la suite de facteurs de stress. (Fried et coll., 2001 ; Rockwood et coll., 2005). L'âge s'est révélé très précis en tant qu'indicateur de l'utilisation des services de santé et des résultats dans la population générale. Toutefois, chez les patients âgés admis aux urgences, la valeur pronostique de l'âge est limitée et probablement confondue avec la fragilité et la complexité gériatrique. (Mowbray et coll., 2020). La fragilité est le plus fréquemment mesurée à l'aide de l'une des deux méthodes suivantes : l'indice des déficits de santé ou le modèle phénotypique.

L'indice des déficits de santé calcule la fragilité en divisant le nombre réel de déficits de santé par tous les déficits de santé possibles mesurés et présentés sous forme de décimales. (Rockwood et coll., 2005 ; Rockwood & Mitnitski, 2012). En revanche, les mesures phénotypiques permettent de déterminer la fragilité par le dépistage d'indicateurs d'évaluation précis ou de besoins de soins formels, comme l'aide à la marche. (Fried et coll., 2001). Les modèles phénotypiques sont plus régulièrement utilisés dans le cadre de la pratique clinique, notamment en raison de leur facilité de mise en œuvre. Cependant, les modèles d'accumulation des déficits de santé, comme l'indice de fragilité des urgences (Brousseau et coll., 2018), sont peut-être mieux adaptés à la recherche, car ils permettent aux chercheurs d'examiner l'ensemble de la granularité des données. De plus, lorsqu'on emploie un modèle d'accumulation des déficits de santé pour opérationnaliser la fragilité, il est recommandé aux chercheurs en

ISSN: 2293-3921 (print) | ISSN: 2563-2655 (online) | https://doi.org/10.29173/cjen147
Print publisher: Pappin Communications http://pappin.com | Online publisher: University of Alberta www.library.ualberta.ca/publishing/open-journals

soins infirmiers et d'urgence de ne pas modifier l'indice dans son état continu naturel, dans la mesure du possible, afin d'éviter : (i) une perte d'information (ii) une augmentation du taux d'erreur de type 1 (c'-à d des résultats faussement positifs) et (iii) la création arbitraire d'une dichotomie dans les données (par exemple, fragilité ou non-fragilité), qui se traduit souvent par une diminution de la puissance statistique et la généralisation des résultats de l'étude (Altman & Royston, 2006 ; Austin & Brunner, 2004).

La multimorbidité est prévalente chez les personnes âgées et se définit comme la coexistence de deux maladies chroniques ou plus (Marengoni et coll., 2011). Tout comme la fragilité, la multimorbidité est fortement liée à l'utilisation des services de santé et aux résultats chez les personnes âgées (Marengoni et coll., 2011). Bien que ces pathologies existent souvent en parallèle, leurs mesures peuvent varier de manière significative, ce qui suggère qu'elles offrent une valeur pronostique unique pour déterminer les résultats des patients et les thérapies cliniques. Par exemple, un patient souffrant d'hypertension, d'hypercholestérolémie et de goutte serait qualifié comme ayant une multimorbidité. Cependant, il est peu probable qu'il soit considéré comme plus fragile ou vulnérable que les patients dont le seul diagnostic est une insuffisance cardiaque congestive de stade III. Cette illustration laisse entendre que la fragilité est davantage influencée par la gravité et l'interaction des conditions de santé chroniques plutôt que par leur nombre.

Les renseignements sur les diagnostics des patients se trouvent dans presque tous les dossiers médicaux et administratifs, ce qui facilite le calcul rétrospectif du statut multimorbide. Ce facteur explique probablement pourquoi les études sont plus disposées à évaluer et à signaler les associations avec la multimorbidité chez les personnes âgées (Griffith et coll., 2018). En outre, la fragilité nécessite souvent une évaluation directe des syndromes gériatriques et de la capacité fonctionnelle par une infirmière ou un prestataire de soins de santé aux urgences pour permettre une mesure valable. (Hubbard & Story, 2014). Malgré les fortes recommandations de l'American College of Emergency Physicians (ACEP), de l'American Geriatric Society (AGS), de l'Emergency Nursing Association (ENA) et de la Society for Academic Emergency Medicine (SAEM) (American College of Emergency Physicians et coll., 2014) en faveur du dépistage de la fragilité et de la vulnérabilité aux urgences, peu de services d'urgence ou d'institutions ont adopté cette pratique comme norme de soins. L'absence de données et les difficultés liées au calcul rétrospectif sont des facteurs qui peuvent expliquer pourquoi la fragilité est souvent omise de la recherche sur le vieillissement et les urgences.

L'examen de la fragilité est primordial pour faciliter l'obtention d'estimations statistiques précises et une compréhension adaptée du profil du patient et des résultats propres à l'urgence. Lorsque possible, les chercheurs en soins infirmiers et en soins d'urgence qui s'intéressent aux soins gériatriques doivent viser à recueillir ou à analyser des données sur la fragilité des patients, en utilisant l'un des nombreux instruments valables disponibles, tels que l'échelle de fragilité clinique (Rockwood et coll., 2005 ; Theou et coll., 2021). Le modèle phénotypique de Fried (Fried et coll., 2001), ou l'indice de fragilité du département des urgences (Brousseau et coll., 2018), par exemple. Si l'on s'intéresse uniquement à la valeur pronostique de la fragilité ou de la multimorbidité, des mesures non contaminées sont nécessaires pour éviter les modèles statistiques surestimés et validités externes faibles. (Theou & Searle, 2018). Autrement dit, il est essentiel de s'assurer que la mesure de fragilité sélectionnée ne tient pas compte de l'état de comorbidité et vice versa. Il faut en outre mettre en garde contre les mesures de la fragilité qui base leurs calculs sur une seule évaluation, un seul diagnostic ou une seule valeur de laboratoire (p. ex., la force de préhension ou la sarcopénie), car ces mesures ne saisissent pas la nature multidimensionnelle de la fragilité.

Les infirmières d'urgence et les chercheurs doivent également éviter d'utiliser les échelles de fragilité qui se basent uniquement sur les diagnostics documentés pour déterminer le statut de fragilité, comme l'échelle de fragilité clinique. (Gilbert et coll., 2018). Bien qu'on puisse tirer parti des diagnostics, l'exactitude des codes de diagnostic et de procédure soulève des inquiétudes dans les données administratives et hospitalières. (O'Malley et coll., 2005). Certains codes et procédures de diagnostic sont directement liés à des mesures de qualité, à la facturation et à d'autres résultats importants pour les cliniciens, et sont donc documentés avec plus de précision. De plus, la fragilité et d'autres syndromes gériatriques sont rarement évalués et probablement sous-représentés dans les dossiers médicaux, ce qui souligne un biais de sélection potentiel pour l'abstraction de données rétrospectives.

En somme, les infirmières d'urgence et les chercheurs devraient viser à évaluer, ou à mesurer, la fragilité et la multimorbidité dans leur pratique clinique et universitaire, car ces mesures ont une valeur pronostique exceptionnelle. L'âge seul est une caractéristique qui donne relativement peu de renseignements sur les personnes âgées. Étant donné qu'ils constituent le plus grand groupe de cliniciens d'urgence, le personnel infirmier donne la majorité des soins directs au chevet des patients âgés des urgences et les documente, offrant une occasion unique de recherche et de leadership en matière de soins infirmiers d'urgence à l'avenir.

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The impact of COVID-19 on the cardiovascular system

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Introduction

SARS-CoV-2, or coronavirus, is an airborne virus that affects multiple organ systems of an infected person (Zhou et al., 2020). The virus was first identified in Wuhan, China, and led the World Health Organization (WHO) (Zhou et al., 2020) to declare a global pandemic on January 30, 2020. As of September 05, 2021, there have been 220.5 million confirmed cases globally, with more than 196 million recovered, 5.4 billion vaccinated, and 4.5 million deaths worldwide (COVID-19 Map, 2020).

Common symptoms of SARS-CoV-2 include but are not limited to fever, dry cough, shortness of breath, fatigue, nasal congestion, diarrhea, nausea, throat tenderness, and confusion (Nejati et al., 2020). The maturation of SARS-CoV-2 symptoms can take up to four-five days and last 11-14 days after exposure (Guan et al., 2020). Patients with comorbidities like diabetes, cancer, hypertension, coronary artery disease, a chronic obstructive pulmonary disorder, and heart failure who get infected with SARS-CoV-2 are at higher risks for mortality and decreased quality of life (Bonow et al., 2020). The purpose of this review is to explore the impact of SARS-CoV-2 on the cardiovascular system.

Transmission

SARS-CoV-2 is transmitted by direct contact with droplets expelled from infected people during coughing, sneezing, or talking (Wiersinga et al., 2020). Risk of transmission increases when exposure lasts 15 minutes or longer within a six-foot distance to an infected person (Wiersinga et al., 2020). The virus can also be transmitted via the fecal-oral route (Clerkin et al., 2020), aerosolized droplets suspended in the air, and contact with a surface contaminated with the virus (Wiersinga et al., 2020). Approximately 48-62% of all transmission cases occur when an infected person is in the pre-symptomatic phase (Wiersinga et al., 2020). This means that although patients may not demonstrate common symptoms of infection, they can still infect other people through contact and droplet (Wiersinga et al., 2020). Respiratory and cardiovascular symptoms can take up to ten days to be visually apparent in an infected person (Wiersinga et al., 2020), highlighting the significance of using preventative measures like hand washing/sanitization, social distancing, and masks when in public places.

COVID-19 Pathophysiology

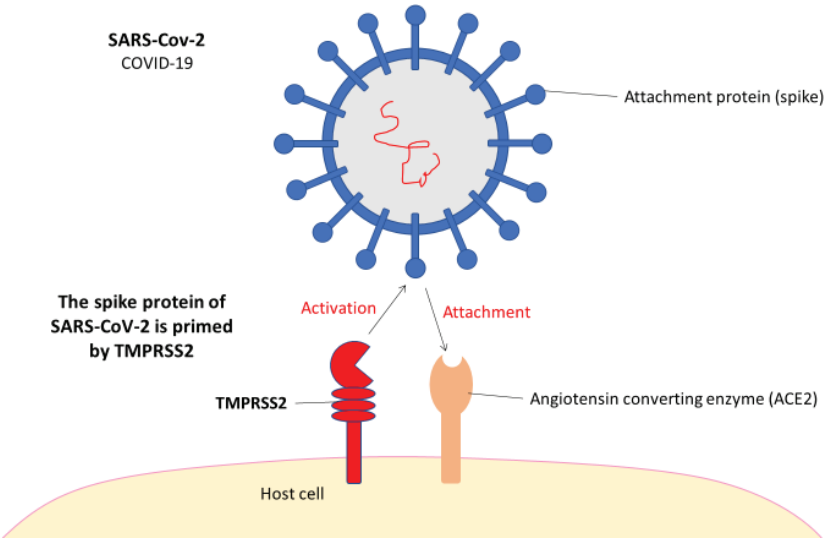
SARS-CoV-2, with a diameter of 60 nm-140 nm and unique spike proteins that range from 9nm-12nm (Wiersinga et al., 2020), is a single-stranded ribonucleic acid (RNA) virus that infects the host by binding the spike proteins on its viral surface to the angiotensin-converting enzyme 2 (ACE2) receptor in type II alveolar cells of the human lungs. After binding, stimulation of the spike protein on the viral surface by the host enzyme transmembrane protease serine-2 (TMPRSS2) promotes the uptake of the virus by the alveolar cells (Hoffmann et al., 2020) (see Figure 1). The virus penetrates the alveolar cells by attaching its envelope to the alveolar cell membrane and undergoing endocytosis (Clerkin et al., 2020). In the initial stages of the infection, SARS-CoV-2 infects the epithelial cells in the nasal cavity, the bronchial spaces, and the pneumocytes (Wiersinga et al., 2020).

ACE2 receptors are an integral part of maintaining cardiovascular health, explicitly preventing hypertension, inflammation, myocardial remodeling, and hypertrophy (Bosso et al., 2020). Unfortunately, when SARS-CoV-2 co-opts ACE2 receptors to enter the host's epithelial cells in the target tissue, fewer ACE2 receptors will be available to achieve the anti-inflammatory goal resulting in exaggerated inflammation. The latter is mediated

ISSN: 2293-3921 (print) | ISSN: 2563-2655 (online) | https://doi.org/10.29173/cjen146
Print publisher: Pappin Communications http://pappin.com | Online publisher: University of Alberta www.library.ualberta.ca/publishing/open-journals

Figure 1

Pathogenesis of SARS-CoV-2



through a 'cytokine storm' where excessive concentrations of multiple chemokines, interferons, interleukins (IL), and tumor necrosis factor (TNF)-alpha, are released into the bloodstream (Coperchini et al., 2020). The serum levels of pro-inflammatory cytokines like IL-1β, IL-six, IL-12, IL-18 increase significantly and exacerbate pulmonary and systemic inflammation (Huang et al., 2020). The latter can further lead to acute respiratory distress syndrome (ARDS) or severe multiple organ damage (Coperchini et al., 2020). A high serum level of IL-six in SARS-CoV-2 infected patients is primarily a predictor of the infection's deterioration and severity (Coperchini et al., 2020). SARS-CoV-2 tends to bind ACE2 receptors expressed in the lungs, heart, and kidneys (Sandoval et al., 2020). The heart has an abundant presence of ACE2 receptors in its walls (Sandoval et al., 2020), thus increasing the vulnerability of myocardial cells to SARS-CoV-2 and eventually resulting in direct cell toxicity, viral infiltration of the myocardial tissue (Iqbal & Gupta, 2020). RNA sequencing and mapping were conducted by Johnson et al. (2020) and revealed that greater than 7.5% of myocardial cells are at increased susceptibility to SARS-CoV-2 due to greater expression of ACE2 in the heart. Patients treated with angiotensin-converting enzyme inhibitors (ACEIs) and angiotensin receptor blockers (ARBs) tend to have upregulated ACE2 receptors providing more receptors for the SARS-CoV-2 virus to get attached and gain access to the affected tissues, further reinforcing SARS-CoV-2 infection severity (Rossi et al., 2020; Tikellis et al., 2020).

In addition to inflammation, the tendency to develop pulmonary edema reaches 80% in patients with pre-existing cardiac conditions like heart failure (Iqbal & Gupta, 2020). Systemic inflammation caused by SARS-CoV-2 induces morbid vasodilation and may result in cardiogenic shock (Wiersinga et al., 2020). Although cardiovascular disease (CVD) makes an individual more susceptible to contract SARS-CoV-2 due to compromised perfusion and weakened immunity, an individual infected with SARS-CoV-2 can also develop clinical manifestations and complications of CVD.

Cardiac damage and elevated serum troponin levels were prevalent in 36% of the 3,000 SARS-CoV-2 patients from a retrospective cohort study using observational data in New York (Lala et al., 2020). A strong connection between the myocardial injury and SARS-CoV-2 was identified in patients with pre-existing comorbidities (Lala et al., 2020). This indicates that SARS-CoV-2 can cause serious myocardial injury and an imbalance in cardiac biomarkers such as troponin that can lead to adverse health outcomes of the infected patient.

Cardiovascular Complications

Myocardial Injury: Myocarditis

Myocarditis is an injury of the myocardium caused by severe inflammation that exacerbates the humoral or cellular immune response to infectious toxins such as viruses, bacteria, or fungi (Tschöpe et al., 2019). Studies have shown evidence of SARS-CoV-2 in the myocardium through the polymerase chain reaction test (Sandoval et al., 2020), where the infection was not active; however, the damage was thought to be caused by the inflammatory response that follows the viral pathogenesis (Sandoval et al., 2020). As inflammation progresses and diffuses throughout the myocardium, it results initially in ischemia and hypoxia, eventually leading to the anaerobic metabolism of cells (Johnson et al., 2020). Anaerobic metabolism yields acidosis with an accumulation of lactic acid and production of free radicals in the interstitial space that causes further injury and damage of the myocardial cellular phospholipid bilayer (Johnson et al., 2020). Hypoxemia also results in an increased influx of calcium ions into the cytoplasm, causing apoptosis of myocytes (Johnson et al., 2020). A retrospective study conducted by Zhou et al. (2020) in Wuhan, China, found that approximately 20% of SARS-CoV-2 infected patients developed acute cardiac injury and coagulopathy. Autopsy reports of deceased patients infected with SARS-CoV-2 reported the presence of cardiomegaly, myocarditis, and right ventricular dilation. Furthermore, microscopic findings consisted of hypertrophy of cardiac myocytes, degeneration, edema, necrosis, infiltration of lymphocytes, monocytes, and neutrophils (Sandoval et al., 2020).

The rise in interleukins (ILs), specifically IL-six, has been reported to cause acute and delayed myocardial contractility, with a progressive increase in inflammation and a direct decrease in left ventricular function and capacity (Ptaszyńska-Kopczyńska et al., 2017). Increased cytokine release has also been related to cardiomyopathy and arrhythmias (Shimabukuro-Vornhagen et al., 2018). Lymphocytic intrusion potentiates an autoimmune response from SARS-CoV-2 viral pathology that can cause CVD and myocarditis (Fung et al., 2016). The manifestations of myocarditis range from severe destruction of the myocardium that generates cardiogenic shock to having a limited myocardial impact with no residual symptoms (Fung et al., 2016).

Illustrative Case Study

Moe is a 39-year-old healthy male presenting to the ED with a history of lightheadedness, palpitations, and presyncope. Initial electrocardiogram (ECG) showed normal sinus rhythm with first-degree atrioventricular block (AVB; see Figure 2). A later ECG shows a bi-fascicular block including right bundle branch block (RBBB) and left anterior fascicular block (see Figure 3) that later progressed to the left bundle branch block (LBBB; see Figure 4). The patient reported a history of SARS-CoV-2 infection four weeks before his presentation that was associated with pleuritic chest discomfort. Troponin levels were elevated, and echocardiography showed diffuse myocardial

Figure 2

Normal sinus rhythm with first-degree atrioventricular block

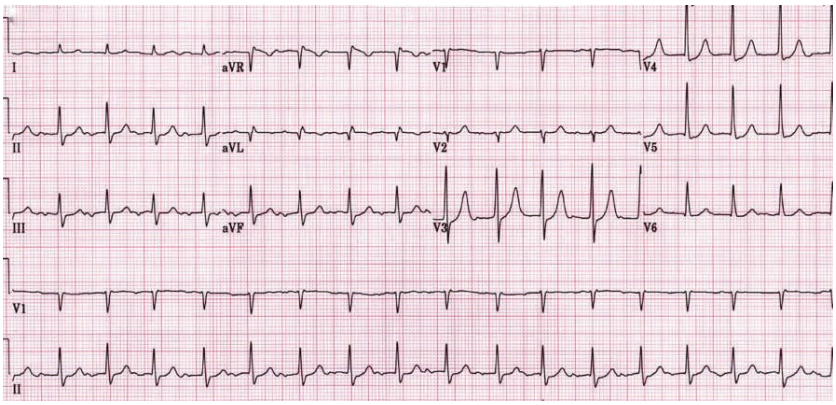


Figure 3

Bi-fascicular block including right bundle branch block and left anterior fascicular block

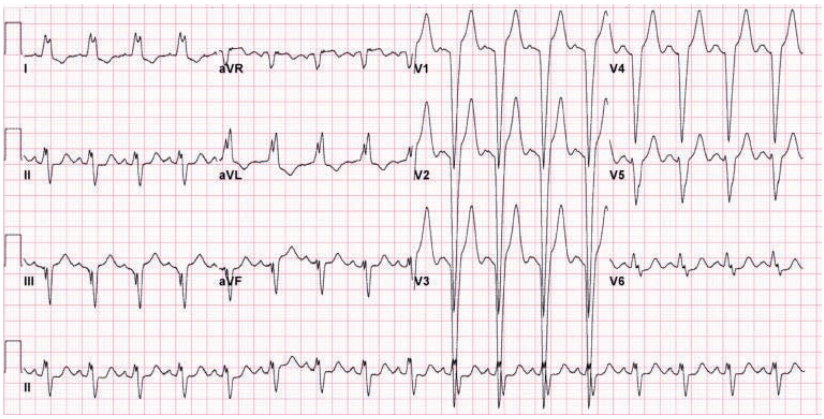


Figure 4

Left bundle branch block

dyskinesia and decreased left ventricular ejection fraction (LVEF). Cardiovascular magnetic resonance imaging (CMR) findings were consistent with myocardial inflammation. The CMR also reported global systolic dysfunction and moderately sizeable pericardial effusion. The patient was transferred to the coronary care unit (CCU) where his heart rate (HR) was averaging around 40 BPM, with ECG showing LBBB with intermittent RBBB. The cardiac monitor shows a blood pressure (BP) of 100/57 and an oxygen saturation of 98% on room air. The patient had negative Lyme serology. Chest X-ray (CXR) displayed moderate bilateral pleural effusion with no evidence of pneumonia. In CCU, temporary transvenous pacing wires were inserted with the HR at 80bpm, RV paced, MA 2 amps. A CXR confirmed appropriate placement. For five days in the CCU, the patient was in complete heart block with an intermittent transition into LBBB and RBBB, and he became symptomatic, particularly with any exertion leading to lightheadedness. The electrophysiologist recommended permanent pacemaker insertion and a dual-chamber, and then a rate-modulated mode (DDDR) pacemaker was implanted. The final diagnosis was SARS-CoV-2 infection-induced myocarditis complicated with LBBB/RBBB and complete heart block.

Acute Coronary Syndrome (ACS)

ACS is a cardiovascular disease characterized by the disruption of a plaque that causes thrombosis or occlusion to one of the coronary arteries, resulting in acute unstable angina, myocardial infarction (MI), or sudden cardiac death (Kimura et al., 2019). A definitive diagnosis of MI is made by assessing the ECG and the presence of cardiac biomarkers (Johnson et al., 2020). Although SARS-CoV-2's focal area for infection is the respiratory system, Kwong et al. (2018), in Ontario, Canada, concluded that viral infections increase the risk of acute MI (Kwong et al., 2018). Patients with pre-existing coronary artery disease and stable plaques can develop acute myocardial infarction (AMI) when infected with SARS-CoV-2, as severe systemic inflammation can disrupt plaque stability (Kwong et al., 2018).

Inflammatory mediators such as TNF-alpha, interleukins, cytokines, and chemokines play a direct role in causing AMI (Sandoval et al., 2020). SARS-CoV-2 infected patients in intensive care units (ICUs) tend to have higher serum cytokines and chemokines than non-ICU patients, further increasing the risks of developing cellular myocardial injury (Sandoval et al., 2020). The incidence rate of MIs in patients who developed SARS-CoV-2 is unsubstantiated due to limited research to support the data. Cases of microvascular dysfunction and coronary thrombosis unrelated to plaque disturbance have also been reported in SARS-CoV-2 infected patients (Sandoval et al., 2020).

Systemic inflammation or sepsis caused by a viral infection like SARS-CoV-2 was also linked to ventricular diastolic and systolic dysfunction (Zochios et al., 2014). A systematic review found that severe sepsis correlates with increasing serum troponin levels, with a 60% prevalence rate (Zochios et al., 2014). A comprehensive review conducted by Johnson et al. (2020) found that 69.4% of patients (n = 187) hospitalized in China with SARS-CoV-2 had elevated troponin T (TnT) levels and were also at higher risk for inpatient mortality (7.6%). Heart failure SARS-CoV-2 infected patients were at high risk of developing acute hemodynamic decompensation (AHD) (Bonow et al., 2020).

Bonow et al. (2020) reviewed studies conducted in the USA, Italy, and China that focused on patients with underlying cardiac complications infected with SARS-CoV-2 and established that the majority of the patients included in the studies presented with elevated troponin levels indicating underlying myocardial damage (Bonow et al., 2020). Another multicenter cross-sectional study conducted by Lombardi et al. (2020) in Italy reported that 45.3% of hospitalized patients (n = 614) infected with SARS-CoV-2 had elevated TnT levels and increased risk of in-hospital death (71%). The same study also concluded that patients (n = 614) infected with SARS-CoV-2 had twice an increase in the likelihood of developing sepsis, pulmonary embolism, extensive bleeding, multiorgan failure, and acute kidney failure (Lombardi et al., 2020). Further data from this study proclaimed a six-times increase in cases of heart failure, MI, and other cardiovascular complications in patients with elevated serum troponin levels (Lombardi et al., 2020).

Arrhythmias: Atrial and Ventricular

Another cardiac clinical manifestation of SARS-CoV-2 infected patients is arrhythmia. A life-threatening arrhythmia occurs when frequent ventricular tachycardia lasts longer than 30 seconds. It can prompt ventricular fibrillation and hemodynamic instability with abnormal blood pressure (Guo et al., 2020). A retrospective study conducted in Wuhan, China, found that 7.3% of a total of 187 SARS-CoV-2 positive patients showed palpitations as a primary symptom for cardiovascular complications (Guo et al., 2020). Further review revealed that 17% of SARS-CoV-2-infected hospitalized patients developed undefined arrhythmia (Guo et al., 2020) and 5.9% developed ventricular fibrillation and tachycardia (Guo et al., 2020). SARS-CoV-2 infected patients that depended on ventilator support had a 17.7% prevalence of having atrial arrhythmias in a cohort study of 393 hospitalized patients in the USA (Goyal et al., 2020). Common types of arrhythmias associated with the SARS-CoV-2 infection are sinus tachycardia, atrial flutter, atrial fibrillation, and ventricular tachycardia (Bhatla et al., 2020).

