



**THE JOURNAL OF CANADA'S PHYSICIAN  
ASSISTANTS**

[HTTP://JCANPA.CA](http://jcanpa.ca)

**ABSTRACTS FOR THE  
MPAS CLASS 2019 CAPSTONE PROJECTS**



**University  
of Manitoba**

**Master of Physician Assistant Studies**

**Student's Capstone Articles located at**

<https://mspace.lib.umanitoba.ca/handle/1993/24066>

**Kelli Bell MPAS; M.Sc., B.Sc., PA,  
An Exploratory Study on Autoimmune Encephalitis and Comorbidities in the Manitoba  
Patient Population: 7 Cases and a Review of Literature**

Autoimmune encephalitis is a potential life threatening, rapidly debilitating disease that is often overlooked or late in diagnosis resulting in lengthy hospital stays and ICU admission.

Autoimmune encephalitis may be associated with comorbidities or potential “triggers.”

The patient population from the Health Sciences Center, Winnipeg, Manitoba, was studied to elucidate the comorbidities associated with autoimmune encephalitis concerning previously identified comorbidities from the medical literature. Charts were reviewed under classification of non-infectious encephalitis category for autoimmune encephalitis, from Jan. 2004-Jan. 2019. Seventy-three charts were evaluated.

Seven patients were identified or diagnosed as autoimmune encephalitis. Five out of seven patients were female (71%). The range in length of hospitalization varied from 7 days to 53 days. The mean length of stay (LOS) was 25 days. The two male patients had the most extended hospitalizations. Common comorbidities were depression, anxiety, neuropsychiatric symptoms, diabetes mellitus, with one patient exhibiting multiple concurrent autoimmune morbidities. None of the patients had positive findings for neoplasms, in contrast to the autoimmune encephalitis literature.

Autoimmune encephalitis remains a challenging and rare diagnosis. Triggers and risk factors predisposing one to this disease may be challenging to identify. However, attention to patients presenting with psychiatric symptoms in combination with autoimmune morbidities may allow prompt treatment, leading to improved prognosis and decreased hospital stays.

**Justine Bucko MPAS, B.Sc (Hons), PA**

**Evaluating the duration of dual antiplatelet therapy in ACS patients post-PCI:**

**A literature review**

Acute coronary syndrome (ACS) patients who undergo percutaneous coronary intervention (PCI) with stents require downstream dual antiplatelet therapy (DAPT) to reduce the rates of stent thrombosis and ischemic events. DAPT is recommended to continue for one-year in multiple guidelines. The use of dual antiplatelet therapy longer than one year is still debatable on whether the benefits of ischemic protection outweigh the risks of bleeding.

To evaluate randomized controlled trials (RCT) that assess downstream prolonged dual antiplatelet therapy (>12 months) in acute coronary syndrome patients treated with PCI and drug-eluting stents (DES).

A literature review by utilizing an online PubMed database for randomized controlled trials was conducted using the keywords "dual antiplatelet therapy" "dual antiplatelet treatment" "drug-eluting-stent." Only five randomized controlled trial studies conducted in the last 15 years met the selection criteria and were included.

One of the 5 RCT determined that prolonged dual antiplatelet therapy (>12 months) significantly reduces the rates of major cardiovascular events (MACE) such as all-cause mortality, myocardial infarction (MI), and cerebrovascular accident (CVA), as well as significantly reduces rates of stent thrombosis. However, 3 of the 5 RTC determined that DAPT prolonged dual antiplatelet therapy will significantly increase the rates of moderate to severe bleeding in patients.

ACS patients who undergo PCI with drug-eluting stent implantation can benefit from the use of prolonged dual antiplatelet therapy to reduce major cardiovascular events. However, this would be at the cost of moderate to severe bleeding. More large scale RCT with longer follow-up are needed to determine the definitive duration of prolonged dual antiplatelet therapy.