Incidences of arrhythmias and cardiac arrests observed in patients with SARS-CoV-2 are not solely due to the impact of viral load on the myocardium but are in conjunction with underlying conditions that add to illness severity. Non-cardiovascular causes, including sepsis and systemic inflammation, increase the risk of developing arrhythmias in hospitalized SARS-CoV-2 patients in an ICU setting (Bhatla et al., 2020). Prolonged arrhythmias add to the increased risk of myocardial tissue necrosis, heart failure, cardiac arrest, and direct interference with the hearts' electrical conduction system. They also impose more significant risks for thrombotic issues like venous and arterial thrombosis as a direct result of severe damage caused by the release of inflammatory mediators (Bhatla et al., 2020).

Atrial fibrillation in conjunction with underlying inflammatory response increases the risks for thrombotic and embolic

complications (Bhatla et al., 2020). A global perspective study was conducted in 76 countries to gather data from various healthcare professionals revealed that arrhythmias such as ventricular arrhythmias and pulseless electrical activity are common manifestations with SARS-CoV-2 infected hospitalized patients (Gopinathannair et al., 2020). Further discussion depicted that atrial fibrillation and sinus bradycardia were the most prevalent types of arrhythmias observed in SARS-CoV-2 infected patients (Gopinathannair et al., 2020). Babapoor-Farrokhran et al. (2020) reported an increase in the incidence of idioventricular rhythms, sinus node dysfunction, atrioventricular blocks, and bradycardia in a SARS-CoV-2 infected patient (Babapoor-Farrokhran et al., 2020). The arrhythmias lasted for two weeks from the onset of a maladaptive sinus node (Babapoor-Farrokhran et al., 2020). The report also discussed the presence of an intermittent higher degree of atrioventricular block in an infected patient with normal cardiac biomarkers and echocardiogram (Babapoor-Farrokhran et al., 2020).

Figure 5, modified from Siripanthong et al. (2020), displays acute and chronic mechanisms for arrhythmogenesis in SARS-CoV-2-related myocarditis. This is manifested through cardiomyocyte injury, pericardial inflammation, microvascular ischemia, gap junction dysfunction, and non-ischemic scar (Siripanthong et al., 2020).

Diagnostics Investigations: Troponin and ECGs

Elevated cardiac troponin T (cTnT) is a primary predictor of necrosis and myocardial injury associated with increased ICU admission, poor prognosis, and mortality in SARS-CoV-2 patients (Aboughdir et al., 2020). Increased cTnT levels suggest severe myocardial injury and are common in SARS-CoV-2 infected patients, with more than 70% at risk of experiencing intermittent fatal arrhythmias (Guo et al., 2020). Observation and measurement of cTnT in SARS-CoV-2 patients in hospitals are recommended to facilitate and prioritize care to prevent other adverse outcomes (Sandoval et al., 2020).

Electrocardiogram (ECG) findings reported cases of SARS-CoV-2 patients in China illustrating an S1Q3T3 pattern where there was a presence of an S wave in lead I, Q wave in lead III, and inverted T wave in lead III along with a temporal atrioventricular block (AVB) (He et al., 2020). Elevated ST-segment in the infected patient occurred due to hypotension and extreme hypoxia, along with myocardial injury and inflammation induced by the virus (He et al., 2020).

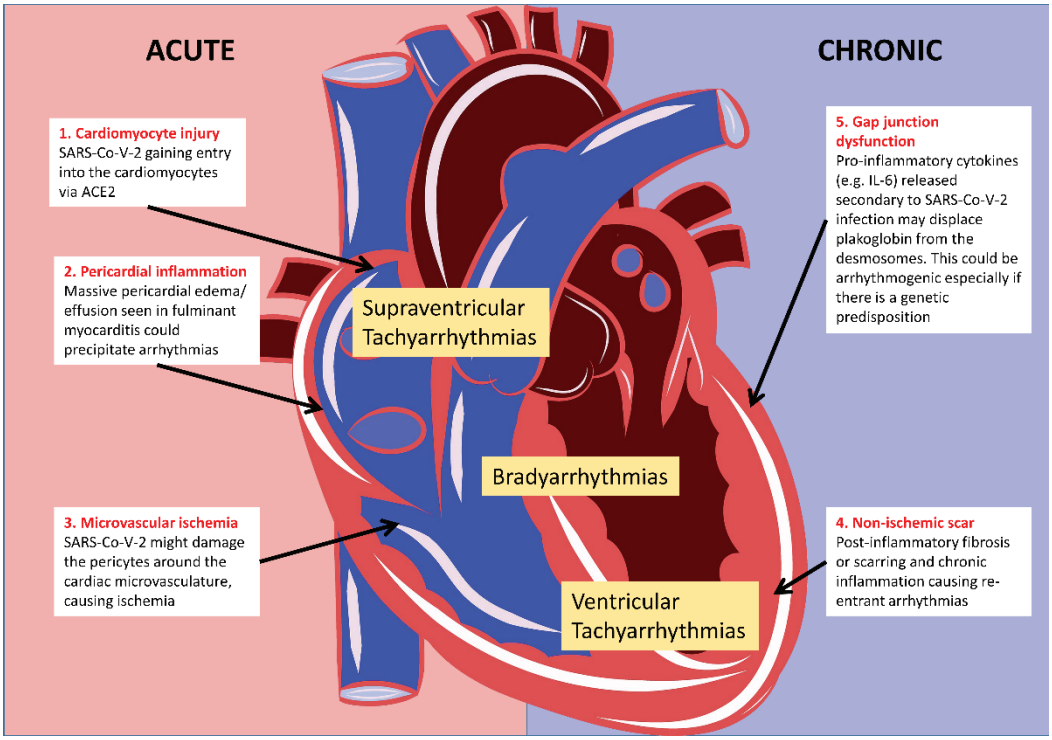
Fulminant myocarditis (FM) was reflected on ECG of SARS-CoV-2 patients with the depression of the PR-segment in the precordial and limb leads and alternating ST-segment elevation (Mansoor et al., 2020). Q waves and bundle branch blocks from delays in the electrical conduction system were also seen with FM (Mansoor et al., 2020). Although it is a common finding in patients with FM, a widened QRS complex and right bundle branch block have been observed in infected patients with cardiovascular complications, leading to the development of pathological arrhythmias (Mansoor et al., 2020).

Nursing Implications for ED Nurses

Cardiovascular Considerations

Nursing care for infected patients suspected of cardiologic complications like ACS, arrhythmias, and AMI in the ED should consist of triage and quick management by establishing a nursing diagnosis, isolating, and case management by requesting diagnostic tests for cardiac enzymes and an ECG (Matos et al.,

Figure 5



2021). Suggest and encourage orders for low molecular weight heparin and the use of sequential compression devices to prevent the risk of venous and arterial thromboembolism in immobile patients (Matos et al., 2021). Therefore, nurses should focus on abnormal activated partial thromboplastin time along with any signs of elevations in the D-Dimer test for anticoagulant dose adjustment (Deitrick et al., 2020).

In a myocardial injury and elevated creatine kinase situation, cardiac enzymes should be monitored (Matos et al., 2021). Nursing assessments and interventions for infected patients that develop myocarditis and arrhythmias are ECG monitoring and frequent measurements of the Q-T interval if the patient is receiving antiretroviral or antimalarial therapy (Dawson et al., 2020; Deitrick et al., 2020; Guzik et al., 2020). Many patients infected with SARS-CoV-2 are at risk for vascular and thrombotic complications. When atherosclerosis and ACS are suspected, treatment options to differentiate the diagnosis consist of cardiac catheterization (Matos et al., 2021). Nurses can play a role in preparing and educating the patient of the procedures and tests, formulating a plan for transferring to ICU, and initiating early rehabilitation and community referrals (Matos et al., 2021). Oxygen therapy, anxiety reduction, and comfort care are essential to sustain the health of SARS-CoV-2 patients (Fusi-Schmidhauser et al., 2020). Some patients can experience red discoloration and lesions/bumps in addition to swelling on their toes, called 'COVID toes' (Deitrick et al., 2020). Therefore, an integumentary assessment would be pertinent for suspected SARS-CoV-2 patients to rule out circulatory and integumentary complications (Deitrick et al., 2020). Nursing priority for all patients in the ED includes effective PPE use to reduce exposure and virus spread, isolation precautions, supportive care like intubation and oxygen therapy, and monitoring for side effects from medication use and relevant management of the symptoms (Deitrick et al., 2020). Lastly, in SARS-CoV-2 patients experiencing cardiopulmonary failure, ARDS, or obstinate cardio-circulatory compromise, extracorporeal membrane oxygenation (ECMO) can be initiated to preserve cardiopulmonary health and function (Bartlett et al., 2020). Indications for initiating ECMO include a partial pressure of oxygen below 100 despite optimal respiratory interventions, respiratory rate of more than 35 breaths per minute (with or without mechanical ventilation), and/or case by case eligibility depending on prognosis, age, and comorbidities (Bartlett et al., 2020). ED nurses are experts in assessing the need for advanced Oxygen therapies and in collaborating with the rest of the team to expedite the implementation of interventions that are not usually available in the ED such as the ED (ECMO provided usually in the ICU). Hence, knowing contraindications for initiating ECMO such as neuromuscular blockade, high positive-end expiratory pressure, inhalation of any pulmonary vasodilators, and high frequency oscillatory ventilation can provide guidance to transitioning patients to admission in specific units (e.g., ICU), or aid in understanding the treatment options implemented in a SARS-CoV-2 patient (Bartlett et al., 2020).

Individual and Family-Centered Considerations

Providing nursing care effectively amidst the pandemic must consider the delivery of family-centered care. This means respecting the family members' role as partners in caregiving, maintaining collaboration between the family and the healthcare team, and preserving family integrity (Hart et al., 2020). Doing so can prevent and reduce family members' feelings of depression, anxiety, and post-traumatic stress disorder (PTSD) after patient hospitalization (Hart et al., 2020). In addition, it can provide benefits to patient recovery, reduce burnout, and distress among healthcare providers (Hart et al., 2020). Nursing care must incorporate patient education, promote comfort and medication adherence, including determinants of health, along with symptom management and regular assessments to prevent further development of detrimental outcomes (Hart et al., 2020). The deployment of tablet devices can aid in virtual evaluation, consults, planning care, and preserving PPE supplies in the ED (Wittbold et al., 2020). This can be done by mounting the device on an IV pole and placing it 6-8 feet away from the patient (Wittbold et al., 2020). Similarly, a proposed concept of utilizing iPad devices to consult family meetings and prevent patient isolation can promote the family-centered care model without compromising the health of patient(s), staff, and family by preventing unnecessary exposure (Wittbold et al., 2020).

Psychosocial Considerations

A cross-sectional study conducted in the United Kingdom of 4 378 clinical and non-clinical staff highlighted that healthcare workers working in high-risk populations like the ED during the pandemic have a prevalence of PTSD in 30.2% of participants, depression in 27.3%, anxiety in 23.2%, and alcohol misuse in 10.5% (Lamb et al., 2021). Numerous nurses working in the ED experience physical isolation, sleep disturbances, unsafe working environments, and direct patient contact, which are primary factors for mental health challenges (Garcia-Martin et al., 2021; Mukhtar, 2020). Mukhtar (2020) presented a discussion on the importance of supporting nurses with mental health challenges while working in high-risk work environments. They highlighted that in Pakistan, many healthcare providers working in acute settings experience one or more forms of mental health challenges that can have long-term recovery compared to a physical injury (Mukhtar, 2020). This illustrates the prevalence of mental health challenges in acute care healthcare workers that can hinder them from providing quality care in a clinical setting. They suggested utilizing psychological services such as counseling, self-care therapy, psychotherapy and implementing a psychological crisis intervention to address stressors (Mukhtar, 2020). This can assist in providing depersonalization, modify the perspectives on life, allow for self-reflection and improvement, and cope with psychological reactions in a challenging, high-risk work environment (Mukhtar, 2020).

Conclusion

The spread of SARS-CoV-2 has caused pathological complications on compromised and infected patients and added workload and burden to the healthcare system. Raising awareness among ED nurses that SARS-CoV-2 can cause cardiovascular complications like myocardial injury, myocarditis, MI, and arrhythmias can aid in identifying imminent care priorities and develop appropriate nursing interventions. Monitoring diagnostic values like CBC, vascular tests, cardiac biomarkers, and ECGs can promptly diagnose critical conditions, potentially preventing deterioration. Lastly, ED nurses working amidst this

pandemic must indulge in self-care and protect themselves physically and mentally.

Clinical implications for emergency nursing

SARS-CoV-2 (COVID-19) is a viral illness that although primarily targets the respiratory system (giving rise to conditions like ARDS, pneumonia, infections, the risk for sepsis, etc.) also compromises the myocardium as the trauma experienced by a patient's body from exposure to SARS-CoV-2 creates an inflammatory cascade, thereby impacting other major organs and organ systems.

1. Look for signs and symptoms of cardiac-related complications early on, such as changes in cardiac biomarkers, inflammatory markers, and ECG can detect cardiac compromise and aid in rapid treatment to prevent deterioration.
2. Advocate for patient lab tests and management options such as ensuring cardiac biomarkers are ordered, preventative treatment is in place (mechanical stalkings, oxygen saturation, adequate PPE, etc.).
3. Ensure focused assessments to ensure cardiopulmonary system function is maintained, and if a decline is observed, prompt management by advanced practitioners can be utilized upon the recommendation from the primary nurses (such as ECMO).
4. Participate in family-centered care, using technology to connect to a patient's loved one in COVID restrictions, and displaying empathy despite personal or societal differences.
5. Practice regular self-care, relaxation, and seeking additional resources (counseling, therapy) to maintain mental health wellbeing and fitness to practice.

About the Authors

Dr. El-Hussein is a Ph.D.-prepared Nurse Practitioner (Ph.D. and NP completed at the University of Calgary) who has been working in academia for the past 20 years. He is a Full Professor in the School of Nursing and Midwifery, in the Faculty of Health, Community, and Education at MRU where he has taught for the past decade. He's also an adjunct Associate Professor in the Faculty of Nursing at the University of Calgary. Dr. El-Hussein has published over 50 articles in a variety of national and international nursing journals and always has research projects on the go. Dr. El-Hussein's impact on nursing education in Canada is reflected in his contributions to the science of nursing education through publications, grants, presentations, and other knowledge dissemination activities. To stay current in clinical practice as a Nurse Practitioner (NP) Dr. El-Hussein continues to hold a casual position as an NP in the division of Cardiology at the Rockyview General Hospital. As a Nurse Practitioner (NP) and academic Dr. El Hussein sees himself as a Knowledge broker who has the knowledge and expertise to facilitate bridging the gap between research and practice to improve outcomes for patients and keep his students up to date. Because he remains clinically active, Dr. El Hussein's research is grounded in the day-to-day issues pertaining to patients and relevant to the students.

Aditi Sharma is a fourth-year student enrolled in the Bachelor of Nursing Program at Mount Royal University. She is a motivated individual who has previously participated in various leadership and contributor roles with the Student Nursing Society and the Student Association of Mount Royal University. Additionally, she is the founder of her new Health & Wellness business specializing in CPR-BLS training and Public Health Awareness Initiatives. Academically, she is inspired to research imminent pathologies that are related to advancing current nursing practice. In the future, Aditi hopes to pursue advanced practice nursing education to build her experience in clinical and research scholarship.

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CANADIAN JOURNAL of EMERGENCY NURSING
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Impacts de la COVID-19 sur le système cardiovasculaire

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Introduction

Le SRAS-CoV-2 (coronavirus) se transmet par l'émission de gouttelettes respiratoires et affecte de nombreux organes chez la personne infectée (Zhou et al., 2020). Identifié pour la première fois dans la ville de Wuhan, en Chine, ce virus a amené l'Organisation mondiale de la Santé (OMS) (Zhou et al., 2020) à déclarer l'état de pandémie le 30 janvier 2020. En date du 5 septembre 2021, on dénombrait, à l'échelle planétaire, 220,5 millions de cas confirmés, dont plus de 196 millions de cas rétablis, 5,4 milliards de personnes vaccinées et 4,5 millions de décès (COVID-19 Map, 2020).

Voici la liste non exhaustive des symptômes possibles du SRAS-CoV-2 : fièvre, toux sèche, essoufflement, fatigue, congestion nasale, diarrhée, nausée, gorge sensible, confusion (Nejati et al., 2020). Les symptômes peuvent prendre de 4 à 5 jours à se développer et durent de 11 à 14 jours après l'exposition au virus (Guan et al., 2020). Les patients présentant des comorbidités (diabète, cancer, hypertension, coronaropathie, maladie pulmonaire obstructive chronique, insuffisance cardiaque, etc.) et qui contractent le virus sont plus à risque de décès ou d'une diminution de la qualité de vie (Bonow et al., 2020). Le présent examen vise à explorer les impacts du SRAS-CoV-2 sur le système cardiovasculaire.

Transmission

Le SRAS-CoV-2 se transmet par contact direct avec les gouttelettes provenant des voies respiratoires expulsées dans l'air lorsqu'une personne infectée parle, tousse ou éternue (Wiersinga et al., 2020). Le risque de transmission augmente lorsque l'exposition au virus dépasse 15 minutes dans rayon de moins de 2 m (6 pieds) d'une personne infectée (Wiersinga et al., 2020). Le virus se transmet également par voie oro-fécale (Clerkin et al., 2020), par les gouttelettes aérosolisées et par contact avec une surface contaminée par le virus (Wiersinga et al., 2020). Entre 48 et 62 % des cas de transmission du virus environ surviennent lorsqu'une personne infectée est en phase présymptomatique (Wiersinga et al., 2020). En d'autres termes, les patients qui ne présentent pas de symptômes habituels d'infection peuvent quand même infecter d'autres personnes par contact et par des gouttelettes (Wiersinga et al., 2020). Les symptômes respiratoires et cardiovasculaires peuvent mettre jusqu'à 10 jours avant de se manifester chez une personne infectée (Wiersinga et al., 2020), soulignant l'importance d'utiliser des mesures préventives comme le lavage et la désinfection des mains, la distanciation physique et le port du masque en public.

Physiopathologie de la COVID-19

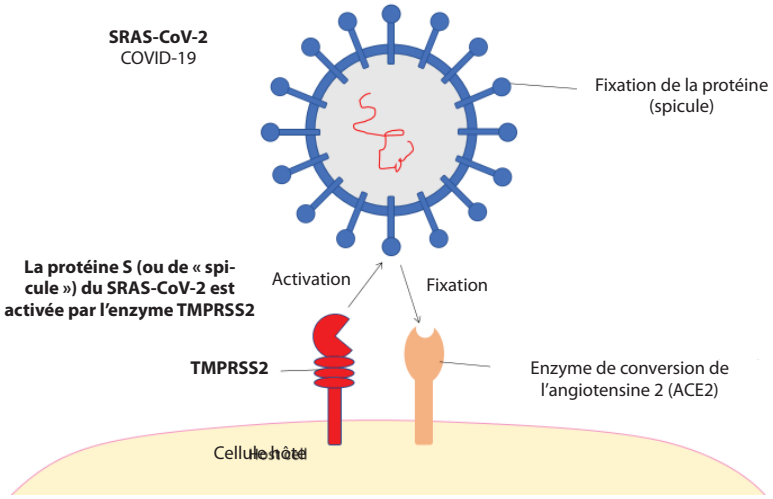
Le SRAS-CoV-2, d'un diamètre de 60 à 140 nm et recouvert de multiples protéines S (ou de « spicule ») mesurant de 9 à 12 nm (Wiersinga et al., 2020), est un virus constitué d'ARN simple brin qui infecte les cellules hôtes en fixant les protéines S de sa surface virale à l'enzyme de conversion de l'angiotensine 2 (ACE2) récepteur des cellules alvéolaires de type II des poumons. Après fixation, l'activation de la protéine S à la surface de la particule virale par la protéase transmembranaire à sérine 2 (transmembrane protease serine-2 [TMPRSS2]), enzyme hôte, permet au virus d'entrer par les cellules alvéolaires (Hoffmann et al., 2020) (voir figure 1). Le virus pénètre dans les cellules alvéolaires en liant son enveloppe à leur membrane puis par endocytose (Clerkin et al., 2020). Au début de l'infection, le SRAS-CoV-2 infecte les cellules épithéliales de la cavité nasale, les bronches et les pneumocytes (Wiersinga et al., 2020).

Les récepteurs ACE2 jouent un rôle important dans le maintien de la santé cardiovasculaire, en prévenant spécifiquement l'hypertension, l'inflammation, le remodelage du myocarde et l'hypertrophie myocardique (Bosso et al., 2020). Malheureusement, lorsque le SRAS-CoV-2 utilise les récepteurs pour pénétrer dans les cellules épithéliales du tissu cible de l'hôte, cela réduit le nombre de récepteurs ACE2 pouvant enrayer l'inflammation, et cause une réaction inflammatoire exagérée. S'ensuit une « tempête de cytokines » :

ISSN: 2293-3921 (print) | ISSN: 2563-2655 (online) | https://doi.org/10.29173/cjen146
Print publisher: Pappin Communications http://pappin.com | Online publisher: University of Alberta www.library.ualberta.ca/publishing/open-journals

Figure 1

Pathogenèse du SRAS-CoV-2



des concentrations excessives de multiples chimiokines, d'interférons (INF), d'interleukines (IL) et du facteur de nécrose tumorale alpha (TNF) sont libérées dans le sang (Coperchini et al., 2020). Les taux sériques des cytokines pro-inflammatoires comme l'IL-1β, IL-6, IL-12, IL-18 augmentent alors significativement et exacerbent l'inflammation pulmonaire et systémique (Huang et al., 2020). Cette inflammation systémique peut en outre causer un syndrome de détresse respiratoire aiguë (SDRA) ou des lésions graves à de multiples organes (Coperchini et al., 2020). Un taux sérique élevé d'IL-6 chez les patients infectés à la COVID-19 est surtout un signe prédisant l'aggravation de l'inflammation (Coperchini et al., 2020). Le SRAS-CoV-2 a tendance à se fixer aux récepteurs ACE2 exprimés dans les poumons, le cœur et les reins (Sandoval et al., 2020). La paroi cardiaque possède une très grande quantité de récepteurs ACE2 (Sandoval et al., 2020), augmentant donc la vulnérabilité des cardiomyocytes au SRAS-CoV-2, et entraînant finalement la toxicité directe des cellules, ainsi que l'infiltration virale dans le tissu myocardique (Iqbal et Gupta, 2020). Le séquençage et la cartographie de l'ARN ont été menés par Johnson et collaborateurs (2020) et ont révélé que plus de 7,5 % des cardiomyocytes ont une réceptivité accrue au SRAS-CoV-2 en raison d'une plus grande expression de l'ACE2 dans le cœur. Les patients traités par inhibiteurs de l'enzyme de conversion de l'angiotensine et par antagonistes des récepteurs de l'angiotensine (ARA) tendent à avoir des récepteurs ACE2 régulés positivement et fournissant donc plus de récepteurs au virus pour se lier et pénétrer dans les tissus affectés, augmentant donc la gravité de l'infection (Rossi et al., 2020; Tikellis et al., 2020).

En plus de l'inflammation, la tendance à développer de l'œdème pulmonaire atteint 80 % des patients ayant des maladies cardiaques préexistantes comme l'insuffisance cardiaque (Iqbal et al., 2020). L'inflammation systémique causée par le SRAS-CoV-2 provoque une vasodilatation pathologique et peut entraîner un choc cardiogène (Wiersinga et al., 2020). Même si une maladie cardiovasculaire rend une personne plus susceptible de contracter le SRAS-CoV-2 parce que la circulation sanguine est mauvaise et que l'immunité est faible, une personne infectée peut également développer des caractéristiques cliniques et des complications typiques des maladies cardiovasculaires.

Des lésions cardiaques et des taux élevés de troponine sérique étaient fréquents chez 36 % des 3 000 patients porteurs du SRAS-CoV-2 selon une étude de cohorte rétrospective menée au moyen de données d'observation à New York (Lala et al., 2020). On a identifié un lien solide entre des lésions du myocarde et le virus chez les patients ayant des maladies préexistantes (Lala et al., 2020); le virus peut donc causer de graves lésions myocardiques et un déséquilibre des biomarqueurs cardiaques comme la troponine, ce qui peut gravement nuire à la santé du patient infecté.

Complications cardiovasculaires

Lésions du myocarde : Myocardite

La myocardite est une lésion du myocarde causée par une grave inflammation qui augmente la réaction immunitaire humorale et cellulaire aux toxines infectieuses comme les virus, les bactéries et les champignons (Tschope et al., 2019). Des études ont montré la présence du SRAS-CoV-2 dans le myocarde au moyen du test d'amplification en chaîne par polymérase (Sandoval et al., 2020) alors que l'infection n'était pas active; on croyait autrement que les lésions étaient causées par la réaction inflammatoire qui suit la pathogenèse virale (Sandoval et al., 2020). À mesure que l'inflammation progresse et se répand dans le myocarde, elle provoque initialement de l'ischémie et de l'hypoxie, et mène tôt ou tard au métabolisme anaérobie des cellules (Johnson et al., 2020). Le métabolisme anaérobie produit de l'acidose avec une accumulation d'acide lactique et une production de radicaux libres dans l'espace interstitiel qui cause d'autres lésions et dommages encore à la bicouche lipidique de la membrane cellulaire dans le myocarde (Johnson et al., 2020). L'hypoxémie provoque aussi un apport accru d'ions calciques dans le cytoplasme, entraînant l'apoptose des myocytes (Johnson et al., 2020). Dans une étude rétrospective menée à Wuhan, en Chine, Zhou et collaborateurs (2020) ont constaté qu'environ 20 % des cas de SRAS-CoV-2 ont développé des lésions cardiaques et une coagulopathie. Les rapports d'autopsie des patients infectés par le SRAS-CoV-2 ont signalé la présence de cardiomégalies, de myocardites et de dilatations du ventricule droit. L'examen au microscope du cœur a en outre révélé des myocytes, de la dégénérescence, de l'œdème,

des nécroses, ainsi qu'une infiltration lymphocytaire, monocytaire et des neutrophiles (Sandoval et al., 2020).

Il a été rapporté que l'augmentation des interleukines (IL), en particulier l'IL-6, provoque une contractilité myocardique aiguë et différée, avec une augmentation progressive de l'inflammation et une diminution directe de la fonction et de la capacité ventriculaire gauche (Ptaszyńska-Kopczyńska et al., 2017). La libération accrue de cytokines a également été associée à des cardiomyopathies et à de l'arythmie (Shimabukuro-Vornhagen et al., 2018). L'intrusion lymphocytaire potentialise une réaction auto-immune de la pathologie virale du SRAS-CoV-2 qui peut provoquer des maladies cardiovasculaires et une myocardite (Fung et al., 2016). Les manifestations de la myocardite vont de la destruction massive du myocarde qui génère un choc cardiogénique, à un impact myocardique limité sans symptômes résiduels (Fung et al., 2016).

Étude de cas typique

Marc, un homme de 39 ans en santé, se présente à l'urgence avec des étourdissements, des palpitations et une présyncope. L'électrocardiogramme (ECG) initial montre un rythme sinusal normal avec un bloc atrio-ventriculaire (AV) du premier degré (voir figure 2). Un ECG ultérieur montre un bloc bifasciculaire comprenant un bloc de branche droit (BBD) et un bloc fasciculaire antérieur gauche (voir figure 3) qui évolue ensuite vers un bloc de branche gauche (BBG) (voir figure 4). Le

Figure 2

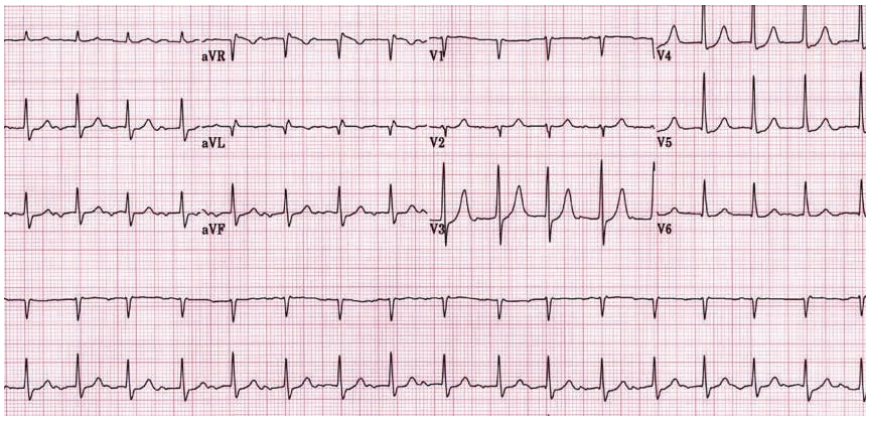


Figure 3

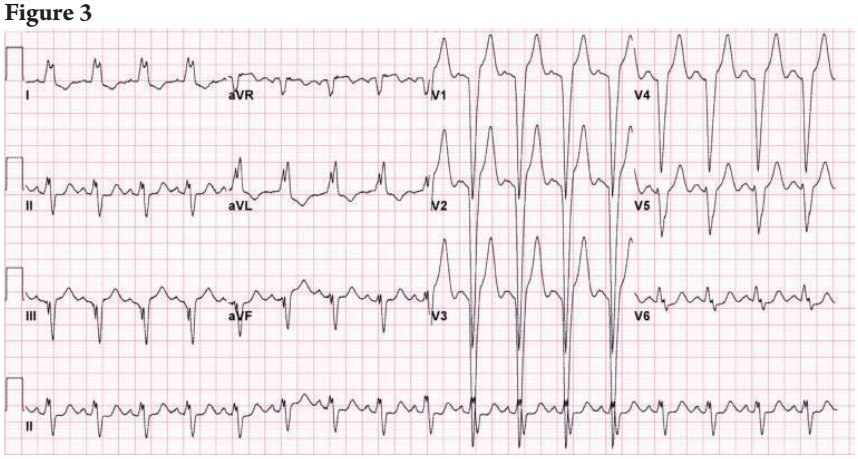


Figure 4

patient rapporte avoir eu une infection au SRAS-CoV-2 quatre semaines plus tôt, associée à une gêne thoracique pleurétique. Les taux de troponine sont élevés, et l'échocardiographie montre une dyskinésie myocardique diffuse et une diminution de la fraction d'éjection du ventricule gauche (FEVG). Les résultats de l'imagerie par résonance magnétique (IRM) cardiovasculaire correspondent à une myocardite. L'IRM cardiovasculaire indique également un dysfonctionnement systolique global et un épanchement péricardique modéré. Le patient est transféré à l'unité de soins coronariens où sa fréquence cardiaque (FC) avoisine en moyenne 40 bpm, et son ECG montre un BBG avec BBD intermittent. Le moniteur cardiaque indique une tension artérielle de 100/57 et une saturation en oxygène de 98 % à l'air ambiant. La sérologie de Lyme est négative. La radiographie thoracique révèle un épanchement pleural bilatéral modéré, sans signe de pneumonie. À l'unité de soins coronariens, des sondes de stimulation transveineuse temporaire sont insérées avec FC à 80 bpm, stimulation du ventricule droit, intensité de 2 mA. Une radiographie thoracique confirme la bonne position. Pendant cinq jours à l'unité de soins coronariens, le patient présente un bloc cardiaque complet avec une transition intermittente vers un BBG et un BBD, et devient symptomatique : tout effort notamment déclenche des étourdissements légers. L'électrophysiologiste recommande l'insertion d'un stimulateur cardiaque permanent avec double chambre, puis un stimulateur avec modulation de fréquence (mode DDDR) est inséré. Diagnostic final : myocardite causée par le SRAS-CoV-2 créant des complications avec le BBG et le BBD ainsi qu'avec le bloc cardiaque complet.

Syndrome coronarien aigu

Le syndrome coronarien aigu (SCA) est une maladie cardiovasculaire où la rupture d'une plaque provoque une thrombose ou une occlusion dans l'une des artères coronaires, entraînant un angor aigu instable, un infarctus du myocarde ou une mort cardiaque subite (Kimura et al., 2019). Le diagnostic formel de l'infarctus du myocarde est établi par examen de l'ECG et une vérification de la présence de biomarqueurs cardiaques (Johnson et al., 2020). Bien que la zone d'infection du SRAS-CoV-2 soit le système respiratoire, Kwong et collaborateurs (2018), en Ontario (Canada), ont conclu que les infections virales augmentent le risque d'infarctus aigu du myocarde (Kwong et al., 2018). Les patients présentant déjà une maladie coronarienne et des plaques stables peuvent subir un infarctus aigu du myocarde lorsqu'ils sont infectés par le virus, l'inflammation systémique grave venant perturber la stabilité des plaques (Kwong et al., 2018).

Les médiateurs inflammatoires comme le TNF-alpha, les interleukines, les cytokines et les chimiokines jouent un rôle direct dans l'apparition d'un infarctus aigu du myocarde (Sandoval et al., 2020). Dans les unités de soins intensifs, les patients infectés par le SRAS-CoV-2 ont tendance à présenter des taux sériques de cytokines et de chimiokines plus élevés que les autres patients, ce qui augmente d'autant plus le risque de développer des lésions myocardiques cellulaires (Sandoval et al., 2020). Le taux d'incidence des infarctus du myocarde chez les patients qui ont contracté le virus n'est pas confirmé en raison du nombre limité de recherches pour étayer les données. Des cas de troubles microvasculaires et de thromboses coronaires non reliés à une rupture de plaque ont également été rapportés chez les patients infectés (Sandoval et al., 2020).

L'inflammation systémique ou la septicémie causée par une infection virale comme le SRAS-CoV-2 a également été associée à un dysfonctionnement diastolique et systolique ventriculaire (Zochios et al., 2014). Une revue systématique a révélé que la septicémie sévère est corrélée à une augmentation des taux de troponine sérique, avec un taux de prévalence de 60 % (Zochios et al., 2014). Une étude exhaustive menée par Johnson et collaborateurs (2020) a indiqué que 69,4 % des patients (n = 187) hospitalisés en Chine pour le SRAS-CoV-2 présentaient des taux élevés de troponine T (TnT) et avaient également un risque plus élevé de mortalité à l'hôpital (7,6 %). Les patients souffrant d'une insuffisance cardiaque infectés par le virus présentaient un risque élevé de décompensation hémodynamique aiguë (Bonow et al., 2020).

Bonow et collaborateurs (2020) ont passé en revue les études menées aux États-Unis, en Italie et en Chine auprès de patients infectés par le SRAS-CoV-2 présentant des complications cardiaques sous-jacentes et ils ont constaté que la majorité des patients inclus dans les études présentaient des taux élevés de troponine indiquant des lésions myocardiques sous-jacentes (Bonow et al., 2020). Une autre étude multicentrique transversale effectuée par Lombardi et collaborateurs (2020) en Italie a rapporté que 45,3 % des patients hospitalisés (n = 614) infectés par le SRAS-CoV-2 avaient des taux élevés de TnT et un risque accru de mort à l'hôpital (71 %). La même étude a également conclu que les patients (n = 614) infectés par le SRAS-CoV-2 étaient deux fois plus à risque de développer une septicémie, une embolie pulmonaire, une hémorragie importante, une défaillance de plusieurs organes ou une insuffisance rénale aiguë (Lombardi et al., 2020). D'autres données de cette étude ont annoncé une multiplication par six des cas d'insuffisance cardiaque, d'infarctus du myocarde et d'autres complications cardiovasculaires chez les patients ayant des taux élevés de troponine sérique (Lombardi et al., 2020).

Arythmies auriculaire et ventriculaire

L'arythmie est une autre manifestation clinique cardiaque des patients infectés par le SRAS-CoV-2. Une arythmie potentiellement mortelle se produit lorsque la tachycardie ventriculaire fréquente dure plus de 30 secondes. Elle peut provoquer une fibrillation ventriculaire et une instabilité hémodynamique avec une tension artérielle anormale (Guo et al., 2020). Une étude rétrospective menée à Wuhan, en Chine, a révélé que 7,3 % d'un total de 187 patients positifs au SRAS-CoV-2 présentaient des palpitations comme symptôme principal de complications cardiovasculaires (Guo et al., 2020). Un examen plus approfondi a révélé que 17 % des patients hospitalisés infectés par le SRAS-CoV-2 ont développé une arythmie non définie (Guo et al., 2020), et 5,9 %, une fibrillation et une tachycardie ventriculaires (Guo et al., 2020). Les patients infectés par le SRAS-CoV-2 qui dépendaient d'une assistance respiratoire présentaient une prévalence de 17,7 % d'arythmies auriculaires dans une étude de cohorte portant sur 393 patients hospitalisés aux États-Unis (Goyal et al., 2020). Les types courants d'arythmies associés à

l'infection par le SRAS-CoV-2 sont la tachycardie sinusale, le flutter auriculaire, la fibrillation auriculaire et la tachycardie ventriculaire (Bhatla et al., 2020).

Les incidences d'arythmie et d'arrêts cardiaques observées chez les patients atteints de SRAS-CoV-2 ne sont pas seulement causées par l'impact de la charge virale sur le myocarde, mais sont associées à des conditions sous-jacentes qui ajoutent à la gravité de la maladie. Les causes non cardiovasculaires, notamment la septicémie et l'inflammation systémique, augmentent le risque de développer des arythmies chez les patients hospitalisés pour le SRAS-CoV-2 dans une unité de soins intensifs (Bhatla et al., 2020). Les arythmies prolongées augmentent le risque de nécrose du tissu myocardique, d'insuffisance cardiaque, d'arrêt cardiaque et d'interférence directe avec le système de conduction électrique du cœur. Elles présentent également des risques plus importants de problèmes thrombotiques tels que la thrombose veineuse et artérielle, conséquence directe des lésions graves causées par la libération de médiateurs inflammatoires (Bhatla et al., 2020).

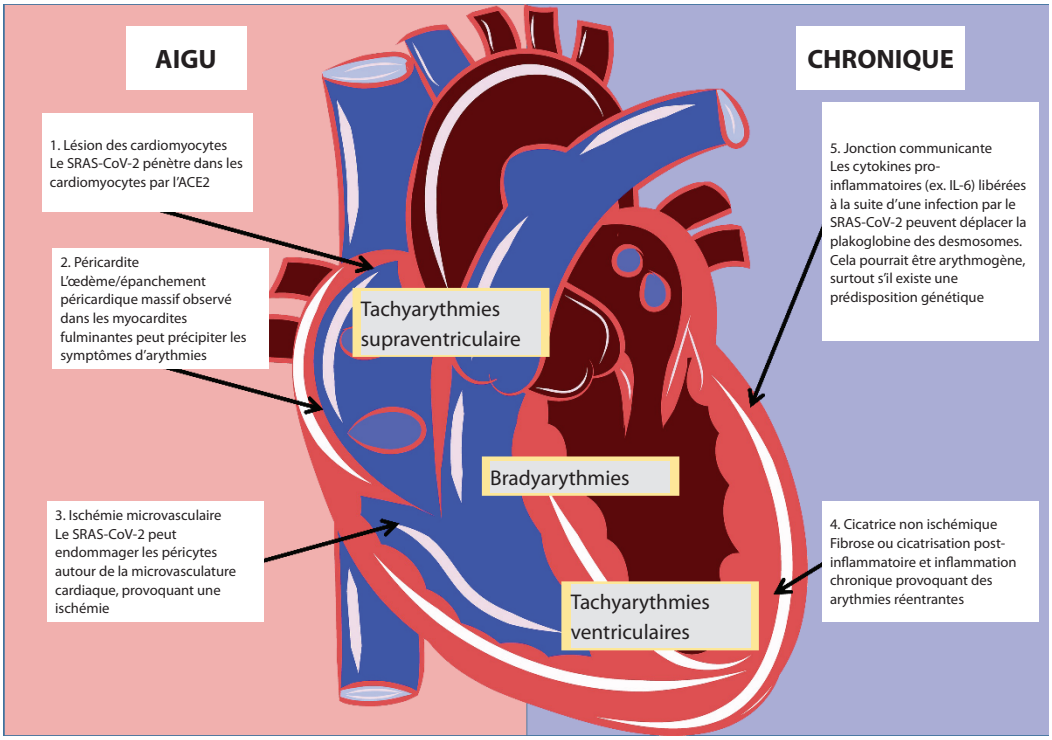
La fibrillation auriculaire associée à une réaction inflammatoire sous-jacente augmente les risques de complications thrombotiques et emboliques (Bhatla et al., 2020). Une étude globale menée dans 76 pays pour recueillir des données auprès de divers professionnels de la santé a révélé que les arythmies comme l'arythmie ventriculaire et l'activité électrique sans pouls sont des manifestations courantes chez les patients hospitalisés infectés par le SRAS-CoV-2 (Gopinathannair et al., 2020). Une discussion plus poussée a fait ressortir que la fibrillation auriculaire et la bradycardie sinusale étaient les types d'arythmies les plus fréquemment observées chez les patients infectés par le SRAS-CoV-2 (Gopinathannair et al., 2020). Babapoor-Farrokhran et collaborateurs (2020) ont rapporté une hausse de l'incidence des rythmes idioventriculaires, du dysfonctionnement du nœud sinusal, des blocs auriculo-ventriculaires et de la bradycardie chez un patient infecté par le SRAS-CoV-2 (Babapoor-Farrokhran et al., 2020). Les arythmies ont duré deux semaines à partir de l'apparition d'un nœud sinusal inadéquat (Babapoor-Farrokhran et al., 2020). Le rapport traitait également de la présence d'un bloc auriculo-ventriculaire intermittent de degré supérieur chez un patient infecté dont les biomarqueurs cardiaques et l'échocardiogramme étaient normaux (Babapoor-Farrokhran et al., 2020).

La figure 5, modifiée d'après Siripanthong et collaborateurs (2020), montre les mécanismes aigus et chroniques de l'arythmogenèse dans la myocardite liée au SRAS-CoV-2. Ces mécanismes se manifestent par des lésions des cardiomyocytes, une inflammation du péricarde, une ischémie microvasculaire, un dysfonctionnement de la jonction communicante et une cicatrice non ischémique (Siripanthong et al., 2020).

Tests diagnostics : Troponine et ECG

L'élévation de la troponine T cardiaque (cTnT) est le principal facteur prédictif d'une nécrose et de lésions myocardiques associées, chez les patients atteints du SRAS-CoV-2, à une augmentation des hospitalisations aux soins intensifs, à un pronostic défavorable et à de la mortalité (Aboughdir et al., 2020). L'augmentation des taux de cTnT indique des lésions myocardiques graves; or, elle est courante chez les patients infectés par le SRAS-CoV-2 : plus de 70 % d'entre eux risquent en effet de subir des arythmies intermittentes mortelles (Guo et al., 2020). Il est recommander d'observer et de mesurer la cTnT chez les patients atteints de SRAS-CoV-2 dans les hôpitaux pour orienter et prioriser les soins visant à prévenir d'autres effets néfastes de l'infection sur la santé (Sandoval et al., 2020).

Figure 5



En Chine, l'examen des électrocardiogrammes (ECG) a permis de relever des cas de SRAS-CoV-2 dont le schéma S1Q3T3 présentait une onde S sur la dérivation I, une onde Q sur la dérivation III, et une onde T inversée sur la dérivation III, ainsi qu'un bloc auriculo-ventriculaire temporal (He et al., 2020). L'élévation du segment ST chez le patient infecté est causée par l'hypotension et l'hypoxie extrême, ainsi que par les lésions et l'inflammation myocardiques causées par le virus (He et al., 2020).

La myocardite fulminante s'est traduite sur l'ECG des patients atteints du SRAS-CoV-2 par une dépression du segment PR dans les dérivations précordiales et des membres, ainsi que par une élévation alternée du segment ST (Mansoor et al., 2020). Des ondes Q et des blocs de branche dus à des retards dans le système de conduction électrique ont également été observés avec la myocardite fulminante (Mansoor et al., 2020). Bien qu'il s'agisse d'une constatation courante chez les patients atteints de myocardite fulminante, un élargissement du complexe QRS et un bloc de branche droit ont été observés chez des patients infectés souffrant de complications cardiovasculaires entraînant le développement d'arythmies pathologiques (Mansoor et al., 2020).

Implications pour les infirmières des services d'urgence

Considérations cardiovasculaires

Dans les services d'urgence, les soins infirmiers prodigués aux patients infectés soupçonnés de complications cardiaques comme un SCA, des arythmies ou un infarctus aigu du myocarde doivent consister en une prise en charge rapide en établissant un diagnostic infirmier, puis en isolant et en prenant les cas en charge par la demande des tests diagnostiques pour les enzymes cardiaques et un ECG (Matos et al., 2021). Il peut être utile de proposer et d'encourager la prescription d'héparine de faible poids moléculaire et l'utilisation d'appareils de dispositifs de compression séquentielle pour prévenir le risque de thromboembolie veineuse et artérielle chez les patients immobiles (Matos et al., 2021). Les soins infirmiers doivent donc être axés sur un temps de thromboplastine partielle activée anormal ainsi que sur tout signe d'élévation du test D-Dimer pour ajuster la dose d'anticoagulants (Deitrick et al., 2020).

En cas de lésion myocardique et d'élévation de la créatinine kinase, les enzymes cardiaques doivent être surveillées (Matos et al., 2021). Les évaluations et interventions infirmières pour les patients infectés qui développent une myocardite et des arythmies sont la surveillance par ECG et la mesure fréquente de l'intervalle QT si le patient reçoit un traitement antirétroviral ou antipaludéen (Dawson et al., 2020; Deitrick et al., 2020; Guzik et al., 2020). Beaucoup de patients infectés par le SRAS-CoV-2 présentent un risque de complications vasculaires et thrombotiques. Lorsqu'on suspecte une athérosclérose ou un SCA, considérer le cathétérisme cardiaque comme option thérapeutique pour différencier le diagnostic (Matos et al., 2021). Le personnel infirmier peut jouer un rôle dans la préparation et l'éducation du patient en ce qui concerne les procédures et les tests, la formulation d'un plan de transfert à l'unité de soins intensifs et la mise en place d'une réadaptation précoce et d'une orientation vers la communauté (Matos et al., 2021). L'oxygénothérapie, la réduction de l'anxiété et les soins de confort sont essentiels pour maintenir la santé des patients atteints du SRAS-CoV-2 (Fusi-Schmidhauser et al., 2020). Certains patients peuvent présenter une décoloration rouge et des lésions ou des boutons en plus d'un gonflement des orteils, appelés « orteils COVID » (Deitrick et al., 2020). Par conséquent, une évaluation tégumentaire sera pertinente pour les patients suspectés de SRAS-CoV-2 afin d'exclure les complications circulatoires et tégumentaires (Deitrick et al., 2020). Les soins infirmiers prioritaires pour tous les patients aux urgences comprennent l'utilisation efficace de l'EPI pour réduire l'exposition au virus et la propagation, les précautions d'isolement, les soins de soutien comme l'intubation et l'oxygénothérapie, la surveillance des effets secondaires des médicaments et la gestion adéquate des symptômes (Deitrick et al., 2020). Enfin, chez les patients atteints du SRAS-CoV-2 présentant une insuffisance cardiopulmonaire, un SDRA ou un trouble cardiocirculatoire persistant, une oxygénation par membrane extracorporelle (ECMO) peut être mise en œuvre pour préserver la santé et la fonction cardiopulmonaire (Bartlett et al., 2020). Les indications pour la mise en place d'une ECMO comprennent une pression partielle d'oxygène inférieure à 100 malgré des interventions respiratoires optimales, une fréquence respiratoire à plus de 35 respirations par minute (avec ou sans ventilation mécanique), ou une admissibilité au cas par cas selon le pronostic, l'âge et les comorbidités (Bartlett et al., 2020). Les infirmières des services d'urgence excellent dans l'évaluation des besoins en matière d'oxygénothérapie avancée et la collaboration avec le reste de l'équipe pour accélérer la mise en place d'interventions qui ne sont pas habituellement disponibles dans les services d'urgence (l'ECMO est habituellement fournie dans l'unité de soins intensifs). Par conséquent, la connaissance des contre-indications à la mise en place d'une ECMO, comme le blocage neuromusculaire, une pression positive élevée, l'inhalation d'un vasodilatateur pulmonaire et la ventilation oscillatoire à haute fréquence, peut servir de guide pour l'admission des patients dans des unités spécifiques (ex. soins intensifs) ou aider à comprendre les options thérapeutiques mises en œuvre chez un patient atteint du SRAS-CoV-2 (Bartlett et al., 2020).