**Kieran Derksen, MPAS, B.Eng., PA**  
**Assessing the Use of Tapered Titanium Stems in Treating Periprosthetic Fractures**

Periprosthetic fractures are a late complication of total hip arthroplasty. There are a variety of surgical techniques and femoral component designs that can be used to treat them depending on surgeon preference and fracture type. Tapered titanium stems have shown promising results in recent studies for the treatment of periprosthetic fractures.

The objective of this retrospective study was to investigate the efficacy of using tapered titanium hip stems in a revision arthroplasty procedure for periprosthetic fracture repairs by assessing survivorship, radiographic findings, and self-reported functional outcomes at a post-operative period of at least two years.

A total of 34 patients who received treatment for periprosthetic fractures between May 2008 and January 2016 were assessed for the use of tapered titanium stems. Survivability was determined, and radiographs were evaluated for fracture union, stem subsidence, and osseous restoration. The Oxford questionnaire and satisfaction survey were used to determine quality of life, functionality, and pain scores.

Three patients required early revisions after surgery for either trochanteric fracture and dislocation (5 months), infection (10 months), or aseptic loosening (4 months). The complete union was found in 88% of cases, and bone stock was unchanged or increased in 91% of cases. Stem subsidence occurred in 44% of cases with a mean migration of 2.6 mm. Although there was a high occurrence of subsidence, the majority of cases measured less than 4 mm, and subsidence did not correlate with survivorship or clinical outcomes. The mean 2-year Oxford score was 37.8 of 48, and on average patients were either satisfied or very satisfied.

This study reports encouraging radiographic and clinical results with a minimum 2-year follow-up for the treatment of periprosthetic fractures with tapered titanium femoral stems.

**JENNIFER FORBES, MPAS, BA, PA**

**Starting Strong: Exploring Experiences of Prenatal Care among First Nations Mothers**

Studies have revealed that Indigenous women experience a higher incidence of adverse birth outcomes and are more likely to receive inadequate prenatal care. Few studies have examined the opinions of First Nations women concerning their prenatal care.

This study used an individual, semi-structured interview-based qualitative approach to identify themes related to First Nations women's current experience and their thoughts regarding prenatal care going forward. Themes related to overcoming barriers including transportation issues and appointment accessibility were cited. Privacy concerns and information-sharing revealed a desire for respect when accessing care (four participants).

There is an appreciation for the care received at the Nursing Station despite some of barriers described. There is interest and need for dedicated space and staff to deliver prenatal programming, and greater information sharing related to travel for birth and postpartum depression. A one-on-one approach was appreciated.

This study contributes to first-person narratives of the prenatal care experiences of women living in a northern First Nations community. As in existing literature, access to transportation, and appointment availability were reported as common barriers to prenatal care. Going forward, additional research surrounding perinatal outcomes and the barriers to accessing prenatal care among women who did not seek prenatal care would add additional context.

*Indigenous peoples are a "collective name for the original peoples of North America and their descendants." First Nations, Inuit and Metis people are all recognized in the Constitution of Canada and are distinct and unique peoples. (Government of Canada. Indigenous peoples and communities)*

**Lauren Girard, MPAS, BSc, PA**

**Evaluation of Physician Assistant Students' Perceived Preparedness in Providing Health care to people who may identify as Lesbian, Gay, Bisexual, and Transgender**

People who identify as lesbian, gay, bisexual, and transgender (LGBT) face barriers to accessing appropriate, non-discriminatory culturally-safe health care. An important strategy to address the disparities experienced by the LGBT population is to ensure the preparedness of students graduating from health care professions. Canadian Physician Assistant students' level of preparedness in caring for LGBT+ patients is unknown.

This study used an online survey distributed to students and alumni of the Master of Physician Assistant Studies at the University of Manitoba to characterize the LGBT+-related health curriculum and to determine Physician Assistant students' self-reported preparedness in providing care to patients who identify as LGBT+. We interview a curriculum and program developer to characterize the curriculum and confirm survey findings.