Considérations concernant les soins centrés sur la personne et la famille

Pour fournir des soins infirmiers efficaces dans un contexte de pandémie, il faut veiller à offrir des soins centrés sur la famille. Cela signifie qu'il faut respecter le rôle des membres de la famille en tant que partenaires de soins, maintenir la collaboration entre la famille et l'équipe de soins, et préserver l'intégrité familiale (Hart et al., 2020). On pourra ainsi prévenir et réduire les sentiments de dépression, d'anxiété et de trouble du stress post-traumatique (TSPT) après l'hospitalisation (Hart et al., 2020). Agir ainsi peut en outre contribuer au rétablissement du patient et réduire l'épuisement professionnel ainsi que la détresse des fournisseurs de soins de santé (Hart et al., 2020). Les soins infirmiers doivent intégrer l'éducation du patient, promouvoir le confort et l'adhésion à la médication (en tenant compte des déterminants de la santé), ainsi que la gestion des symptômes et des évaluations régulières afin de prévenir le développement d'effets néfastes sur la santé (Hart et al., 2020). Le déploiement

de tablettes peut faciliter l'évaluation virtuelle, les consultations, la planification des soins et le maintien de l'approvisionnement en EPI dans les urgences (Wittbold et al., 2020). Il suffit de monter l'appareil sur une tige à perfusion et de la placer à une distance de 2 à 2,5 mètres du patient (Wittbold et al., 2020). De même, la proposition d'utiliser des iPad pour permettre la concertation familiale et prévenir l'isolement des patients peut contribuer au modèle de soins centrés sur la famille sans compromettre la santé du patient, du personnel et de la famille, toute exposition inutile étant ainsi évitée (Wittbold et al., 2020).

Considérations de nature psychosociale

Une étude transversale menée au Royaume-Uni auprès de 4 378 employés des secteurs clinique et non clinique a mis en évidence que les travailleurs de la santé travaillant dans des populations à haut risque comme dans les services d'urgence durant la pandémie ont une prévalence de troubles de stress post-traumatique (TSPT) chez 30,2 % des participants, de dépression chez 27,3 %, d'anxiété chez 23,2 %, et d'abus d'alcool chez 10,5 % (Lamb et al., 2021). Nombre d'infirmières travaillant dans les services d'urgence sont confrontées à la distanciation physique, aux troubles du sommeil, à des milieux de travail dangereux, et au contact direct avec les patients, tous des facteurs importants pouvant mener à des problèmes de santé mentale (Garcia-Martin et al., 2021; Mukhtar, 2020). Mukhtar (2020) a présenté une discussion sur l'importance de soutenir les infirmières ayant des problèmes de santé mentale tandis qu'elles travaillent dans des environnements à haut risque. Les chercheurs ont souligné qu'au Pakistan, beaucoup de fournisseurs de soins de santé travaillant dans des établissements de soins de courte durée sont confrontés à une ou plusieurs formes de problèmes de santé mentale parfois fort longs à se rétablir comparativement à une blessure physique (Mukhtar, 2020). Tout cela illustre combien la prévalence des problèmes de santé mentale chez les travailleurs de la santé peut entraver la qualité des soins qu'ils prodiguent dans un établissement clinique. Il est proposé de recourir à des services psychologiques comme le counseling, l'autotraitement, la psychothérapie et la mise en place d'interventions en cas de crise psychologique sociale pour arriver à gérer ces facteurs de stress (Mukhtar, 2020). Ces services peuvent aider à dépersonnaliser, à modifier ses perspectives sur la vie, à faciliter l'autoréflexion et l'amélioration, et à mieux faire face aux réactions psychologiques dans un milieu de travail difficile et à haut risque (Mukhtar, 2020).

Conclusion

La propagation du SRAS-CoV-2 a entraîné des complications pathologiques chez les patients fragilisés et infectés et a alourdi la charge de travail et le fardeau du système de santé. Sensibiliser les infirmières des services d'urgence au fait que le SRAS-CoV-2 peut entraîner des complications cardiovasculaires comme des lésions myocardiques, des myocardites, les infarctus du myocarde et des arythmies peut aider à identifier les priorités de soins imminentes et à élaborer des interventions appropriées en soins infirmiers. Surveiller les valeurs diagnostiques comme la numération formule sanguine (NFS), les tests vasculaires, les biomarqueurs cardiaques et les ECG peut aider à diagnostiquer promptement les états critiques et ainsi prévenir une détérioration de l'état de santé. Enfin, les infirmières des services d'urgence qui travaillent au milieu de cette pandémie doivent prendre soin d'elles-mêmes et se protéger physiquement et mentalement.

Implications cliniques pour les soins infirmiers d'urgence

Le SRAS-CoV-2 (COVID-19) est une maladie virale qui, bien que ciblant en premier lieu le système respiratoire (ex. SDRA, pneumonie, infections, risque de septicémie), compromet aussi le myocarde, car le traumatisme subi par l'organisme du patient suite à l'exposition au SRAS-CoV-2 crée une cascade inflammatoire qui affecte d'autres organes essentiels.

1. Rechercher les signes et symptômes de complications cardiaques à un stade précoce (ex. modifications des biomarqueurs cardiaques, des marqueurs inflammatoires et dans les ECG) permettra de détecter une atteinte cardiaque et de mettre en place un traitement rapide pour prévenir la détérioration de l'état de santé.
2. 2. Préconiser les tests de laboratoire et les options de prise en charge, par exemple veiller à l'analyse des biomarqueurs cardiaques et à la mise en place d'un traitement préventif (assistance mécanique, saturation en oxygène, EPI adéquat, etc.)
3. 3. Effectuer des évaluations ciblées pour s'assurer que la fonction du système cardiopulmonaire est maintenue, et si un déclin est observé, une prise en charge rapide par des praticiens avancés peut être faite sous recommandation des infirmières primaires (comme l'ECMO).
4. 4. Contribuer à une offre de soins centrés sur la famille en utilisant la technologie pour se connecter aux proches dans le contexte des restrictions imposées par la COVID, et montrer de l'empathie malgré les différences personnelles et sociétales.
5. Prendre régulièrement soin de soi, se détendre et chercher des ressources supplémentaires (conseil, thérapie) pour maintenir le bien-être mental et l'aptitude à la pratique.

À propos des auteurs

Mohamed Toufic El Hussein est infirmier praticien titulaire d'un doctorat (doctorat et diplôme d'IP de l'Université de Calgary). Il travaille dans le milieu universitaire depuis vingt ans. Il est professeur titulaire à l'École de sciences infirmières et pratique sage-femme de la Faculté des sciences de la santé, communauté et éducation de l'Université Mount Royal, où il enseigne depuis dix ans. Il est aussi professeur agrégé adjoint à la Faculté des sciences infirmières de l'Université de Calgary. Il a publié plus de cinquante articles dans diverses revues nationales et internationales sur les soins infirmiers et a toujours des projets de recherches en cours. Les répercussions qu'il a sur l'enseignement des sciences infirmières au Canada se reflètent dans ses contributions à la science de l'enseignement des sciences infirmières par ses publications, récompenses, conférences et autres activités de diffusion des connaissances. Pour rester à jour dans sa pratique clinique comme infirmier praticien (IP), il continue à occuper un poste occasionnel d'IP dans l'unité de cardiologie de l'Hôpital Général de Rockyview. En tant qu'infirmier praticien, il se considère comme un passeur

de savoir qui possède les connaissances et l'expertise nécessaires pour faciliter le rapprochement entre la recherche et la pratique afin d'améliorer les résultats pour les patients et de maintenir ses étudiants à jour. Comme il reste actif au point de vue clinique, ses recherches sont ancrées dans les problèmes quotidiens des patients et pertinentes pour les étudiants.

Aditi Sharma est une étudiante de quatrième année inscrite au programme de baccalauréat en sciences infirmières de l'Université Mount Royal. Motivée, elle a déjà tenu divers rôles au sein de la Student Nursing Society et de l'association étudiante de l'Université Mount Royal. De plus, elle est la fondatrice d'une nouvelle entreprise de santé et bien-être spécialisée dans la formation en RCR et secourisme et les initiatives de sensibilisation à la santé publique. Dans ses études universitaires, elle s'intéresse à la recherche de pathologies imminentes liées à l'avancement de la pratique infirmière actuelle. Dans le futur, Aditi espère poursuivre sa formation d'infirmière en pratique avancée afin d'acquérir de l'expérience dans le domaine clinique et de la recherche.

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Research Review

Heather McLellan

Citation

Punches, B. E., Berger, K. M., Freiermuth, C. E., Soliman, S. A., Walker, Q. T., & Lyons, M. S. (2021). Emergency nurse perceptions of pain and opioids in the emergency department. *Pain Management Nursing*. https://doi.org/10.1016/j.pmn.2021.05.003

Background

The authors for this study identify that opioid use disorder and overdose-related death statistics are on the rise and have reached crisis proportion. The authors note that for many patients, the emergency department (ED) is the first exposure to opioids when used for pain management. Understanding emergency nurse knowledge, attitudes and behaviours will have a direct impact on both pain management and opioid use, the authors sought to have a better understanding of the perspective of the emergency nurse.

Purpose of the study

The purpose of the study is to identify emergency nurses' knowledge and attitudes towards ED pain management in the context of the ongoing opioid use crisis.

Research approach and methods

The authors used a qualitative exploratory approach. Researchers used a demographic survey to understand the study participants' background then engaged in semi-structured interviews with open-ended questions to collect their data. Interviews were conducted one-on-one and completed by a single researcher for increased consistency. Interview questions focused on emergency care including pain management and opioid use disorder (OUD). Transcripts of the interviews were reviewed, coded and conventional content analysis done independently, as well as jointly, by the researchers.

Setting and sample

This study uses a convenience sample of emergency nurses at a single urban Level 1 trauma centre. Participants were recruited using email, word of mouth and flyers in the department. Interested individuals then contacted the researchers to participate. Included were nurses having at least 12 months of emergency department nursing experience at the centre. Excluded were those who were serving in management roles. The rationale for this selection is they wanted nurses who were actively caring for patients.

Findings

The authors had a response rate of 12 nurses. One component of the research was the collection of demographic information from participants, but that information articulated in the article. The authors identified two primary themes: "Nurses Influence ED Pain Management" and "Adjustments in ED pain management" under a predominant concept that "Pain Management Depends on the Care Team". The domains emerging under the "Nurses Influence ED Pain Management" theme included subjective versus objective assessment of pain and response to pain requests. Domains under "Adjustments in ED pain management" were the potential facilitators and barriers to pain management.

Commentary

This study identifies the influence that nurses have over pain management. The authors determined that patient behaviours often influenced both the subjective and objective assessment of pain, particularly when the patient was angry or defensive. This is consistent with the findings of similar studies. Sardo et al (2020) reported that while frequently assessed at triage, pain is less-well assessed at the bedside leading to suboptimal pain management. Moceri and Drevdahl (2014) also found patient behaviours influence nurses' assessment and choices in pain management, so that they often used their own assessment of the patient's pain instead of basing pain management on the description provided by the patient. Abouzida et al. (2020) found screening for pain at the bedside occurred with just over half of the patients, in addition to pain scale used in only 10% of cases.

ISSN: 2293-3921 (print) | ISSN: 2563-2655 (online) | https://doi.org/10.29173/cjen160
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The authors address both facilitators and barriers to pain management. Concern about OUD and addiction issues or protocolized pain management strategies are potential barriers to effective pain management. Other authors have also identified these barriers. Abouzida et al. (2020) note that although pain undeniably has negative consequences, pain management often goes under addressed. Moceri and Drevdahl note nurses under treatment of pain often focused on concerns around future addiction and dependence around opioid use, which is consistent with the findings in this study. Addiction and condoning drug seeking behaviour/opioid use was also a key theme from Punches et al. (2020).

Facilitators to pain management identified in the study included education and discussion around treatment alternatives and expectations. Kahsay and Pitkajarvi (2019) also identified the use of training modules for nurses addressing both knowledge and attitudes, allowed for better assessment of patient and improved pain management overall.

One primary strengths of this study is the timeliness of the message. The World Health Organization (2021) identified OUD as affecting 36.3 million people around the world in 2019. Emergency nurses work in a landscape where OUD is an increasing crisis of global proportions. A second strength of the study is the choice of one-on-one interviews allowing the interviewer to provide a safe space for discussion and hear the key messages from each participant without distraction.

A recommendation to strengthen this paper would be to include a better understanding of the participant's level of experience and the study location, particularly around patient demographics. The authors also identify the limitations of using a single site for their data collection. A larger and more diverse study population would strengthen the research study.

Key messages

- Nurses have significant impact on pain management strategies in the ED.
- Concern about addiction and OUD can negatively influence pain management.
- Emergency nurses should advocate for appropriate pain management strategies

About the author

Heather McLellan has been an emergency and critical care transport nurse for more than 40 years. She currently works as an Associate Professor with the Advanced Studies in Critical Care Nursing (ACCN) program at Mount Royal University and a bedside clinical nurse in the Foothills Medical Centre emergency department. Her research interests include hypothermia in transport and scholarship of teaching and learning related to nursing in high-acuity practice areas.

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Dog therapy for staff in a pediatric emergency department: A quality improvement project

Haley Mash, DNP, RN, CPN, Gerene Bauldoff, PhD, RN, FCCP, MAACVPR, FAAN, Jennifer Kosla, DNP, APRN-CNP, CNE, Tondi Harrison, PhD, RN, FAAN

Abstract

Background: Recent surveys of our pediatric emergency department staff showed a decrease in staff morale related to increased stress, indicating the need for intervention. Animal-assisted therapy has been shown to have multiple other positive effects in various populations including decreased stress and anxiety reduction. Our existing dog therapy program was unpredictable and inconsistent, resulting in limited staff involvement. The purposes of this project were to determine whether a consistently offered dog therapy program in our pediatric emergency department would be utilized by staff and to elicit staff feedback on the program.

Methods: A therapy dog was scheduled for one hour twice weekly for staff to visit when they were available. All staff in the ED were encouraged to attend these sessions.

Results: Staff responses were collected via pre- and post-intervention questionnaires. The percentage of staff who were not able to visit the dogs pre-intervention was 33%, decreasing to 15% post-intervention. Prior to project initiation, 60% of staff indicated that dog therapy was not offered enough, compared to only 37% after project completion. Staff reported the program was a morale booster and added positivity to the unit. Barriers to participation and suggested improvements were identified.

Conclusions: Staff were able to participate in dog therapy more often during the project than prior to project implementation, meeting the overall goal of providing more accessible dog therapy to staff. The program was well-received and has now become a standard offering for our emergency department staff.

Keywords: animal assisted therapy, professional burnout, emergency departments, job-related stress, complementary therapy, compassion fatigue

Introduction

Emergency departments (ED) are stressful environments that require staff members to make difficult, complex decisions. Physical, mental, and emotional stress experienced by ED staff may lead to compassion fatigue, which has the potential to adversely affect patient care (Ginex, et al., 2018). In order to provide the best care possible to patients, it is essential that ED staff have a way to combat work-related stress. Animal-assisted therapy has been shown to reduce stress in hospital staff (Bert et al., 2016).

Background

Prolonged work-related stress among healthcare staff can contribute to compassion fatigue and job burnout, ultimately leading to increased turnover rates and additional costs for healthcare facilities (Ginex, et al., 2018; Abrahamson, et al., 2016). According to Kline et al. (2020), 55% to 70% of ED healthcare professionals are at risk of leaving their jobs due to burnout. Burnout scores in these healthcare professionals are inversely correlated with self-perception of empathy, leading to loss of empathy and compassion towards patients (Kline et al., 2020). The cost of replacing registered nurses (RN) is 75% to 125% of their annual salaries, in some cases costing up to $145,000 per nurse (Pine & Tart, 2007).

Between August 2018 and August 2019, nurse turnover and new hire rates were especially high in our ED. Reasons for the full-time equivalent (FTE) changes included nurses reducing their FTE hours to attend graduate school, nurses taking positions outside the ED, and nurses taking travel positions out-of-state. Two additional buildings were also opened during this period and were staffed by existing ED nurses. The staff turnover and

ISSN: 2293-3921 (print) | ISSN: 2563-2655 (online) | https://doi.org/10.29173/cjen110
Print publisher: Pappin Communications http://pappin.com | Online publisher: University of Alberta www.library.ualberta.ca/publishing/open-journals

increased new hires adversely affected the remaining staff due to understaffing and an increased need for preceptors. In the most recent staff satisfaction survey, conducted quarterly to yearly by the ED nursing administration, low ED staff morale and decreased satisfaction due to perceived lack of support from management and peers were revealed. To address this issue, we began searching for courses of action to retain staff.

One approach to increasing retention rates was to improve staff morale. The ED employs multiple staff support clinicians: behavioural health professionals who are independently-licensed professional clinical counsellors or licensed independent social workers. The staff support clinicians provide support to staff through private meetings with staff members and rounding on the unit. In response to the survey results, the unit's staff support clinicians initiated more regular monthly "check-in" meetings focused on providing emotional support to the ED staff that included interventions such as aromatherapy and tea or coffee breaks. These sessions allowed staff to leave the unit and talk to the support clinician or simply have a small break.

The ED staff support clinician added dog therapy to some of these monthly check-in meetings based on staff requests and studies demonstrating, for example, that exposure to therapy dogs buffers stress responses (Fiocco & Hunse, 2017) and enhances mood (Brown et al., 2019). Ginex et al. (2018) noted that healthcare staff reported higher compassion toward their patients and lower burnout compared to baseline when participating in a dog therapy program on their unit. Stress reduction in healthcare professionals can occur as quickly as five minutes after the initial interaction with a therapy dog, as evidenced by a decrease in both salivary cortisol and self-reported anxiety levels (Hoffman et al., 2009; Kline et al., 2020), suggesting that ED staff could reap benefits of dog therapy even in short visits.

Therapy dog programs are generally operated by volunteers and are provided without charge for hospital staff. In combination with a strong program of recruitment and appropriate hiring practices, dog therapy has the potential to improve nursing job satisfaction in the stressful ED environment. Improved job satisfaction will, in turn, improve retention, potentially saving the unit hundreds of thousands of dollars per year (Pine & Tart, 2007; Hillman & Foster, 2010). The purpose of this quality improvement (QI) project was to implement a consistent and frequent dog therapy program in our Pediatric ED to provide enhanced opportunities for staff to relieve work-related stress.

Methods

Design and Setting

This QI project was conducted between the months of October and December 2019 in a large metropolitan pediatric hospital ED with approximately 550 staff members. While research regarding nursing was heavily evaluated in our planning, this QI project was made available to all ED staff, due to the stress perceived by all disciplines in this specialty.

Dog Therapy Program

Participation in this QI project was open to all ED staff in both clinical and non-clinical areas. Prior to initiation of this QI project, staff support clinicians scheduled dog therapy once every one-to-two months for one-hour increments. The dog therapy sessions for this QI project differed only in the frequency, not in the delivery. During October and December 2019, a therapy dog was scheduled twice weekly for one hour, a 700% to 1500% increase compared with previous dog therapy opportunities. Different dogs were scheduled during various time slots during ED shift changes at 1100h, 1500h, and 1900h. One dog handler and one therapy dog were present at each visit, and a total of seven handlers volunteered for this program. The therapy dog visits took place in a non-patient-care area per hospital epidemiology policies. During these scheduled therapy times, all staff on the unit were welcome to visit at any point during the scheduled hour and could stay as long as they liked.

Project Approvals

Prior to initiating the project on the unit, human subject research determination forms developed by the local institutional review boards (IRB) were completed by the project lead for both of the project's affiliated institutions. This QI project was deemed exempt from IRB oversight.

Measures

Outcomes were measured using a five-item pre- and post-intervention questionnaire developed by the project lead based on the literature review (see Appendix A). The items focused on staff perceptions of therapy dogs' availability on the unit and any barriers to participation experienced when dog therapy was available. Item 1 allowed only a single response; items 2-4 allowed multiple responses. Comment boxes for each question allowed staff to offer additional thoughts or suggestions. The anonymous questionnaires were offered to all staff members prior to initiation and upon completion of the eight-week dog therapy intervention. To maintain anonymity, data were not collected on staff characteristics, such as professional discipline, years of ED employment, or age.

Procedure

The questionnaires were loaded into Survey Monkey, and the link was distributed by email to all ED staff members. A printable version was also attached to the email to either be emailed back or printed and placed in a secure mailbox on the unit, which was emptied regularly by the project lead. The pre-intervention questionnaires were available to staff for two weeks prior to project initiation. The post-intervention questionnaire link was available for two weeks after the last therapy session was completed.

Unit leadership was notified of the QI project start date of October 2019, approximately one month prior to initiation. The project lead contacted the volunteer services coordinator to obtain contact information for dog therapy handlers interested in volunteering for this QI project. Seven handlers volunteered, and the project lead worked with them individually to schedule one-hour therapy visits in the ED over eight weeks. Information (including the schedule for therapy dog visits) was added to the daily change-of-shift staff huddles and publicized through flyers posted at staff gathering areas throughout the unit.

Dog therapy sessions were conducted in two non-patient care areas: the ED conference room, which was on the unit and easily accessible to staff, and the education conference room, located one floor below the ED. The therapy dogs and handlers entered the hospital through the main entrance and were guided by the

project lead to the conference rooms through non-patient care areas. Prior to starting the QI project, all dogs were certified through Therapy Dogs International and had previous experience in the hospital setting.

The project lead was present for each dog therapy session to record the number of staff participants. The number of staff members at each visit was summed over the period of the QI project. No names were recorded.

Results

The average number of ED staff participating in each of the dog therapy sessions was 21. There was a minimum of four participants and a maximum of 42 participants at these visits. Questionnaire responses were received by 121 staff members pre-intervention (approximately 22%), and 102 staff members post-intervention (approximately 19%).

Frequency of Participation

Staff visited the therapy dogs more during the eight-week QI project than in the eight weeks prior to project implementation (see Figure 1). The percentage of staff respondents that were able to visit the dogs one to two times decreased from pre-intervention (56%, $n = 68$) to post-intervention (34%, $n = 35$) and the percentage of staff respondents that were able to visit three to four times increased from pre-intervention (11%, $n = 13$) to post-intervention (41%, $n = 42$). Pre-project, none of the staff were able to visit therapy dogs at least six times, whereas 10% ($n = 10$) were able to visit at that frequency during the QI project. The number of staff respondents unable to visit the dogs decreased from 33% ($n = 40$) pre-intervention to 15% ($n = 15$) post-intervention.

Barriers to Participation

The largest reported barrier in both pre- and post-intervention questionnaires was time limitations (see Figure 2). Prior to project initiation, 57% ($n = 69$) of staff respondents indicated they were "too busy" to visit the therapy dogs. Post-intervention, this response increased to 82% ($n = 84$).

Comments indicated that staff were not scheduled to work when therapy dogs were on the unit ($n = 26$; 13%) or that they were working at an off-site location during the sessions ($n = 2$; 2%). One staff member commented that the dogs were inconveniently located when the visits took place in the conference

Figure 1

Percentage of staff interactions with therapy dogs before QI project initiation and after project completion

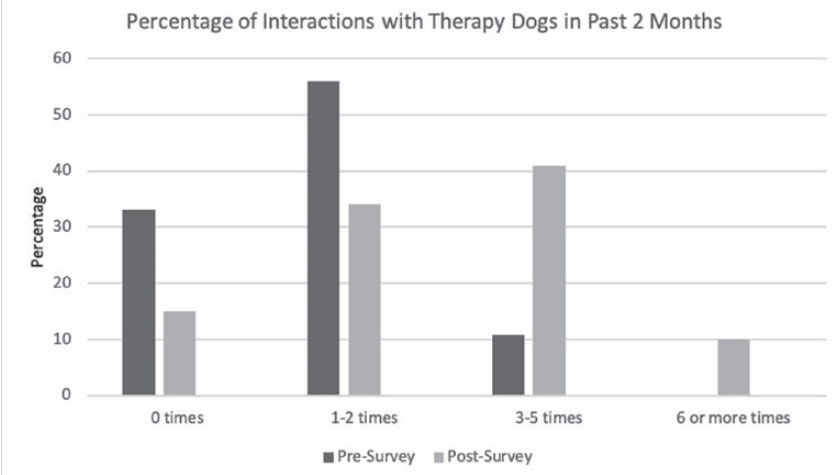
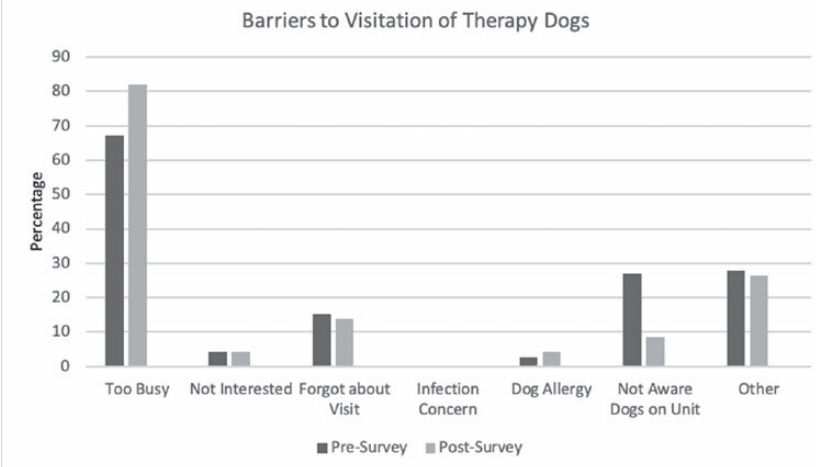


Figure 2

Percentage of respondents identifying barriers to attending dog therapy before QI project initiation and after project completion



room, off the unit. Another staff member reported an aversion to dogs due to religious purposes as a reason for not participating in the sessions, stating, "In Islam, we're not allowed to touch dogs due to their tongues being considered dirty…"

Staff Responses to Dog Therapy in the ED

Prior to project initiation, 60% (n = 73) of respondents indicated that dog therapy was not offered enough (see Figure 3). This decreased to 37% (n = 38) after project completion. Pre-intervention, 14% (n = 17) of respondents indicated dog therapy was offered just the right amount; post-intervention 40% (n = 41) of respondents agreed the newly increased frequency was the right amount. No respondents indicated that dog therapy was offered too often at either pre- or post-intervention. The issue of therapy dog sessions not matching with staff schedules decreased from 41% (n = 50) pre-intervention to 23% (n = 23) post-intervention. Staff indicated that the dog therapy sessions usually fit their schedules more often post-intervention (19%, n = 19) when compared to pre-intervention (12%, n = 15). Never utilizing the dog therapy program was reported by 5% (n = 6) of respondents pre-intervention and 6% (n = 6) of respondents post-intervention.

Suggested Improvements

Both the pre- and post-intervention questionnaires indicated that staff would like dog therapy offered more often (65% [n = 79] and 51% [n = 52] respectively; see Figure 4). Pre-intervention, 66% (n = 80) of respondents indicated that they would like dog therapy offered at different times, as compared to 38% (n = 39) post-intervention.

Respondents commented post-intervention that staff coverage when the therapy dogs visited would be helpful. Two respondents suggested the sessions be offered at different times to allow for more staff participation, requesting more therapy dog visits on evenings and weekends. Many staff members commented post-intervention that they would be more likely to visit the therapy dogs if the visits took place in the unit conference room rather than a location off-unit. Two respondents suggested that the dogs visit off-site areas. One staff respondent requested that other animals be offered for those with an aversion to dogs. In addition, a respondent commented, "I know this is probably out of our control, but it seems that some of the dogs we have

Figure 3

Percentage of staff perceptions of therapy dog availability before QI project initiation and after project completion

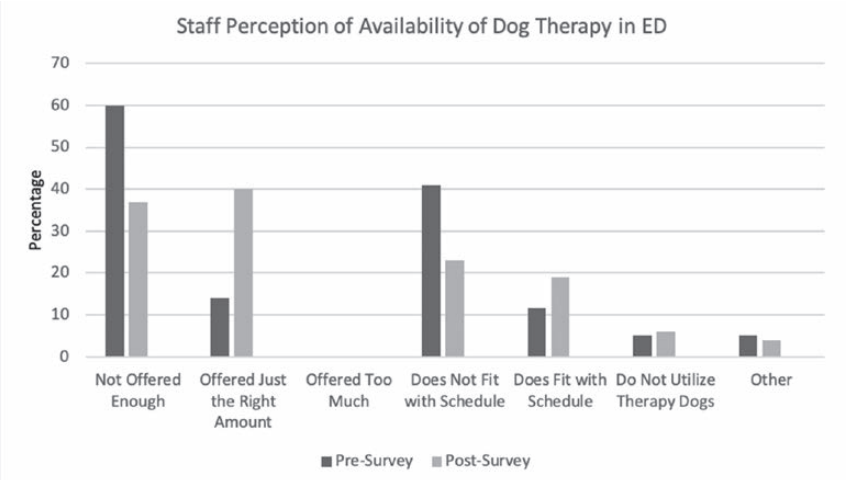
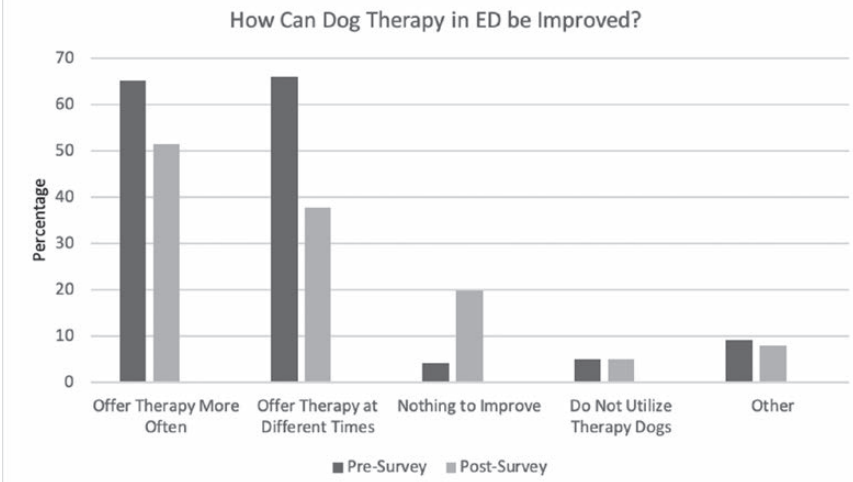


Figure 4

Percentage of staff recommending specific ideas for improvement before QI project initiation and after project completion



had shed excessively, so staff don't want to interact with them as much." Three staff members indicated that they did not participate due to dog aversion.

Additional Comments

Pre-intervention questionnaire comments included suggestions on how to proceed with future dog therapy visits. One staff member commented, "I think dog therapy programs could have an awesome impact on staff in the ED and wish they were available more often to staff members." Many of the post-intervention questionnaire comments offered praise for this QI project (n = 30; 29%). One respondent commented that the sessions were "Such a great morale booster for staff." Another respondent commented that they noticed more positivity in other staff members when the therapy dogs were on the unit, writing, "I think that this program brought a lot of joy to the department. I would see people speed walking down the hallway to get to the dogs."

Discussion

Evaluation and Lessons Learned

The purpose of this QI project was to assess the utilization of dog therapy by ED staff when offered on a more consistent and frequent basis. Overall, the QI project findings showed that implementation of a consistently scheduled dog therapy program allowed staff to participate more regularly in dog therapy and was well received. In addition, staff provided positive comments regarding the project implementation, as well as suggestions for continued dog therapy sessions.

The eight-week QI project duration affected the participation of the dog therapy volunteers, who reported that they would have been able to be more involved had the project took place over a longer period, and their visits could be more regularly scheduled. Due to the project's limited timeframe, the volunteers were scheduled on different days at varying times throughout the eight weeks, making scheduling a challenge. A consistent schedule for dog therapy sessions would also enable the staff on-unit to plan their participation.

Additional times and regular scheduling would also allow for better utilization of the unit conference room for dog therapy sessions. Many staff members reported that the location of the therapy dog affected their participation, i.e. the unit conference room was more accessible than the off-unit location. Due to hospital infection control policies, the therapy dog visits could only take place off-unit, where patient care was not conducted. The conference room on the unit was being utilized for other meetings during some of the dog therapy sessions, so these sessions were held in the conference room one floor below the ED, making visits more of a challenge for some staff.

Optimally, it would be beneficial for the ED staff support clinicians to have a designated therapy dog that was available not only for "check ins", but also for staff experiencing increased stress on the unit, such as trauma, death, or a difficult caseload. Indeed, having a consistent dog providing therapy may improve staff satisfaction with the program. Ideally, having a staff support clinician with a certified therapy dog would provide more access to this intervention during heavy census times due to multiple trauma or critical care patients. However, our hospital is not currently accepting applications for additional therapy dogs. Another option would be to have volunteer handlers "on-call" for assistance. However, it may be difficult for volunteers to commit to a regular schedule. This barrier may be overcome with additional monetary support to compensate volunteers for their time and cover dog therapy training costs for staff members.

An unanticipated barrier to this QI project was the inability of some staff members to participate due to religious beliefs regarding dogs. Multiple respondents on the post-intervention questionnaire suggested having other therapy animals available for those that were unable to touch dogs. They indicated that in the Islamic faith, dogs are considered "dirty" and are not to be touched. Multiple staff members self-identified as Muslim and indicated that they were able to participate partially and did come to the therapy sessions, but they did not touch the dogs. While they may have experienced some positive effects, other animal-assisted therapies that may be implemented in the future should take into consideration that some staff may not receive full benefits due to such barriers.

Another barrier to participation was allergies to dogs or concern about returning to work with dog hair on clothing. One alternative to alleviate this barrier would be to offer staff isolation gowns to wear during the visits or suggest that staff bring extra clothing to change into after visiting the dogs. However, many respondents in the post-intervention questionnaire indicated that they were not aware of the therapy dog visits until the day they took place, preventing them from coming to work with an additional set of clothing. While isolation gowns would be a useful alternative, the use of hospital PPE for non-patient care would need to be approved by unit management for budget purposes.

An alternative to using live animals is the utilization of robot-assisted therapy animals. One of the robotic alternatives frequently reported in the literature is a socially assistive pet robot (PARO). PARO has the appearance of a baby harp seal and utilizes artificial intelligence to respond to light, temperature, and touch, and can "learn" to monitor changes in patients' emotions and health utilizing sensors (Park, et al., 2020; Yu, et al., 2015; Peterson, et al., 2016). PARO allows participation in animal-assisted therapy for those with an allergy to animals and fear or aversion to dogs, and alleviates the unpredictability of live animals (Yu, et al., 2015; Hung, et al., 2019). While animal-assisted therapy had larger positive effect on emotional well-being in elderly patients with dementia, Park et al. (2020) found PARO to be a viable alternative to animal-assisted therapy for the reduction of stress, anxiety, and depression in this population (Yu, et al., 2015; Peterson, et al., 2016; Hung, et al., 2019; Park et al., 2020).

The use of PARO in other populations has also shown benefits. Following this human-robot interaction, decreased salivary oxytocin, self-reported increased happiness, and an alleviation of pain sensations were found after one session with PARO in healthy young adults (Geva et al., 2020). These positive effects of PARO support including it as an option for stress reduction in ED staff.

The cost of PARO is currently $6,000, excluding the warranty and cost to care for the robot (Hung, et al., 2019). In addition, there is also a cost for maintenance and staff training (Hung, et al., 2019). PARO has been approved by the Food and Drug

Administration as a complementary medicine intervention and is billable to Medicaid in the United States. Government funding is available in some countries, such as Japan, for this alternative therapy, but other countries such as Canada have no government aid and would be responsible for the entire cost (Hung, et al., 2019). While these data are promising, it is unclear whether government aid would be provided for the use of PARO specifically for healthcare professionals.

Another option to alleviate allergy or fear of animals is the use of goldfish for pet therapy. The hospital does have multiple fish aquariums, including a large aquarium in our ED. In a systematic review, Clements et al. (2019) report that fish in aquariums can contribute to the overall well-being of humans of various ages. However, studies included in this review had small sample sizes, and an unclear risk of bias since some of those included in the testing groups were fish owners. Since there is no physical contact for fish, as there is in other animal-assisted therapy, fish in aquariums may be more suitable for some staff and could be a feasible option for staff with an aversion to dogs.

Finally, response rates to our survey were lower than anticipated. We believe that the volume of emails received by our staff increased the possibility of postponing survey completion or not reading our message because it was not urgent and not directly related to provision of clinical care. In the future, we recommend sending friendly, engaging reminders at least twice while the survey is open, including an estimated time of completion of the survey, providing verbal reminders during staff huddles and at staff meetings, and posting additional reminders in common staff areas. These reminders should include the value of staff input related to this intervention.

Moving Forward

This QI project was well received by the unit. Consistent and predictable scheduling of therapy dogs at specific dates and times in the future may increase involvement by enabling staff to plan their participation and also allowing therapy dog handlers to continue volunteering long-term. All of the therapy volunteers who were involved in this QI project expressed interest in continuing their participation. Staff support clinicians volunteered to continue the dog therapy program and develop an established dog therapy schedule. Volunteers will be scheduled regularly, and visits will only occur in the unit conference room to enhance staff participation. Lint rollers will be available for all staff to use after dog therapy to combat excess shedding issues. Other animal-assisted therapy or robot pet therapy needs are to be discussed further with hospital management to determine if it would be feasible for our department.

Additional information on the effects of dog therapy can be obtained by continuing this project. The primary reason for the implementation of this QI project was to address low staff morale with the goal of reducing turnover. A future goal would be to measure the effect of regular dog therapy on staff morale and turnover rates. Staff morale and turnover rates could be collected 12 months following project initiation and compared with the pre-project period to meet this goal. This timeframe correlates with the information gathered during the 12 months prior to this QI project's initiation and allows for a larger picture of the ebb and flow of staffing changes in the ED. Based on previous literature, results would likely support the continuation of this project in the ED and possibly expanding to other units of the hospital.

Conclusion

Implementation of a consistent dog therapy program successfully increased ED staff utilization of this intervention. Recommendations for improvements were received from staff and implemented in this ongoing dog therapy program. Evaluation of effects of participation in dog therapy on staff morale, job satisfaction and retention is recommended.

Implications for Emergency Clinical Practice

1. Nursing in the ED is highly stressful and it is imperative that nurses care for their mental and physical well-being to care for their patients adequately.
2. There is a need for interventions that improve healthcare staff morale and overall emotional satisfaction.
3. Providing a regularly scheduled, consistent dog therapy program to healthcare professionals working in stressful environments has the potential to enhance emotional wellness and, in turn, alleviate burnout and decrease turnover rates.

About the authors

Haley Mash, DNP, RN, CPN, was born and raised in Columbus, OH and traveled to Duquesne University in Pittsburgh, PA for her BSN. She started her career as a nurse at Nationwide Children's hospital in 2012 in the Infectious Disease Ambulatory Clinic after undergraduate training. During her time in the ambulatory clinic, she attended multiple conferences and presented on the topic of communication barriers occurring between providers and pediatric patients and families who do not speak English. She transitioned to the Emergency Department at Nationwide Children's Hospital in 2015 where she still works part time. Haley was accepted into the BSN to DNP program at OSU and graduated with her Masters Degree specializing in Acute Care Pediatrics, and then with a DNP the following year during which time she completed her DNP project entitled "Dog Therapy for Staff in a Pediatric Emergency Department." Haley also worked as a graduate teaching assistant for the University throughout her graduate school experience, and started full time with OSU as an Assistant Professor of Clinical Practice in 2021, where she currently teaches clinical for BSN and graduate entry students in the pediatric inpatient setting. She currently lives in Grove City, OH with her family and pets and her hobbies include doing yoga, spinning, gardening, and traveling. She travels out west as much as possible to visit the mountains where she enjoys hiking, camping, and being outdoors.

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Appendix A

Emergency Department Dog Therapy Questionnaire

1. How many times have you been able to interact with the therapy dog in the past 2 months as a staff member in the Emergency Department?
1 = 0 times
2 = 1-2 times
3 = 3-5 times
4 = 6 or more times

2. If you were unable to visit the dog, what kept you from doing so? (Select all that apply
1 = Too busy
2 = Not interested
3 = Forgot to go
4 = Worried about infection
5 = Allergic to dogs
6 = Not aware therapy dogs were available
7 = Other (please comment)

Comments:

3. How do you feel about the **availability** of dog therapy in the Emergency Department? (Select all that apply)
1 = Not offered enough
2 = Offered just the right amount
3 = Offered too much
4 = Therapy times usually DO NOT fit with my schedule
5 = Therapy times usually DO fit with my schedule
6 = N/A – do not utilize therapy dog program
7 = Other (please comment)

Comments:

4. What could be done to improve the current dog therapy program? (Select all that apply)
1 = Offer therapy more often
2 = Offer therapy at different times
3 = Nothing to improve
4 = N/A – do not utilize therapy dog program
5 = Other (please comment)

Comments:

5. Do you have any additional comments?

Comments:

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

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Attitudes and acceptability of organ and tissue donation registration in the emergency department: A national survey of emergency nurses

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Abstract

Introduction: Worldwide, there is a shortage of organs for transplantation. The number of people listed on organ donation registries can possibly be increased by promoting organ donation registration in emergency departments.

Methods: We administered a national survey to assess emergency nurses' attitudes and feelings on offering patients' information on registering to become an organ donor in the emergency department, as well as an immediate opportunity to register.

Results: We received 130 (10.2%) responses. Of these, 61.5% of nurses feel that the emergency department is an acceptable location to promote organ donation registration. Additionally, 58.4% feel that the emergency department is an appropriate setting to offer patients and visitors an immediate opportunity to register as an organ and tissue donor while they await medical care. We identified several facilitators and barriers to a potential intervention to promote organ donation registration in the emergency department, such as public importance of increasing donation rates, the recognition of patients' willingness to help others, and strong institutional donation culture. Some barriers were also identified, such as time constraints and departmental efficiency and flow. We also found that 80% of nurses report to be personally registered as organ donors.

Conclusions: This study reveals that Canadian emergency nurses are very engaged and supportive of organ donation and the majority feel that the ED is an appropriate venue to promote organ donation. However, the specific mechanism by which patients are approached by emergency department staff regarding organ donation registration remains unclear.

Introduction

The demand for organs for transplantation far outweighs the supply. In 2018, 223 Canadians listed for transplantation died while waiting (Canadian Institute for Health Information, 2019). One solution to addressing this problem is to expand public education and, thereby, increase the number of citizens who enrol to donate their organs after death in provincial registries. In most provinces, citizens need to register their consent for organ donation after death via an electronic registry. In Canada, provincial organ donation organizations obtain family consent prior to proceeding with organ donation, regardless of registration status. If the patient's substitute decision maker is aware that a person has registered consent, they are more likely to offer consent to proceed with organ donation after death (Shah et al., 2018; Siminoff et al., 2001). Fulfilling a person's wish to donate and simultaneously helping a person in need of an organ transplant will benefit all parties involved. Canadian citizens strongly (71%) or somewhat (25%) support organ donation after circulatory death (Canadian Council for Donation & Transplant, 2005), but some provinces have low registration rates, such as British Columbia and Alberta (20% and 7%, respectively, as of 2015; Canadian Blood Services, 2016).

ISSN: 2293-3921 (print) | ISSN: 2563-2655 (online) | https://doi.org/10.29173/cjen140
Print publisher: Pappin Communications http://pappin.com | Online publisher: University of Alberta www.library.ualberta.ca/publishing/open-journals

In Ontario, approximately 35% of the population is registered (Trillium Gift of Life Network, 2019).

Most Canadian citizens register consent with renewal of their health card or driver's license (Rosenblum et al., 2012) but, given the reality of low registration rates, alternative strategies are clearly necessary. Considering the large volume of patients that visit Canadian emergency departments (EDs), spreading awareness of organ donation registration in the ED may prove to be an important means of expanding donor registries. Since nurses are key stakeholders when it comes to ED operations, it is important to understand their attitudes and sense of acceptability for this novel potential intervention. To date, there is little literature examining the role of primary care and other health-related settings pertaining to organ donation promotion (Jones et al., 2017).

Our primary objective was to explore emergency nurses' attitudes and acceptability of utilizing the ED to promote organ donation registration. In addition, we examined perceived facilitators and barriers and nurses' comfort levels with various provider types initiating a personal approach to discuss organ donation registration with patients in the ED. Secondarily, we assessed nurses' support for deceased organ donation and the proportion who are personally registered for donation.

Methods

Study design and participants

This study was a cross-sectional, electronically administered survey of Canadian emergency nurses. The survey was distributed to all 1,270 active members of the National Emergency Nursing Association (NENA). NENA is a nationally recognized association of more than 1,000 registered nurses that promotes the highest standards and practices in emergency nursing and emergency departments in Canada.

Survey development

The survey was developed using a modified Dillman's tailored design method (Dillman, 2007). In order to develop the survey instrument, we first performed a standardized key informant interview with stakeholders who have expertise in organ donation and clinical research that included critical care and emergency nurses and physicians. This process was overseen by two research methodologists with expertise in survey development. Cognitive interviews with a separate group of 10 critical care nurses were then performed. Here, participants were asked to self-administer the survey on paper under observation and openly express their thoughts, observations and concerns. This allowed for validation and sensibility of the content, language and grammar. After some minor adjustment to the survey, we then translated the survey to French and distributed this pilot draft of the survey to 10 local English and French emergency nurses electronically to identify any potential problems with the procedure or completion of the survey. No changes were required after the pilot phase and therefore these responses were included in the data analysis. A total of 24 questions were included in the final survey under four domains and administered using a five-point Likert scale: demographics and practice information, attitudes toward organ donation, acceptability of ED organ donation registration, and related perceived facilitators and barriers (Appendix 1). This study was approved by the Ottawa Health Science Network Research Ethics Board.

Survey administration

The survey was sent via e-mail as a web link to all current members on the NENA distribution list. The initial contact included a brief introduction outlining the justification of the survey, the importance of nurses' input on the topic, and that responding to the survey would imply presumed consent to participate. A reminder email was sent two weeks after the initial request. The survey was available in both English and French languages and was available for completion during the period of December 15, 2019 to February 15, 2020 using SelectSurvey.NET™ online software (ClassApps, Kansas City, MO, USA). We were unable to determine the characteristics of the non-respondents, as the NENA membership database is confidential.

Data analysis

Anonymized responses were reported in an automatically generated Microsoft Excel spreadsheet through SelectSurvey.NET™ and used for analysis. Descriptive statistics were used to summarize nurses' responses. Data were analyzed using SAS version 9.2 (SAS Institute, Cary, NC, USA).

Results

Respondents

A total of 1,270 emergency nurses were contacted to participate via the NENA email distribution list. Of these, there were 130 responses from eligible participants, resulting in a response rate of 10.2 %. Demographic information for the respondents is presented in Table 1. Characteristics of respondents demonstrate eclectic educational backgrounds, training types and amount of experience. Although this was distributed nationally, the majority of responses were from nurses practicing in Ontario (36.9%), Alberta (16.9%) and British Columbia 16.2%).

Attitudes and Acceptability of ED Organ Donation Registration

As depicted in Table 2, 104 (80%) respondents reported that they are registered as organ donors. The most common reported reason for those who are not registered was due to not knowing how to register.

Most respondents either "strongly support" or "somewhat support" the general concept of deceased organ donation (110; 84.6% and 100; 76.9%), respectively (Table 3). In addition, 80 or 61.5% of respondents either "strongly support" or "somewhat support" dissemination of information about organ donation to patients the ED waiting area, and 76 (58.4%) either "strongly support" or "somewhat support" offering ED patients and visitors an immediate opportunity to register while they await medical care. A minority of respondents felt that ED patients would be open to receiving information regarding organ donation in the ED (40; 38.3%; Table 3). Similarly, 47 (36.2%) felt that ED patients would be open to being offered an immediate opportunity to register as an organ donor in the ED. However, 86 (66.2%) felt that ED patients would not be open to receiving instructions on how to register as an organ donor after their ED visit is completed.

Table 1

Distribution of Respondent Characteristics (n = 130)

Characteristic	Frequency (%) of Respondents
Female	107 (72.3)
Mean age, years (SD)	42.8 (8.4)
Years in practice	
<5	15 (11.5)
5–10	29 (22.3)
11–20	37 (28.5)
>20	49 (37.7)
Religious Affiliation	
Christian	66 (50.8)
None	53 (40.8)
Other	5 (3.8)
Hindu	2 (1.5)
Jewish	2 (1.5)
Muslim	2 (1.5)
Sikh	0
Location of practice	
Ontario	48 (36.9)
Alberta	22 (16.9)
British Columbia	21 (16.2)
Nova Scotia	9 (6.9)
Saskatchewan	8 (6.2)
Manitoba	7 (5.4)
Quebec	5 (3.8)
Newfoundland and Labrador	4 (3.1)
New Brunswick	3 (2.3)
Northwest Territories	0
Nunavut	0
Prince Edward Island	0
Yukon Territory	0
Missing	3 (2.3)
Practice setting	
Academic / Tertiary	63 (48.5)
Community (Teaching)	45 (34.6)
Community (Non-teaching)	19 (14.6)
Rural	1 (0.8)
Other	2 (2.3)
Professional designation	
Registered Nurse (Bachelor of Science Nursing)	63 (48.5)
Registered Nurse	34 (26.2)
Registered Nurse (Bachelor of Nursing)	23 (17.7)
Other	8 (6.2)
Nurse Practitioner	1 (0.8)
Licensed Practical Nurse	1 (0.8)
Highest level of education	
Bachelor's degree	81 (62.3)
College diploma	23 (17.7)
Master's degree	15 (11.5)
Hospital training program	5 (3.8)
Other	5 (3.8)
Doctorate degree	1 (0.8)
Employed by provincial organ donation organization	
Yes	3 (2.3)
No	117 (90)
Unanswered	10 (7.7)

Comfort Levels with Active Approach by Provider Type

We found that 108 respondents (83.1%) were either "very comfortable" or "somewhat comfortable" with provincial organ donation organization personnel performing a personal approach (Table 4). This compares to 77 (59.2%) and 66 (50.8%) that were either "very comfortable" or "somewhat comfortable" with the emergency physician and emergency resident physicians approaching patients about organ donation in the ED, respectively. 83 nurses (63.9%) were "very comfortable" or "somewhat comfortable" with research staff making the approach. 48.5% of respondents felt "very comfortable" or "somewhat comfortable" with emergency nurses, and a minority were either "very comfortable" or "somewhat comfortable" with medical students, administrative clerks and hospital volunteers (40 or 30.8%; 35 or 26.9%; and 27 or 20.8%, respectively), making the approach.

Respondents' Support for Information Delivery Methods Regarding Organ Donation to ED Patients

One hundred respondents (76.9%) felt that signage posted in ED waiting areas should be utilized and 97 (74.6%) felt that an active personal approach to offer information would be acceptable. 80 (61.5%) reported that an electronic device (e.g., iPad) would be acceptable.

Perceived Potential Facilitators and Barriers in the Promotion of Organ Donation Registration in the ED

Most nurses felt that many potential facilitators may play a role in the promotion of organ donation registration in the ED. 91 (70.1%) of respondents felt that the societal/public importance of increasing donation rates was either a "very significant" or "somewhat significant" facilitator. A patient's previous awareness of donation, their personal willingness to help others, and having a strong donation culture at the institution were reported as being "very significant" or "somewhat significant" by 84 respondents (64.6%), 78 (60%), and 77 (59.3%), respectively.

Table 2

Respondents Personal Donor Registration Status and Reasons for Non-Registration (N=130)

Registration Status	# (%) of Respondents
Registered	104 (80)
Not registered	22 (16.9)
Unanswered	4 (3.1)
Reasons for non-registration	
I don't know how to register	4 (3.1)
I don't have time to register	2 (1.5)
Religious beliefs	2 (1.5)
Personal beliefs	3 (2.3)
My organs are not suitable due to medical problems	3 (2.3)
I prefer not to donate my organs	1 (0.8)
Other	5 (3.9)

Table 3

Attitudes and Acceptability of Organ and Tissue Donation Registration in the Emergency Department (%, N=130)

Question/Statement	Strongly Support	Somewhat Support	Neutral	Somewhat Oppose	Strongly Oppose
1. In general, do you support the concept of deceased organ donation?	84.6	6.9	5.4	0.8	2.3
2. Provincial organ donation organizations should attempt to increase the number of registered organ donors.	76.9	15.4	6.9	0.8	0
3. The emergency department waiting area is an appropriate setting to disseminate information regarding organ and tissue donation to capable patients who do not need immediate attention and visitors.	22.3	39.2	23.1	12.3	3.1
4. The emergency department waiting area is an appropriate setting to offer patients and visitors an immediate opportunity to register as an organ and tissue donor while they await medical care.	19.2	39.2	25.9	13.4	2.3
5. Emergency department patients would be open to receiving information regarding deceased organ donation in emergency department waiting areas.	4.6	26.2	43.5	22.3	3.4
6. Emergency department patients would be open to being offered an immediate opportunity to register for deceased organ donation in emergency department waiting areas.	6.2	30	33.8	27.7	2.3
7. Emergency department patients would be open to being offered instructions on how to register as an organ donor in the future, following their emergency department visit.	13.1	53.1	26.8	6.2	0.8

Table 4

Nurses' Comfort Levels of Various Provider Types to Actively Approach ED Patients and Visitors (%, N=128)

Provider Type	Very Comfortable	Somewhat Comfortable	Don't Know	Somewhat Uncomfortable	Very Uncomfortable
Emergency physician	40.0	19.2	19.3	6.9	14.6
Emergency resident	30.8	20.0	23.0	13.1	13.1
Medical student	13.9	16.9	31.5	19.2	18.5
Emergency nurse	22.3	26.2	19.9	15.4	16.2
Administrative clerks	10.0	16.9	23.9	21.5	27.7
Provincial ODO* staff	63.9	19.2	10.7	3.1	3.1
Research staff	40.0	23.9	23.0	6.9	6.2
Hospital volunteer	10.0	10.8	27.6	15.4	36.2

* organ donation organization

Several barriers to the consideration of organ donation registration in ED waiting areas that were considered "very significant" or "somewhat significant" by nurses are listed in Table 5. Logistical barriers such as time constraints 99 (76.2%) and availability of personnel (106; 81.5%) were reported most frequently, followed by those related to ethics (87; 66.9%) and religious barriers (85; 65.4%).

Discussion

Our study explored emergency nurses' attitudes and acceptability of potentially utilizing the ED waiting area to disseminate information regarding deceased organ donation and offer patients and visitors an opportunity to become registered organ donors. The vast majority of nurses support the concept of deceased organ donation and 104 nurses (80.0%) in our sample

Figure 1

Support for Information Delivery Methods Regarding Organ Donation to Emergency Department Patients (%, N=129)

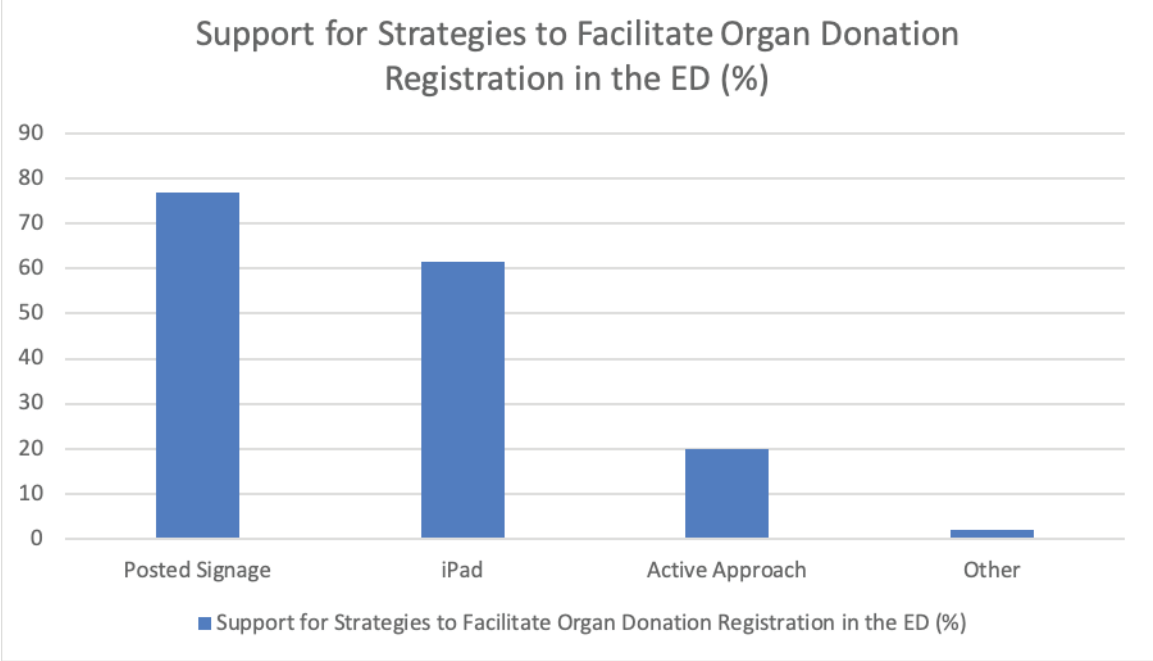

Table 5

Perceived Potential Facilitators and Barriers of Organ Donation Registration in the ED (%, N=127)

Facilitator	**Very Significant**	**Somewhat Significant**	**Don't Know**	**Somewhat Insignificant**	**Very Insignificant**
Strong donation culture at institution	23.9	35.4	13.9	14.6	4.6
Societal/public importance of increasing donation rates	36.2	33.9	6.9	7.7	6.9
Patients' willingness to help others	30.0	30.0	17.7	8.5	5.4
Patient's previous awareness of donation	29.2	35.4	8.5	11.5	4.6
Barrier	**Very Significant**	**Somewhat Significant**	**Don't Know**	**Somewhat Insignificant**	**Very Insignificant**
Ethical barriers	27.7	39.2	6.2	15.4	2.3
Religious barriers	36.9	28.5	7.7	13.9	3.9
Lack of patient interest	22.3	36.9	17.7	10.8	2.3
Time constraints	47.7	28.5	5.4	6.2	3.1
Department flow/efficiency	51.5	25.4	3.9	5.4	3.1
Availability of staffing/personnel	64.6	16.9	2.3	3.1	3.1
Hospital costs	11.5	24.6	26.9	19.2	6.2
Patient privacy	20.0	30.8	10.0	20.8	9.2
Staff skill/confidence in discussing organ donation	37.7	38.5	3.9	9.2	1.5

are personally registered as organ donors. Most nurses in our study felt that the ED is an acceptable venue to promote organ donation, although the optimal mechanism to do so is less clear. Several facilitators were identified and supported by nurses, such as a patients' and society's support for organ donation in general, and the institutional culture of organ donation. Similarly, several barriers were deemed as significant, mainly centred around time spent, departmental efficiency, and personnel availability. A significant number of nurses also felt that ethical and religious barriers exist.

Some previous literature is consistent with our findings that nurses generally have a positive attitude towards organ donation (Ingram et al., 2002; Ozdag, 2001), but there is little previously published work regarding organ donation registration in the ED. Surprisingly, a majority of nurses felt that patients would not be open to registering consent while in the ED, which is in contrast to previously published literature (Ellis et al., 2019). Ellis et al. reported that the majority of ED patients would be supportive of the distribution of information regarding organ and tissue donation, and that one-third of patients who are not currently registered would consider registering to become a potential organ donor while in the ED waiting room (Ellis et al., 2019). This finding contrasts with what emergency nurses in the current study perceive about patients' open mindedness to ED organ donation registration. It is possible that nurses feel that patients visit the ED only for an acute medical reason and, therefore, would feel distracted by having their attention drawn to something that is unrelated to the ED visit. Nurses may also feel that patients should not be approached to discuss organ donation during a time when they need acute medical care, in order to avoid patients feeling that the care they receive may be impacted by their decision regarding becoming a registered organ donor.

This study has some limitations. The response rate of 130 nurses (10.2%) means that non-response bias cannot be ruled out and, therefore, our results may not be an accurate representation of the attitudes and opinions of all emergency nurses in Canada. This response rate is in keeping with a previous survey administered to the same distribution list (Hancock et al., 2017), which demonstrated a response rate of 11.4%. Internet-based surveys have been shown to have a significantly lower response rate than postal surveys in healthcare professionals (Cho et al., 2013). However, we were unable to find a mechanism that would enable us to target emergency nurses via post. The potential for selection bias on the sampling frame also exists, given that not all Canadian emergency nurses are registered as NENA members. The baseline characteristics of nurses in our sample are quite diverse, and it is unclear if this sample yields a true representation of emergency nurses in Canada. Due to the confidential nature of the NENA membership database, we were unable to examine characteristics of non-respondents in an attempt to assess for non-response bias. Additionally, it is possible that respondents who are registered donors themselves may be more likely to respond to a survey regarding organ donation.

Future research should aim to compare the results of this study with the attitudes and opinions of other key ED stakeholders to ultimately form the foundation of an implementation strategy that can be piloted in the ED. In addition, it may be of value to further explore nurses' perceptions of patients' willingness to register while in the ED. Furthermore, the barriers we have identified could be further explored using a qualitative approach to inform future implementation.

Conclusion

This study reveals that Canadian emergency nurses are very engaged and supportive of organ donation and the majority feel that the ED is an appropriate venue to promote organ donation. Public importance of increasing donation rates, the recognition of patients' willingness to help others, and strong institutional donation culture were all identified as facilitators to this important potential intervention in EDs. Some barriers were also identified, such as time constraints and departmental efficiency and flow.

Implications for Emergency Nurses

1. Emergency nurses largely support the concept of deceased organ donation, and most are registered organ donors.
2. Most emergency nurses are open to the promotion of organ donation registration in the ED.
3. Respondents would be most comfortable with organ donation organization personnel performing a face-to-face approach in speaking about organ donation
4. While respondents report generally supporting a registration intervention in the ED, the ideal mechanism to achieve this is not clear and requires further study.

Funding

Dr. Jeffrey Perry is supported by the Heart and Stroke Foundation of Ontario through a Mid-Career Award.

Dr. Michael Hartwick receives a salary as Regional Medical Lead Donation from Trillium Gift of Life Network, Ontario's organ donation organization.

Dr. Michael Hickey receives a salary as Hospital Donation Physician from Trillium Gift of Life Network, Ontario's organ donation organization.

This study was partially funded by a grant from the Department of Emergency Medicine, University of Ottawa.

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Appendix 1: Survey instrument

EMERGENCY NURSE ATTITUDES AND ACCEPTABILITY OF ORGAN AND TISSUE DONATION REGISTRATION IN THE EMERGENCY DEPARTMENT: A NATIONAL SURVEY

A. Professional Status and Practice Setting

1. Are you: ☐ Female ☐ Male

2. Year of birth: 19____ **Province of Practice:** ____

3. How many years have you been practicing nursing independently?
- Less than 5 years
- Between 5 and 10 years
- Between 10 and 20 years
- Greater than 20 years

4. To which religion do you most identify?
☐ Christian ☐ Buddhist ☐ Hindu ☐ Muslim ☐ Jewish ☐ Sikh ☐ Aboriginal ☐ Other (specify):
☐ None

5. In what setting do you perform *MOST* of your emergency nursing clinical activity?
- Teaching hospital
- Community / District general hospital: Teaching
- Community / District general hospital: Non-teaching
- Other (specify): _____

6. What is your current qualification?
- RN
- BN
- BScN
- MN (non-NP)
- LPN
- RPN
- NP
- Other (Specify):_____

7. Do you hold an official affiliation with a provincial organ donation organization?
- Yes
- No

B. Attitudes and Acceptability

1. Are you personally registered as an organ and tissue donor?
- Yes
- No

2. If no, what is the reason?
- I don't know how to register
- I don't have time to register
- I was not aware that it is possible to register as an organ donor
- Religious beliefs
- Personal beliefs
- Assumed non-suitability of organs due to medical problems
- I prefer not to donate my organs
- Other (specify):_____

3. In general, do you support the concept of deceased organ donation?

- Strongly support
- Somewhat support
- Neutral
- Somewhat oppose
- Strongly oppose

4. Provincial organ donation organizations should attempt to increase the number of registered organ donors:

- Strongly agree • Somewhat agree • Neither agree nor disagree • Somewhat disagree • Strongly disagree

5. The emergency department waiting area is an appropriate setting to disseminate information regarding organ and tissue donation to capable patients who do not need immediate attention and visitors:

- Strongly agree • Somewhat agree • Neither agree nor disagree • Somewhat disagree • Strongly disagree

6. The emergency department waiting area is an appropriate setting to offer patients and visitors opportunity to register as an organ and tissue donor while they await medical care:

- Strongly agree • Somewhat agree • Neither agree nor disagree • Somewhat disagree • Strongly disagree

7. Emergency department patients would be open to receiving information regarding deceased organ donation in ED waiting areas:

- Strongly agree • Somewhat agree • Neither agree nor disagree • Somewhat disagree • Strongly disagree

8. Emergency department patients would be open to being offered an immediate opportunity to register for deceased organ donation in ED waiting areas:

- Strongly agree • Somewhat agree • Neither agree nor disagree • Somewhat disagree • Strongly disagree

9. Emergency department patients would be open to being offered instructions on how to register as an organ donor in the future, following their ED visit:

- Strongly agree • Somewhat agree • Neither agree nor disagree • Somewhat disagree • Strongly disagree

10. If emergency department patients have an immediate opportunity to register as an organ donor, this should be facilitated by: (check all that are appropriate)

- Publicly posted signage with instructions
- Electronic devices available in waiting areas (iPad)
- Active approach by personnel
- Other:_____

11. There may be a number of individuals in the ED who may potentially approach patients and visitors regarding organ donation registration while they await medical care. As a nurse in your ED, please describe your comfort level with the following categories of personnel should they facilitate the approach:

		Very uncomfortable	Somewhat uncomfortable	Don't know/Unsure	Somewhat comfortable	Very comfortable
a.	ED physician/resident	•	•	•	•	•
b.	Medical student	•	•	•	•	•
c.	ED nurse	•	•	•	•	•
d.	ED administrative clerks	•	•	•	•	•
e.	Provincial organ donation organization staff	•	•	•	•	•
f.	Hospital volunteer	•	•	•	•	•

12. The following are potential facilitators to offering information regarding registration for organ donation in emergency department waiting areas. Please choose an option for each potential facilitator which you feel most appropriately describes the level of significance of the facilitator:

		Insignificant facilitator	Somewhat insignificant facilitator	Don't know/Unsure	Somewhat significant facilitator	Very significant facilitator
a.	Strong donation culture at institution	•	•	•	•	•
b.	Societal/public importance of increasing organ donation rates	•	•	•	•	•
c.	Patients' willingness to help others	•	•	•	•	•
d.	Patients' previous awareness of organ donation	•	•	•	•	•

Please indicate any other facilitators not mentioned above:

13. The following are potential barriers to offering information regarding registration for organ donation in emergency department waiting areas. Please choose an option for each potential barrier which you feel most appropriately describes the level of significance of the barrier:

		Insignificant barrier	Somewhat significant barrier	Very significant barrier	Don't know
e.	Staff or patient ethical barriers	•	•	•	•
f.	Staff or patient religious barriers	•	•	•	•
g.	Lack of patient interest	•	•	•	•
h.	Time constraints	•	•	•	•
i.	Department flow/efficiency	•	•	•	•
j.	Availability of staffing / personnel	•	•	•	•
k.	Hospital costs	•	•	•	•
l.	Patients' privacy	•	•	•	•
m.	Staff confidence in ability to discuss organ donation	•	•	•	•

Please indicate any other barriers not mentioned above:

Additional comments regarding this topic or questionnaire:

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Attitudes et acceptabilité de l'enregistrement des dons d'organes et de tissus dans les services d'urgence : Une enquête nationale auprès du personnel infirmier d'urgence

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Résumé

Introduction : À travers le monde, il y a une pénurie d'organes disponible à des fins de transplantations. Il est possible d'augmenter le nombre de personnes inscrites sur les registres de dons d'organes en promouvant l'inscription dans les services d'urgence

Méthodologie : Nous avons mené une enquête nationale pour déterminer les attitudes et les sentiments des infirmières des services d'urgence quant à la possibilité d'offrir aux patients des renseignements sur l'inscription au registre des donneurs d'organes dans les services d'urgence, ainsi qu'une occasion immédiate de s'inscrire.

Résultats : Nous avons obtenu 130 réponses (10,2 %). Parmi celles-ci, 61,5 % des infirmières estiment que le service des urgences est un endroit acceptable pour favoriser l'enregistrement des dons d'organes. De plus, 58,4 % considèrent que le service des urgences est un endroit convenable pour offrir aux patients et aux visiteurs la possibilité de s'inscrire immédiatement comme donneur d'organes et de tissus pendant qu'ils attendent des soins médicaux. Nous avons identifié plusieurs facteurs, facilitant et entravant une intervention potentielle visant à promouvoir l'enregistrement des dons d'organes dans les services d'urgence, tels que la conscientisation du public sur l'importance d'augmenter les taux de dons, la reconnaissance de la volonté des patients d'aider les autres et une solide culture institutionnelle du don. Certains obstacles ont également été identifiés, comme les contraintes de temps, le taux d'efficacité et le flux du département. Nous avons également constaté que 80 % des infirmières déclarent être inscrites comme donneurs d'organes.

Conclusions : Cette étude révèle que les infirmières d'urgence canadiennes sont très engagées et appuient le don d'organes. La majorité d'entre elles estiment que l'urgence est un lieu approprié pour promouvoir le don d'organes. Cependant, le mécanisme spécifique par lequel les patients se verront proposer par le personnel des services d'urgence des informations concernant l'inscription au registre des dons d'organes reste imprécis.

Introduction

Le besoin de dons d'organes pour les transplantations est toujours bien plus important que la disponibilité. En 2018, 223 Canadiens inscrits sur une liste de transplantation sont décédés pendant leur attente (Institut canadien d'information sur la santé, 2019). Une solution à ce problème est d'intensifier la sensibilisation du public et d'augmenter ainsi le nombre de citoyens qui s'inscrivent pour donner leurs organes après leur décès dans les registres provinciaux. Dans la plupart des provinces, les citoyens doivent enregistrer leur consentement

ISSN: 2293-3921 (print) | ISSN: 2563-2655 (online) | https://doi.org/10.29173/cjen140
Print publisher: Pappin Communications http://pappin.com | Online publisher: University of Alberta www.library.ualberta.ca/publishing/open-journals

au don d'organes après la mort au moyen d'un registre électronique. Au Canada, les organismes de don d'organes provinciaux obtiennent le consentement de la famille avant de procéder au don d'organes, quel que soit le statut d'enregistrement. Si le mandataire spécial du patient sait qu'une personne est inscrite, il est plus susceptible d'offrir son consentement pour procéder au don d'organes après la mort (Shah et coll., 2018 ; Siminoff et coll., 2001). Réaliser le souhait d'une personne de faire un don et aider dans un même temps une personne qui a besoin d'une greffe d'organe sera bénéfique pour toutes les parties concernées. Les citoyens canadiens soutiennent fortement (71 %) ou plutôt (25 %) le don d'organes après la mort circulatoire (Conseil canadien pour le don et la transplantation, 2005), mais certaines provinces ont de faibles taux d'inscription, comme la Colombie-Britannique et l'Alberta (20 % et 7 %, respectivement, en 2015) (Société canadienne du sang, 2016). En Ontario, environ 35 % de la population est inscrite (Réseau Trillium pour le don de vie, 2019).

La plupart des citoyens canadiens enregistrent leur consentement lors du renouvellement de leur carte d'assurance-maladie ou de leur permis de conduire (Rosenblum et coll., 2012), mais comme les taux d'enregistrement sont faibles, il faudrait employer d'autres stratégies. Compte tenu du grand nombre de patients qui se rendent dans les services d'urgence canadiens, la sensibilisation à l'enregistrement du don d'organes dans ceux-ci pourrait permettre d'élargir les registres de donneurs.

Puisque les membres du personnel infirmier sont des intervenants clés dans le fonctionnement des urgences, il est important de comprendre leur attitude et leur sentiment d'acceptabilité à l'égard de cette nouvelle intervention possible. Jusqu'à présent, les ouvrages consacrés au rôle des soins primaires et d'autres milieux de la santé dans la promotion du don d'organes sont peu nombreux (Jones et coll., 2017). Notre premier objectif était d'analyser les attitudes des infirmières des urgences et la susceptibilité de l'utilisation des urgences pour promouvoir l'inscription au don d'organes. De plus, nous avons examiné la perception des facteurs de facilitation et des obstacles, ainsi que le degré d'aisance du personnel infirmier quant aux différents types de prestataires qui abordent personnellement les patients aux urgences pour discuter de l'inscription au don d'organes. Ensuite, nous avons évalué le soutien des infirmières et infirmiers au don d'organes de personnes décédées et la proportion d'entre eux qui s'inscrivent personnellement au don.

Méthodes

Méthodologie et participants

La présente étude est une enquête transversale administrée par voie électronique auprès des infirmières d'urgence canadiennes. L'enquête a été distribuée aux 1 270 membres actifs de l'Association nationale des infirmières et infirmiers d'urgence (ANIIU). L'ANIIU est une association reconnue à l'échelle nationale qui réunit plus de 1000 infirmières et infirmiers autorisés et qui favorise les normes et les pratiques les plus élevées en matière de soins infirmiers d'urgence et de services d'urgence au Canada.

Élaboration de l'enquête

L'enquête a été élaborée sur mesure en modifiant la méthode de Dillman (Dillman, 2007). Afin d'élaborer le matériel d'enquête, nous avons d'abord réalisé une entrevue normalisée avec des intervenants spécialisés dans le don d'organes et la recherche clinique, dont le personnel infirmier et les médecins des soins intensifs et des urgences. Ce processus a été mené par deux méthodologues de recherche spécialisés dans l'élaboration d'enquêtes. Par la suite, des entretiens cognitifs ont été réalisés avec un groupe distinct de dix infirmières en soins intensifs. Dans ce contexte, les participants ont été invités à s'autoadministrer le questionnaire sur papier en observation et à exprimer ouvertement leurs réflexions, observations et préoccupations. Cette étape a permis de valider et de sensibiliser le contenu, la langue et la grammaire. Après quelques petites modifications, nous avons ensuite traduit l'enquête vers le français et distribué cette version préliminaire à 10 infirmières d'urgence locales francophones et anglophones par voie électronique afin d'identifier tout problème potentiel lié à la procédure ou au remplissage de l'enquête. Aucune modification n'a été nécessaire après la première phase et ces réponses ont donc été incluses dans l'analyse des données. L'enquête finale comportait au total 24 questions réparties en quatre volets et administrées à l'aide d'une échelle de Likert en cinq points : données démographiques et renseignements sur la pratique, attitudes à l'égard du don d'organes, acceptabilité de l'enregistrement du don d'organes à l'urgence et perception des facilitateurs et des difficultés associées (annexe 1). Cette étude a été approuvée par le Conseil d'éthique de la recherche du Réseau des sciences de la santé d'Ottawa.

Administration de l'enquête

L'enquête a été transmise par courrier électronique par un lien Web à tous les membres actifs de la liste de distribution de l'ANIIU. Cette première communication consistait en une brève introduction précisant la justification de l'enquête, l'importance de l'avis des infirmières sur le sujet et le fait de répondre à l'enquête signifiait un consentement présumé à y participer. Deux semaines suivant la première demande, un courriel de rappel a été envoyé. L'enquête était disponible en anglais et en français et pouvait être remplie entre le 15 décembre 2019 et le 15 février 2020 à l'aide du logiciel en ligne SelectSurvey.NETTM (ClassApps, Kansas City, MO, É.-U.). Puisque la base de données des membres de l'ANIIU est confidentielle, nous n'avons pas pu déterminer les caractéristiques des non-répondants.

Analyse des données

Les réponses anonymes ont été inscrites dans une feuille Microsoft Excel générée automatiquement par SelectSurvey.NETTM et utilisées pour l'analyse. Des statistiques descriptives ont été utilisées pour résumer les réponses des infirmières. Les données ont été analysées à l'aide de la version 9.2 de SAS (SAS Institute, Cary, NC, USA).

Résultats

Répondants

1 270 infirmières et infirmiers d'urgence ont été invités à participer à l'étude par le biais de la liste de diffusion électronique de l'ANIIU. Parmi ceux-ci, 130 réponses ont été reçues de la part de participants admissibles, ce qui représente un taux de réponse de 10,2 %. Les informations démographiques des répondants sont présentées dans le tableau 1. Les caractéristiques des répondants

Tableau 1

Répartition des caractéristiques des répondants (n=130)

Caractéristiques	Fréquence (%) des répondants
Femme	107 (72,3)
Âge moyen, années (SD)	42,8 (8,4)
Années d'expérience dans la pratique	
<5	15 (11,5)
5–10	29 (22,3)
11–20	37 (28,5)
>20	49 (37,7)
Religious Affiliation	
Chrétien	66 (50,8)
Aucune	53 (40,8)
Autre	5 (3,8)
Hindouiste	2 (1,5)
Juif	2 (1,5)
Musulman	2 (1,5)
Sikh	0
Province ou territoire d'exercice	
Ontario	48 (36,9)
Alberta	22 (16,9)
Colombie-Britannique	21 (16,2)
Nouvelle-Écosse	9 (6,9)
Saskatchewan	8 (6,2)
Manitoba	7 (5,4)
Québec	5 (3,8)
Terre-Neuve-et-Labrador	4 (3,1)
Nouveau-Brunswick	3 (2,3)
Territoires du Nord-Ouest	0
Nunavut	0
Île-du-Prince-Édouard	0
Territoire du Yukon	0
Absent	3 (2,3)
Cadre d'exercice	
Universitaire/Tertiaire	63 (48,5)
Communauté (enseignant)	45 (34,6)
Communauté (non enseignant)	19 (14,6)
Rural	1 (0,8)
Autre	2 (2,3)
Titre professionnel	
Infirmière/Infirmier autorisé·e (baccalauréat en sciences infirmières)	63 (48,5)
Infirmière/Infirmier autorisé·e	34 (26,2)
Infirmière Infirmier autorisé·e (baccalauréat en soins infirmiers)	23 (17,7)
Autre	8 (6,2)
Infirmière-praticienne/Infirmier-praticien	1 (0,8)
Infirmière auxiliaire autorisée	1 (0,8)
Niveau d'études le plus élevé	
Baccalauréat	81 (62,3)
Diplôme universitaire	23 (17,7)
Maîtrise	15 (11,5)
Programme de formation en milieu hospitalier	5 (3,8)
Autre	5 (3,8)
Doctorat	1 (0,8)
Employé par une organisation provinciale de don d'organes	
Oui	3 (2,3)
Non	117 (90)
Sans réponse	10 (7,7)

révèlent un éclectisme quant à la formation, aux types de formation et à la quantité d'expérience. Bien que l'enquête ait été distribuée à l'échelle nationale, la majorité des réponses provenaient d'infirmières exerçant en Ontario (36,9 %), en Alberta (16,9 %) et en Colombie-Britannique (16,2 %).

Attitudes et acceptabilité de l'enregistrement du don d'organes dans les services d'urgence

Selon le tableau 2, 104 (80 %) des répondants déclarent être inscrits comme donneurs d'organes. La raison la plus souvent invoquée par ceux qui ne sont pas inscrits est qu'ils ne savent pas où s'inscrire..

La plupart des répondants appuient fortement ou plutôt fortement le concept général du don d'organes de personnes décédées (110 ; 84,6 % et 100 ; 76,9 %), respectivement ; tableau 3). De plus, 80 (61,5 %) des répondants appuient fortement ou plutôt fortement la diffusion d'informations sur le don d'organes aux patients dans la salle d'attente des urgences, et 76 (58,4 %) appuient fortement ou plutôt fortement le fait d'offrir aux patients et aux visiteurs des urgences la possibilité de s'inscrire immédiatement pendant qu'ils attendent des soins médicaux. Une minorité de répondants estiment que les patients de l'urgence seraient réceptifs à recevoir de l'information sur le don d'organes à l'urgence (40 ; 38,3 %), tableau 3). Par ailleurs, 47 (36,2 %) pensent que les patients des services d'urgence seraient ouverts à l'idée qu'on leur offre immédiatement la possibilité de s'inscrire comme donneur d'organes aux services d'urgence. Toutefois, 86 (66,2 %) estiment que les patients de l'urgence ne seraient pas ouverts à recevoir des instructions sur la façon de s'inscrire comme donneur d'organes à la suite de leur consultation à l'urgence.

Tableau 2

Statut d'enregistrement de dons d'organes des répondants et raisons du non-enregistrement (N=130)

Statut d'enregistrement	# (%) de répondants
Enregistrés	104 (80)
Non — enregistrés	22 (16,9)
Sans réponse	4 (3,1)
Raisons du non-enregistrement	
Je ne sais pas comment m'inscrire	4 (3,1)
Je n'ai pas le temps de m'inscrire	2 (1,5)
Croyances religieuses	2 (1,5)
Croyances personnelles	3 (2,3)
Mes organes ne conviennent pas en raison de troubles médicaux	3 (2,3)
Je préfère ne pas donner mes organes	1 (0,8)
Autre	5 (3,9)

Tableau 3

Attitudes et acceptabilité de l'enregistrement du don d'organes et de tissus dans le service des urgences (%, N=130)

Question ou affirmation	Appuie fermement	Plutôt favorable	Neutre	Plutôt opposé	Fortement opposé
1. En général, êtes-vous favorable au concept de don d'organes de personnes décédées ?	84,6	6,9	5,4	0,8	2,3
2. Les organismes provinciaux de dons d'organes doivent tenter d'augmenter le nombre de donneurs d'organes enregistrés	76,9	15,4	6,9	0,8	0
3. La salle d'attente des urgences est un lieu approprié pour diffuser des renseignements sur le don d'organes et de tissus auprès des patients capables qui n'ont pas besoin d'une attention immédiate et aux visiteurs	22,3	39,2	23,1	12,3	3,1
4. La salle d'attente du service des urgences est un endroit approprié pour offrir aux patients et aux visiteurs la possibilité de s'inscrire immédiatement comme donneur d'organes et de tissus en attendant les soins médicaux	19,2	39,2	25,9	13,4	2,3
5. Les patients en salle d'attente aux services d'urgence seraient réceptifs à l'idée de recevoir des informations relatives au don d'organes de personnes décédées	4,6	26,2	43,5	22,3	3,4
6. Les patients des services d'urgence seraient ouverts à l'idée qu'on leur propose la possibilité de s'inscrire immédiatement pour le don d'organes de personnes décédées dans les salles d'attente des urgences.	6,2	30	33,8	27,7	2,3
7. Les patients des services d'urgence pourraient être disposés à recevoir des directives sur la façon de s'inscrire comme donneur d'organes à l'avenir, à la suite de leur visite au service des urgences	13,1	53,1	26,8	6,2	0,8

Tableau 4

Niveau d'aisance du personnel infirmier à l'égard de divers types d'intervenants pour aborder activement les patients et les visiteurs à l'urgence (%, N=128)

Type de prestataire	Très à l'aise	Plutôt à l'aise	Je n'en sais rien	Plutôt mal à l'aise	Très mal à l'aise
Médecin d'urgence	40,0	19,2	19,3	6,9	14,6
Interne aux urgences	30,8	20,0	23,0	13,1	13,1
Étudiant en médecine	13,9	16,9	31,5	19,2	18,5
Infirmière d'urgence	22,3	26,2	19,9	15,4	16,2
Commis administratifs	10,0	16,9	23,9	21,5	27,7
Personnel d'un organisme provincial de don d'organes	63,9	19,2	10,7	3,1	3,1
Personnel de recherche	40,0	23,9	23,0	6,9	6,2
Bénévole de l'hôpital	10,0	10,8	27,6	15,4	36,2

Figure 1

Appui aux méthodes de diffusion de l'information sur le don d'organes aux patients des services d'urgence (%, N=129)

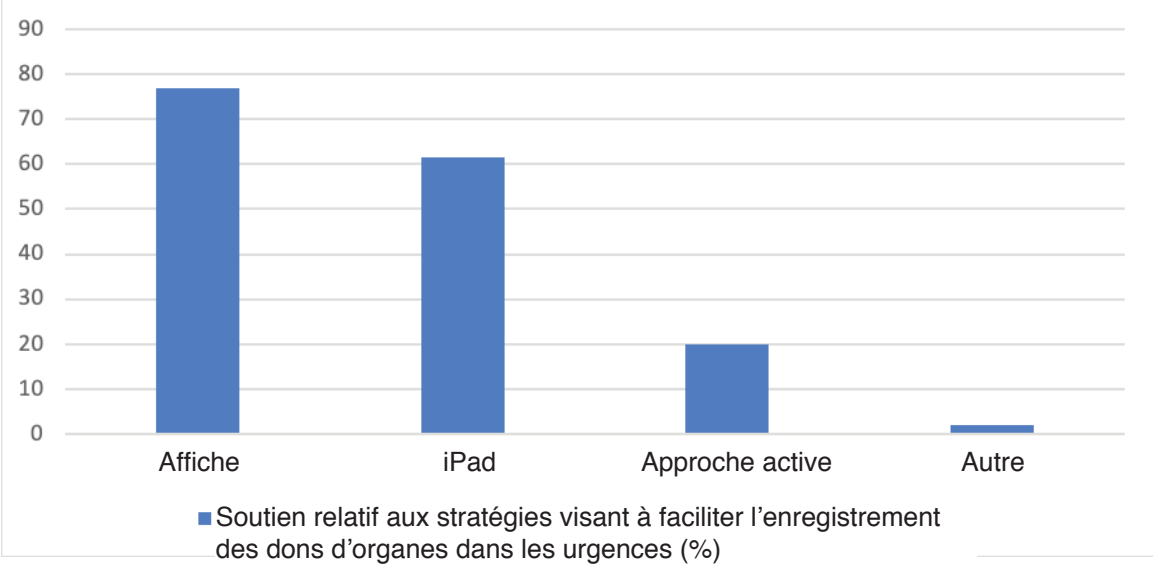

Tableau 5

Perception des obstacles potentiels et des éléments facilitant l'enregistrement du don d'organes aux urgences (%, N=127)

Éléments facilitateurs	**Très important**	**Plutôt important**	**Je n'en sais rien**	**Quelque peu important**	**Pas du tout important**
Une forte culture du don au sein de l'institution	23,9	35,4	13,9	14,6	4,6
Importance sociétale/public de l'augmentation des taux de dons	36,2	33,9	6,9	7,7	6,9
Volonté des patients d'aider les autres	30,0	30,0	17,7	8,5	5,4
Sensibilisation antérieure du patient au don d'organes	29,2	35,4	8,5	11,5	4,6
Obstacles	**Très important**	**Plutôt important**	**Je n'en sais rien**	**Quelque peu important**	**Pas du tout important**
Entraves éthiques	27,7	39,2	6,2	15,4	2,3
Entraves religieuses	36,9	28,5	7,7	13,9	3,9
Manque d'intérêt des patients	22,3	36,9	17,7	10,8	2,3
Contraintes de temps	47,7	28,5	5,4	6,2	3,1
Flux ou efficacité du département	51,5	25,4	3,9	5,4	3,1
Disponibilité du Personnel	64,6	16,9	2,3	3,1	3,1
Coûts hospitaliers	11,5	24,6	26,9	19,2	6,2
Vie privée du patient	20,0	30,8	10,0	20,8	9,2
La compétence et la confiance du personnel pour discuter du don d'organes	37,7	38,5	3,9	9,2	1,5

Niveaux de confort vis-à-vis de l'approche active par type de prestataire

Nous avons constaté que 108 répondants étaient soit très (83,1 %) ou assez à l'aise avec le fait que le personnel des organisations provinciales de dons d'organes fasse une approche personnelle (tableau 4). En contraste, 77 (59,2 %) et 66 (50,8 %) respectivement, étaient très ou assez à l'aise avec le fait que le médecin des urgences et les médecins résidents des urgences abordent les patients au sujet du don d'organes aux urgences. 83 infirmières (63,9 %) étaient très ou assez à l'aise que ce soit le personnel de recherche qui aborde le sujet. 48,5 % des répondants se sentaient très ou plutôt à l'aise que ce soit les infirmières des urgences, et une minorité était très ou « plutôt à l'aise avec l'idée que les étudiants en médecine, les employés administratifs et les bénévoles des hôpitaux abordent le sujet avec les patients (40 ou 30,8 % ; 35 ou 26,9 % ; et 27 ou 20,8 %), respectivement).

Appui des répondants envers les méthodes de diffusion de l'information sur le don d'organes aux patients des services d'urgence

100 répondants (76,9 %) estiment que la signalisation devrait être utilisée et affichée dans les salles d'attente des urgences et 97 (74,6 %) pensent qu'il serait acceptable d'offrir des informations directement aux patients. 80 (61,5 %) ont indiqué qu'il serait acceptable de le faire par le biais d'un appareil électronique (par exemple, un iPad).

Perception des facteurs et des obstacles potentiels à la promotion de l'inscription au don d'organes aux urgences

La majorité des infirmières et infirmiers pensent que de nombreux facteurs peuvent jouer un rôle dans la promotion de l'enregistrement des dons d'organes aux urgences. 91 (70,1 %) des répondant(e)s estiment que l'importance sociétale ou publique de l'augmentation du taux de dons est un facteur de facilitation très ou assez important. La sensibilisation antérieure du patient au don, sa volonté d'aider les autres et l'existence d'une forte culture du don de soi dans l'établissement sont des facteurs qui ont été qualifiés de très ou assez importants par 84 (64,6 %), 78 (60 %) et 77 (59,3 %) des répondants, respectivement.

Au tableau 5, plusieurs obstacles à la réflexion sur l'enregistrement des dons d'organes dans les salles d'attente des urgences, considérés comme très ou assez importants par le personnel infirmier, sont énumérés. Les obstacles logistiques tels que les contraintes de temps 99 (76,2 %) et la disponibilité du personnel (106 ; 81,5 %) ont été signalés plus fréquemment, suivis par ceux liés à l'éthique (87 ; 66,9 %) et à la religion (85 ; 65,4 %).

Analyse

Notre étude porte sur l'attitude des infirmières des urgences et l'acceptabilité de l'utilisation possible de la salle d'attente des urgences pour diffuser des renseignements sur le don d'organes de personnes décédées et offrir aux patients et aux visiteurs la possibilité de devenir des donneurs d'organes inscrits. La grande majorité des infirmières sont en accord avec le concept de don d'organes de personnes décédées et 104 (80,0 %) des infirmières et infirmiers de notre échantillon sont elles-mêmes inscrits comme donneurs d'organes. La plupart des infirmières de notre étude sont d'avis que le service d'urgence est un lieu acceptable pour promouvoir le don d'organes, bien que le meilleur moyen d'y parvenir soit moins clair. Plusieurs facteurs ont été identifiés et soutenus par les infirmières, tels que le soutien des patients et de la société en faveur du don d'organes en général, et la culture institutionnelle du don d'organes. Parallèlement, plusieurs obstacles ont été jugés importants, qui concernent principalement le temps consacré à la diffusion, l'efficacité du service et la disponibilité du personnel. Un nombre important d'infirmières et d'infirmiers estiment également qu'il existe des obstacles éthiques et religieux.

Certaines études précédentes démontrent que les infirmières ont généralement une attitude positive à l'égard du don d'organes (Ingram et coll., 2002 ; Ozdag, 2001), mais il existe peu de travaux publiés sur l'enregistrement du don d'organes aux urgences. Ce qui est étonnant, c'est qu'une majorité d'infirmières et d'infirmiers estiment que les patients ne seraient pas ouverts à l'enregistrement du consentement pendant qu'ils sont aux urgences, ce qui est le contraire de la littérature publiée précédemment (Ellis et coll., 2019). Les mêmes auteurs ont révélé que la majorité des patients des urgences seraient favorables à la distribution d'informations concernant le don d'organes et de tissus, et qu'un tiers des patients qui ne sont pas actuellement inscrits envisageraient de s'inscrire pour devenir un donneur d'organes potentiel pendant qu'ils sont dans la salle d'attente des urgences (Ellis et coll., 2019). Ce résultat est tout à fait contraire à ce que perçoivent les infirmières des urgences dans la présente étude quant à l'ouverture d'esprit des patients à l'égard de l'inscription au don d'organes aux urgences. Il est possible que les infirmières aient l'impression que les patients ne se rendent aux urgences que pour une raison médicale aiguë en général, et que les patients se sentiraient donc désintéressés en voyant leur attention attirée sur quelque chose qui n'a rien à voir avec leur visite aux urgences.

Nurses may also feel that patients should not be approached to discuss organ donation during a time when they are in need of acute medical care, in order to avoid patients' feeling that the care they receive may be impacted by their decision regarding becoming a registered organ donor.

La présente étude comporte certaines limites. Le taux de réponse de 130 infirmières (10,2 %) signifie que le biais de non-réponse ne peut être exclu et que, par conséquent, nos résultats peuvent ne pas refléter fidèlement les attitudes et les opinions de toutes les infirmières d'urgence au Canada. Ce taux de réponse est conforme à une enquête précédente effectuée auprès de la même liste de diffusion (Hancock et coll., 2017) qui a démontré un taux de réponse de 11,4 %. On observe que les enquêtes sur Internet ont un taux de réponse significativement plus faible que les enquêtes postales chez les professionnels de santé (Cho et coll., 2013), cependant, nous n'avons pas pu trouver un moyen qui nous permettrait de cibler les infirmières d'urgence par voie postale. Un biais de sélection est également possible dans la base de sondage, étant donné que les infirmières d'urgence canadiennes ne sont pas toutes

inscrites à titre de membre de l'ANIIU. Les caractéristiques de référence des infirmières de notre échantillon sont très diverses, et il n'est pas certain que cet échantillon constitue une véritable représentation des infirmières d'urgence au Canada. Vu la nature confidentielle de la base de données des membres de l'ANIIU, nous n'avons pas pu examiner les caractéristiques des non-répondants afin d'évaluer le biais de non-réponse. Il est également possible que les répondants qui sont eux-mêmes des donneurs enregistrés soient plus enclins à répondre à une enquête sur le don d'organes.

À l'avenir, les recherches devraient viser à comparer les résultats de cette étude avec les attitudes et les opinions d'autres parties prenantes clés de l'urgence afin de constituer le fondement d'une stratégie de mise en œuvre qui pourrait être expérimentée dans l'urgence. Enfin, il pourrait être utile d'étudier plus précisément la perception qu'ont les infirmières de la volonté des patients de s'enregistrer pendant leur séjour aux urgences. De plus, les obstacles que nous avons identifiés pourraient être étudiés de manière plus approfondie à l'aide d'une approche qualitative afin de mieux orienter la mise en œuvre future.

Conclusion

Cette étude révèle que les infirmières et infirmiers d'urgence au Canada sont très engagés et favorables au don d'organes et que la majorité d'entre eux estiment que l'urgence est un lieu approprié pour promouvoir le don d'organes. L'importance pour le public d'augmenter le taux de dons, la reconnaissance de la volonté des patients d'aider autrui et une forte culture institutionnelle du don de soi ont toutes été identifiées comme des facteurs facilitant cette importante intervention potentielle dans les services d'urgence. Certains obstacles ont aussi été relevés, comme les contraintes de temps, l'efficacité et le flux des services.

Implications pour les infirmières d'urgence

1. Les infirmières et infirmiers d'urgence appuient largement le concept de don d'organes de personnes décédées, et la plupart d'entre eux sont des donneurs d'organes enregistrés
2. La majorité des infirmières d'urgence sont disposées à promouvoir l'enregistrement des dons d'organes aux urgences
3. Les répondants seraient plus à l'aise si le personnel organisant le don d'organes avait une approche en tête à tête pour parler du don d'organes
4. Même si les répondants se disent généralement favorables à une intervention d'enregistrement de dons d'organes dans les urgences, le moyen idéal d'y parvenir n'est pas clair et nécessite une étude plus approfondie

Financement

Le Dr Jeffrey Perry est soutenu par la Fondation des maladies du cœur de l'Ontario par le biais d'une bourse de mi-carrière.

Le Dr Michael Hartwick reçoit un salaire en tant que responsable médical régional du don d'organes du Réseau Trillium pour le don de vie, l'organisme ontarien de don d'organes.

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Cette étude a été partiellement financée par une subvention du département de médecine d'urgence de l'Université d'Ottawa.

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Annexe 1 : Instrument d'enquête

ATTITUDES DU PERSONNEL INFIRMIER D'URGENCE ET ACCEPTABILITÉ DE L'ENREGISTREMENT DES DONS D'ORGANES ET DE TISSUS DANS LES SERVICES D'URGENCE : UNE ENQUÊTE NATIONALE

A. Statut professionnel et cadre d'exercice

1. **Sexe :** • Femme • Homme

2. **Année de naissance :** 19____ **Province d'exercice :** ____

3. **Depuis combien d'années pratiquez-vous le métier d'infirmière ou infirmier de façon indépendante ?**

   • Moins de 5 ans

   • Entre 5 et 10 ans

   • Entre 10 et 20 ans

   • Plus de 20 ans

4. À quelle religion vous identifies-vous le plus **?**

   • Chrétienne • Bouddhiste • Hindou • Musulmane • Juive • Sikh • Indigène • Autre (précisez) :

   • Aucune

5. **Dans quel cadre exercez-vous la PLUS grande partie de votre activité clinique en soins infirmiers d'urgence ?**

   • Hôpital universitaire

   • Hôpital d'enseignement communautaire/de district

   • Hôpital sans-enseignement communautaire/de district

   • Autre (précisez) : _____

6. **Quel est votre titre actuel ?**

   • IA • IAA

   • BN • Inf.aux.

   • B.Sc.Inf • IP

   • M.Sc.Inf. (non-IP) • Autre (précisez) : _____

7. **Avez-vous une affiliation officielle avec un organisme provincial de don d'organes ?**

• Oui

• Non

B. Attitudes et acceptabilité

1. Êtes-vous inscrit comme donneur d'**organes et de tissus ?**

   • Oui

   • Non

2. **Sinon, pourquoi ?**

   • Je ne sais pas comment m'inscrire

   • Je n'ai pas le temps de m'inscrire

   • Je ne savais pas qu'il était possible de s'inscrire comme donneur d'organes

   • Croyances religieuses

   • Croyances personnelles

   • Présomption d'inadmissibilité des organes en raison de problèmes médicaux

   • Je préfère ne pas donner mes organes

   • Autre (précisez) : _____

3. **En général, êtes-vous favorable au concept de don d'organes de personnes décédées ?**

   • Appuie fermement

   • Plutôt favorable

   • Neutre

   • Plutôt opposé

   • Fortement opposé

4. **Les organismes provinciaux de dons d'organes doivent tenter d'augmenter le nombre de donneurs d'organes enregistrés :**

   • Appuie fermement • Plutôt favorable • Neutre • Plutôt opposé • Fortement opposé

5. **La salle d'attente des urgences est un lieu approprié pour diffuser des renseignements sur le don d'organes et de tissus auprès des patients capables qui n'ont pas besoin d'une attention immédiate et aux visiteurs :**

   • Appuie fermement • Plutôt favorable • Neutre • Plutôt opposé • Fortement opposé

6. **La salle d'attente du service des urgences est un endroit approprié pour offrir aux patients et aux visiteurs la possibilité de s'inscrire immédiatement comme donneur d'organes et de tissus en attendant les soins médicaux :**

   • Appuie fermement • Plutôt favorable • Neutre • Plutôt opposé • Fortement opposé

7. **Les patients en salle d'attente aux services d'urgence seraient réceptifs à l'idée de recevoir des informations relatives au don d'organes de personnes décédées :**

   • Appuie fermement • Plutôt favorable • Neutre • Plutôt opposé • Fortement opposé

8. **Les patients des services d'urgence seraient ouverts à l'idée qu'on leur propose la possibilité de s'inscrire immédiatement pour le don d'organes de personnes décédées dans les salles d'attente des urgences**

   • Appuie fermement • Plutôt favorable • Neutre • Plutôt opposé • Fortement opposé

9. **Les patients des services d'urgence pourraient être disposés à recevoir des directives sur la façon de s'inscrire comme donneur d'organes à l'avenir, à la suite de leur visite au service des urgences :**

   • Appuie fermement • Plutôt favorable • Neutre • Plutôt opposé • Fortement opposé

10. **Si les patients des services d'urgence ont la possibilité de s'inscrire immédiatement comme donneurs d'organes, cette démarche devrait être effectuée de la manière suivante : (cochez toutes les cases appropriées)**

    • Affiches publiques avec instructions

    • Appareils électroniques disponibles dans les salles d'attente (iPad)

    • Démarche active du personnel

    • Autre : _____

11. **Il peut y avoir un certain nombre de personnes dans le service d'urgence qui peuvent aborder les patients et les visiteurs concernant l'inscription au don d'organes pendant qu'ils attendent des soins médicaux. En tant qu'infirmier(ère) dans votre service d'urgence, précisez dans quelle mesure vous vous sentez à l'aise avec les catégories de personnel suivantes, si elles devaient faciliter cette approche :**

	Très mal à l'aise	Plutôt mal à l'aise	Je n'en sais rien/ incertain(e)	Plutôt à l'aise	Très à l'aise
Médecin/interne aux urgences	•	•	•	•	•
Étudiant en médecine	•	•	•	•	•
Infirmière d'urgence	•	•	•	•	•
Commis administratifs	•	•	•	•	•
Personnel d'un organisme provincial de don d'organes	•	•	•	•	•
Bénévole de l'hôpital	•	•	•	•	•

12. **Les éléments suivants sont des facteurs potentiels facilitant la diffusion d'informations sur l'inscription au don d'organes dans les salles d'attente des services d'urgence. Pour chaque facilitateur potentiel, veuillez choisir l'option qui, selon vous, décrit le mieux son niveau d'importance :**

	Pas du tout important	Quelque peu important	Je n'en sais rien/ incertain(e)	Plutôt important	Très important
a. Une forte culture du don au sein de l'institution	•	•	•	•	•
b. Importance sociétale/ public de l'augmentation des taux de dons	•	•	•	•	•
c. Volonté des patients d'aider les autres	•	•	•	•	•
d. Sensibilisation antérieure du patient au don d'organes	•	•	•	•	•

Veuillez indiquer tout autre facilitateur non mentionné ci-dessus :

13. Les points suivants sont des obstacles possibles à la diffusion d'informations sur l'inscription au don d'organes dans les salles d'attente des services d'urgence. Pour chaque obstacle possible, veuillez choisir l'option qui, selon vous, décrit au mieux le niveau d'importance de l'obstacle :

	Pas du tout important	Quelque peu important	Très important	Je n'en sais rien/incertain(e)
Obstacles éthiques liés au personnel ou aux patients	•	•	•	•
Obstacles religieux du personnel ou des patients	•	•	•	•
Manque d'intérêt des patients	•	•	•	•
Contraintes de temps	•	•	•	•
Flux ou efficacité du département	•	•	•	•
Disponibilité du Personnel	•	•	•	•
Coûts hospitaliers	•	•	•	•
Vie privée du patient	•	•	•	•
La compétence et la confiance du personnel pour discuter du don d'organes	•	•	•	•

Veuillez indiquer tout autre obstacle qui ne figure pas ci-dessus :

Commentaires additionnels concernant ce sujet ou ce questionnaire :

ENC(C) Review Questions

Section Editor: Heather McLellan, MEd, BN, RN, CEN, CFRN
Authors: Margaret Dymond, BSN, RN, ENC(C), Leanne Tyler, MR, RN, MHM, ENC(C)

1. You are working at triage and a bed has just become available in the department. According to Canadian Triage and Acuity Scale (CTAS) guidelines, which of the following patients should be assigned the highest triage score and assigned to the available bed?
A. 25-year-old male with 10 cm laceration to right forearm from skill saw blade. Pressure dressing in place, bleeding controlled. Neurovascular status to the right upper limb is intact. Pain level is 4/10.
B. 40-year-old male with "heartburn" after playing hockey. He went out for beer and wings after the game. He arrives pale and nauseated, with a serum glucose level of 11 mmol/L. His past medical history includes diabetes and heavy smoking. He denies drug use.
C. 70-year-old female with fractured left hip from fall at home, standing height. Left leg is externally rotated and shortened. Neurovascular status to the left lower limb is intact. Vital signs are stable; alert and oriented. Pain level is 5/10.
D. 28-year-old female with mild abdominal cramping and moderate vaginal bleeding at 13 weeks gestation. Blood pressure (BP) is 100/60 mmHg, heart rate (HR) is 94 beats/minute (bpm), and temperature (Temp) is 37.3°C. She is anxious and crying; her husband is with her.

2. A three-year old-child is brought to the emergency department (ED) by her parents. Her mother states she has had a fever and no appetite for two days. Which of the triage nurse's findings below is <u>not</u> a component of the pediatric assessment triangle (PAT)?
A. Pallor to mucous membranes
B. Intercostal and substernal retractions
C. Limp muscle tone, uninterested in surroundings
D. Decreased urine output for 24 hours

3. Which of the following assessment findings is classic for acute angle-closure glaucoma?
A. Severe, sudden eye pain
B. Mild, progressive eye pain
C. Grey floating objects
D. Flashes of light

4. Which of the following is <u>not</u> a cause of rhabdomyolysis?
A. Toxic ingestion
B. Crush injury
C. Hypotension
D. Overexertion

5. Which of the following are risk factors for ectopic pregnancy? (Choose all that apply)
A. Previous history of sexually transmitted infections
B. In vitro fertilization (IVF)
C. Maternal smoking
D. Chromosomal anomalies

Answer Key with Rationale

1. Correct answer: B

A 40-year-old male patient with signs/symptoms that are suspicious for a cardiac event should be assigned a higher triage score (CTAS Level 2) (Canadian Association of Emergency Physicians [CAEP], 2012, p. 18) and be assigned to the next available bed. His past medical history of diabetes and heavy smoking also increase his risk for acute coronary syndrome (ACS) (Foley & Sweet, 2019, pp. 234-235).

A 25-year-old male patient with a 10 cm laceration for which bleeding is controlled and neurovascular status to the limb is intact can be assigned to the waiting room (CTAS Level 4). His pain level (4/10; acute, peripheral), neurovascular status to the limb, and overall hemodynamic stability must be reassessed as per CTAS guidelines (i.e., every 60 minutes) (CAEP, 2012, p. 15).

A 70-year-old female patient with suspected fractured hip from a fall (standing height) and hemodynamic stability may also be assigned to the waiting room; however, the nurse must recognize the potential for deterioration in this patient (CTAS Level 3) (CAEP, 2012, p. 18).

A 28-year-old female patient with mild abdominal cramping and moderate vaginal bleeding at 13 weeks (< 20 weeks) gestation may also be assigned to the waiting room. As above, the triage nurse must recognize that the patient's vital signs are near lower (BP) and upper (HR) limits indicating the potential for deterioration. CTAS Level 3 may be appropriate for this patient (CAEP, 2012, p. 23).

Note: These triage scenarios are designed as a learning tool only. The triage process is complex and dynamic, with more comprehensive patient data upon which to base one's triage assessment and assignment of triage acuity level.

2. Correct answer: D

Although decreased urine output may be a sign of circulatory compromise (e.g., dehydration), urine output itself is not a component of the PAT. The three components of the PAT include: general appearance, breathing, and circulation; this tool assists the nurse in identifying the critically ill pediatric patient or one

ISSN: 2293-3921 (print) | ISSN: 2563-2655 (online) | https://doi.org/10.29173/cjen125
Print publisher: Pappin Communications http://pappin.com | Online publisher: University of Alberta www.library.ualberta.ca/publishing/open-journals

who is at risk for sudden deterioration (CAEP, 2012, pp. 38-39). A pediatric patient with signs of compromise in general appearance (e.g., limp muscle tone, uninterested in surroundings), breathing (e.g., intercostal/substernal retractions), and/or circulation (e.g., pallor to mucous membranes) requires immediate or urgent intervention.

3. Correct answer: A

Severe, sudden eye pain is the cardinal sign of acute angle glaucoma. Headache, nausea, and/or vomiting often accompany the pain. If not recognized and treated promptly, the dramatic increase in intraocular pressure may lead to permanent damage to corneal endothelium, lens, iris, optic nerve, and retina, causing blindness. Mild, progressive eye pain may be indicative of ocular conditions such as conjunctivitis and conjunctival/corneal foreign body, as irritation progressively worsens (Woods, 2018, pp. 256-257). Grey floating objects ("floaters") and flashes of light are symptoms of retinal detachment (Nolan-Kelley, 2019, pp. 374-375). Generally, observe for these four red flags or cardinal symptoms for all eye conditions: 1) change in vision (i.e., blurring, blindness, diplopia), 2) change in the appearance of the eye (i.e., redness, hazy pupil/iris, cloudiness), 3) discomfort/pain, and 4) history of eye trauma (Nolan-Kelley, 2019, pp. 365-366).

4. Correct answer: C

Hypotension does not lead to rhabdomyolysis. If not corrected, hypotension leads to decreased renal perfusion and acute kidney injury (AKI), specifically prerenal AKI (Baxter, 2020, p. 273). Rhabdomyolysis involves the destruction of skeletal muscle cells which may in turn lead to AKI as well (intrarenal, acute tubular necrosis [ATN]). Toxic ingestion (e.g., "statin" drug class), crush injury (e.g., prolonged entrapment), and overexertion (e.g., endurance athletes) are potential causes of rhabdomyolysis as myoglobin is released into the blood. Fluid shifts from the intravascular to interstitial space, leading to hypovolemia and decreased renal perfusion (prerenal AKI) (Baxter, 2020, p. 275). As myoglobin accumulates in the blood, it becomes an endogenous toxin compromising the kidneys' ability to eliminate it from the body. Intrarenal AKI (ATN) ensues (Lough, 2022b, p. 654).

5. Correct answer: A, B, C

There are multiple factors that can contribute to ectopic pregnancy which is a pregnancy that implants outside of the uterus. Among the most common factors are those that cause anomalies in the fallopian tubes such as the scarring associated with pelvic inflammatory disease (Jordan, 2020). Bouyer et al. (2003) identify smoking as a risk factor for ectopic pregnancy with a potential association between smoking and reduced tubal motility. There is some research that reports an increased risk of ectopic implantation with in vitro fertilization and other assisted reproduction methods (Tulandi, 2021). Chromosomal abnormalities is a contributing factor to spontaneous abortion (Jordan, 2020).

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Questions de révision pour l'examen de CSU(C)

Rédactrice de la section : Heather McLellan, MEd, BN, RN, CEN, CFRN
Auteures : Margaret Dymond, BSN, RN, ENC(C) et Leanne Tyler, MR, RN, MHM, ENC(C)

1. Vous travaillez au triage et une civière vient de se libérer dans le département. Selon les lignes directrices de l'Échelle canadienne de triage et de gravité (ÉTG), lequel des patients suivants devrait se voir attribuer le score de triage le plus élevé et la civière qui est disponible ?

a. Un homme de 25 ans présentant une lacération de 10 cm à l'avant-bras droit causée par une lame de scie. Un pansement compressif est en place et le saignement est contrôlé. L'état neurovasculaire du membre supérieur droit est intact. Le niveau de douleur est de 4/10.

b. Un homme de 40 ans souffrant de « brûlures d'estomac » après avoir joué au hockey. Il est sorti prendre de la bière et des ailes après le match. Il arrive pâle et nauséeux, avec une glycémie de 11 mmol/L. Ses antécédents médicaux incluent le diabète et le tabagisme excessif. Il nie avoir consommé de la drogue.

c. Une femme de 70 ans présentant des signes possibles d'une fracture de hanche gauche à la suite d'une chute de sa hauteur au domicile. La jambe gauche est en rotation externe et semble raccourcie. L'état neurovasculaire du membre inférieur gauche est intact. Les signes vitaux sont stables ; elle est alerte et orienté. Le niveau de douleur est de 5/10.

d. Une femme de 28 ans présentant de légères crampes abdominales et des saignements vaginaux modérés à 13 semaines de gestation. La pression artérielle (PA) est de 100/60 mmHg, la fréquence cardiaque (FC) est de 94 battements/minute (bpm) et la température (Temp) est de 37,3°C. Elle est anxieuse, pleure et son mari est présent pour la soutenir.

2. Un enfant de 3 ans est amené au service des urgences (SU) par ses parents. Sa mère déclare qu'elle a de la fièvre et pas d'appétit depuis deux jours. Laquelle des constatations de l'infirmière de triage ci-dessous n'est pas une composante du triangle d'évaluation pédiatrique (TÉP) ?

a. Pâleur des muqueuses
b. Rétractions intercostales et substernales
c. Diminution du tonus musculaire et indifférence à son environnement
d. Diminution du débit urinaire pendant 24 heures

3. Lequel des résultats d'évaluation suivants est classique pour le glaucome aigu à angle fermé ?

a. Douleur oculaire sévère et soudaine
b. Douleur oculaire légère et progressive
c. Corps flottants gris
d. Éclairs de lumière

4. Lequel des énoncés suivants n'est pas une cause de rhabdomyolyse ?

a. Ingestion toxique
b. Trauma par écrasement
c. Hypotension
d. Surmenage

5. Parmi les éléments suivants, lesquels sont des facteurs de risque de grossesse extra-utérine ? (Choisissez tout ce qui correspond)

a. Antécédents médicaux d'ITSS (infections transmissibles sexuellement et par le sang)
b. Fécondation in vitro (FIV)
c. Tabagisme maternel
d. Anomalies chromosomiques

Réponses avec justification

1. Bonne réponse : B

Un patient de 40 ans qui présente des signes/symptômes suspects d'un événement cardiaque devrait se voir attribuer un score de triage plus élevé (niveau 2 de l'ÉTG) (Canadian Association of Emergency Physicians [CAEP], 2012, p. 18) et se voir attribuer la civière disponible. Ses antécédents médicaux de diabète et de tabagisme excessif augmentent également son risque de syndrome coronarien aigu (SCA) (Foley & Sweet, 2019, pp. 234-235).

Un patient de 25 ans qui présente avec une lacération de 10 cm pour laquelle le saignement est contrôlé et l'état neurovasculaire du membre est intact peut être assigné à la salle d'attente (niveau 4 de l'ÉTG). Son niveau de douleur (4/10 ; aiguë, périphérique), l'état neurovasculaire du membre et la stabilité hémodynamique globale doivent être réévalués conformément aux lignes directrices de l'ÉTG (c.-à-d. toutes les 60 minutes) (CAEP, 2012, p. 15).

Une patiente de 70 ans qui présente une fracture soupçonnée de la hanche à la suite d'une chute de sa hauteur et une stabilité hémodynamique peut également être assigné à la salle d'attente ; cependant, l'infirmière doit reconnaître le potentiel de détérioration chez cette patiente (niveau 3 de l'ÉTG) (CAEP, 2012, p. 18).

Une patiente de 28 ans qui présente des crampes abdominales légères et des saignements vaginaux modérés à 13 semaines (< 20 semaines) de gestation peut également être assigné à la

ISSN: 2293-3921 (print) | ISSN: 2563-2655 (online) | https://doi.org/10.29173/cjen125
Print publisher: Pappin Communications http://pappin.com | Online publisher: University of Alberta www.library.ualberta.ca/publishing/open-journals

salle d'attente. Comme ci-dessus, l'infirmière de triage doit reconnaître que les signes vitaux de la patiente sont proches des limites inférieure (PA) et supérieure (FC) indiquant le potentiel de détérioration. Le niveau 3 de l'ÉTG peut être approprié pour cette patiente (CAEP, 2012, p. 23).

Remarque : Ces scénarios de triage sont conçus comme un outil d'apprentissage uniquement. Le processus de triage est complexe et dynamique, avec des données de patient plus complètes sur lesquelles nous basons notre évaluation de triage et l'attribution du niveau d'acuité de triage.

2. Bonne réponse : D

Bien qu'une diminution de la production d'urine puisse être un signe de troubles circulatoires (par exemple, une déshydratation), la production d'urine elle-même n'est pas une composante du TÉP. Les trois composantes du TÉP comprennent : l'apparence générale, la respiration et la circulation ; cet outil aide l'infirmière à identifier le patient pédiatrique gravement malade ou à risque de détérioration soudaine (CAEP, 2012, pp. 38-39). Un patient pédiatrique présentant des signes d'altération de l'apparence générale (par exemple, perte ou diminution du tonus musculaire, indifférent à son environnement), de la respiration (par exemple, rétractions intercostales/sous-sternales) et/ou de la circulation (par exemple, pâleur des muqueuses) nécessite une intervention immédiate ou urgente.

3. Bonne réponse : A

Une douleur oculaire intense et soudaine est le signe principal du glaucome à angle aigu. Des maux de tête, des nausées et/ou des vomissements accompagnent souvent la douleur. Si elle n'est pas reconnue et traitée rapidement, l'augmentation de la pression intraoculaire peut entraîner des dommages permanents à l'endothélium cornéen, au cristallin, à l'iris, au nerf optique et à la rétine, provoquant la cécité. Une douleur oculaire légère et progressive peut indiquer des conditions oculaires telles qu'une conjonctivite et un corps étranger conjonctival/cornéen, avec une irritation qui s'aggrave progressivement (Woods, 2018, pp. 256-257). Les corps flottants gris (« flotteurs ») et les éclairs de lumière sont des symptômes de décollement de la rétine (Nolan-Kelley, 2019, pp. 374-375). En règle générale, observez ces quatre signes d'alarme ou symptômes cardinaux pour toutes les conditions oculaires : 1) changement dans la vision (c.-à-d. flou, cécité, diplopie), 2) changement dans l'apparence de l'œil (c.-à-d. nébulosité), 3) inconfort/ douleur et 4) antécédents de traumatisme oculaire (Nolan-Kelley, 2019, pp. 365-366).

4. Bonne réponse : C

L'hypotension n'entraîne pas de rhabdomyolyse. Si elle n'est pas corrigée, l'hypotension entraîne une diminution de la perfusion rénale et une lésion rénale aiguë prérénale (Baxter, 2020, p. 273). La rhabdomyolyse implique la destruction des cellules musculaires squelettiques qui peuvent à leur tour conduire à une lésion rénale aiguë (nécrose tubulaire aiguë). L'ingestion toxique (par exemple, la classe de médicaments « statines »), les blessures par écrasement (par exemple, le piégeage prolongé) et le surmenage (par exemple, les athlètes d'endurance) sont des causes potentielles de rhabdomyolyse lorsque la myoglobine est libérée dans le sang. Les fluides passent de l'espace intravasculaire à l'espace interstitiel, entraînant une hypovolémie et une diminution de la perfusion rénale (une lésion rénale aiguë prérénale) (Baxter, 2020, p. 275). Au fur et à mesure que la myoglobine s'accumule dans le sang, elle devient une toxine endogène compromettant la capacité des reins à l'éliminer du corps, ce qui mène à une lésion rénale aiguë intrarénale (Lough, 2022b, p. 654).

5. Bonne réponse : A, B, C

De nombreux facteurs peuvent contribuer à une grossesse extra-utérine, c'est-à-dire une grossesse qui s'implante en dehors de l'utérus. Parmi les facteurs les plus courants figurent ceux qui provoquent des anomalies dans les trompes de Fallope, telles que les cicatrices associées à la maladie inflammatoire pelvienne (Jordan, 2020). Bouyer et al. (2003) identifient le tabagisme comme un facteur de risque de grossesse extra-utérine avec une association potentielle entre le tabagisme et une réduction de la motilité tubaire. Certaines recherches font état d'un risque accru d'implantation ectopique avec la fécondation in vitro (FIV) et d'autres méthodes de procréation médicalement assistée (Tulandi, 2021). Les anomalies chromosomiques sont un facteur contribuant à l'avortement spontané (Jordan, 2020).

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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 biannually.

The editorial board invites submissions within the four domains of emergency nursing: clinical care, education, leadership and research. Topic areas of emergency nursing 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 indexed in online scientific journal databases 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 reports or profiles of:
  - an outstanding emergency nurse, department or program
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  - an ally to Canadian emergency nurses.

CJEN will publish manuscripts related to emergency nursing by non-nurse authors, but priority will be given to the Canadian emergency nurses.

Manuscripts submitted to the CJEN must include the following:

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  - the work has not been published and is not under consideration for publication elsewhere
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1. Title page with the following information:

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2. A brief abstract of the article is required for original research, systematic reviews and meta-analyses, to be on a separate page of 150–250 words. The abstract should provide the context or background for the study and should state the study's purpose, basic procedures (selection of study participants, settings, measurements, analytical methods), main findings (giving specific effect sizes and their statistical and clinical significance, if possible), and principal conclusions. It should emphasize new and important aspects of the study or observations, note important limitations, and not over interpret findings. Clinical trial abstracts should include items that the CONSORT group has identified as essential.

3. Acknowledgements

- Other contributing individuals and sources of research funding should appear in an acknowledgment section.

4. Body of manuscript (approximate maximum):

- Length, including tables, figures, and references:
  - new clinical practices = 8 pages, 2 tables or figures
  - research papers = 20 pages, 6 tables or figures
  - practice improvement papers = 12 pages, 4 tables or figures
  - scholarly projects = 12 pages, 2 tables or figures
  - reviews = 16 pages, 2 tables or figures
  - arts-informed scholarship = 8 pages, 2 tables or figures
  - letters to the editor = 4 pages, 1 table or figure
  - clinical case studies = 8 pages, including tables and figures.

Additional specific guidelines for Clinical Case Studies. Case Studies should be written in a similar format to include the following:

- Initial patient presentation
- Relevant history
- Relevant physical exam findings
- Relevant diagnostics
- Case progression
- Final case outcome
- Discussion/teaching points
- References.

Graphics that will enhance the case study are encouraged (e.g., photos, diagrams, diagnostics).

Authors must receive, and submit, the appropriate permission from the source(s) to use such images in the final publication. Information or graphics that uniquely identify the patient may only be included if written permission for publication in CJEN is received from the patient.

Case studies usually document the management of one patient, with an emphasis on presentations that include care given in an emergency/urgent care/pre-hospital setting and involving emergency nurses and/or nurse practitioners and /or emergency pre-hospital providers. Other features that will be of interest to the reader include cases:

- that are unusual, rare or where there was an unexpected response to treatment
- where new diagnostic tools were used
- that inform readers of new treatment and management options, including relevance to emergency care practice.

5. Implications for nurses

- Provide a separate page with three to five important points or clinical/research implications relevant to the paper. These will also be published with the paper and possibly in NENA social media (e.g., newsletters, Facebook, Twitter).

6. Copyright

- Manuscripts submitted and published in the CJEN become the property of NENA.

7. Submission

- Submit manuscripts electronically as a Word document to the editorial office and NENA national office (editor@nena.ca).
- Submit a signed Author Declaration. All authors must declare any conflicts of interest and acknowledge that they have made substantial contributions to the work and/or contributed substantially to the manuscript at the time of acceptance.

8. Review process and timelines

- All manuscripts are reviewed through a blinded, peer review process.
- Accepted manuscripts are subject to copyediting.
- Expected timeline from submission to response is approximately 8 weeks.
- Papers can be accepted as is, accepted with minor revisions, sent back for revisions and a request to resubmit, or rejected.
- If a paper is rejected, that decision is final.
- Once a manuscript is accepted, time to publication is approximately 3–6 months.

Canadian Journal of Emergency Nursing Preferred Style

- Format: double spaced, 2.5 cm margins on all sides. Pages should be numbered sequentially including tables, and figures. Line numbering should be used as well.
- Prepare the manuscript in the style as outlined in the American Psychological Association's (APA) Publication Manual 7th Edition. An exception from APA is the spelling (should be current "Canadian" use where applicable).
- Use only generic names for products, devices and drugs.
- Suggested format for research papers is background, methods, findings/results, discussion, and conclusion.
- The CJEN supports the SAGER guidelines and encourages authors to report data systematically by sex or gender when feasible.
- Tables, figures, illustrations and photographs must be submitted each on a separate page after the references. Illustrations should be computer-generated or professionally drawn. Images should be in electronic form and high resolution. The CJEN is only printed in black and white copy. If you want to publish a photograph of people you must include a consent from them. CJEN will not reimburse the author for any costs incurred for permission to use a graphic for publication.

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Note

The Canadian Journal of Emergency Nursing strives for excellence in publishing and adheres to the recommendations of the International Committee of Medical Journal Editors as well as the Code of Conduct and Best Practice Guidelines for Journal Editors. Feedback from authors, readers, reviewers and editorial board members about ways the CJEN can improve, are encouraged.

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