Of 34 survey participants, 32 were in the final analysis. Most students/alumni rated the LGBT+-related curriculum as "fair" or worse. The topics that students and alumni felt most prepared to address were HIV, sexually transmitted infections, alcohol use, tobacco and other drug use, safe sex and gender identity. They felt least prepared addressing sex reassignment surgery, transitioning, adolescent health, disorders of sex development, and body image.

Finally, by using our findings as a needs assessment, we proposed recommendations for the inclusion of LGBT+-related health content in the Master of Physician Assistant Studies program at the University of Manitoba.

**Sheryl Kirwan PhD, MPAS, BSc, PA**

**Physician Assistants in Primary Care: Making an Impact in Manitoba**

Physician Assistants (PAs) are employed in various sites in Manitoba and several specialties and subspecialties including primary care. This study aimed to describe the work PAs in primary care are doing, explore the demographics of their patients, assess their job satisfaction, and examine their contributions to healthcare.

Several questionnaires were constructed and distributed to PAs who graduated from Master of Physician Assistant Studies at the University of Manitoba and are currently working in Primary Care. The questions asked were divided into the reasons the PAs specialized in primary care, their practise environment, patient population, schedules, job satisfaction, professional concerns, and their contributions to healthcare.

The results of the primary care PA survey show that in Manitoba's Primary Care PAs generally chose to enter primary care for the breadth and challenge of the practise. They are happy to remain in this speciality, and they are working in a variety of settings. Many of the PAs have variations in the numbers of physicians they report to and the type of patients they serve.

The demographic data shows that PAs are generally dealing with patients of both genders and from a broad spectrum of minorities and socioeconomic levels. Overall the job satisfaction of the PAs is exceptional, and their satisfaction with their patients, supervisory physicians, and other staff and health care providers is outstanding.

**Amber Krentz MPAS, BSc., PA**

**Evaluating the Efficacy of CBT Based Mental Health Apps in the Treatment of Depression:  
A systematic literature review**

Depression is a common mental health disorder afflicting a significant proportion of the population and a negative impact on a person's wellbeing. Cognitive Behavioral therapy (CBT) is a current first line treatment for depression and is typically delivered in person by a trained health care provider. There is a growing demand for CBT services and a shortage of health care providers trained in CBT contributes to long wait times for accessing treatment. Other methods to deliver CBT have become of interest, such as self guided CBT based smartphone applications. There has been a rapid expansion in the number of these applications available, with few studies conducted to determine their efficacy. Health care providers need to be aware if this intervention is a reliable modality suitable for patients who struggle with depression. The purpose of this review was to assess the extent of research findings regarding the effectiveness of CBT based smartphone applications in the treatment of depression.

A literature search was performed using online databases PubMed, Scopus and PsycINFO. Relevant articles were screened and subjected to specific inclusion and exclusion criteria to determine eligibility. Of the five articles identified as eligible and reviewed, four studies reviewed demonstrated a significant reduction in depressive symptoms for their application intervention group. Findings were limited due to inconsistencies between studies making generalizability of results difficult to interpret.

CBT based smartphone applications for the treatment of depression appear to have some impact in reduction of depressive symptoms. However, due to limitations in study characteristics, it is not possible to confidently draw conclusions about their efficacy. Further research with improved, larger scale trials should be conducted to provide more substantial levels of evidence. Initial findings are promising that this modality may be used to reduce depressive symptoms in the appropriate subtype of patients who struggle with depression.



**GRAHAM MADDAFORD, MPAS, B.Sc., PA**  
**THE EFFICACY OF HISTORY AND PHYSICAL EXAM FOR DIAGNOSIS**

This literature review analyzes the reliability of physical exams, along with signs and symptoms when determining the diagnosis.

A literature review looked at the reliability of the Lachman test, the S3 heart sound, and the Alvarado score for aiding in determining the diagnosis. Several procedures were followed to ensure a high-quality review of the literature on physical exam/scores specificity, sensitivity and interprofessional reliability. Three databases included PubMed, Google Scholar, and the University of Manitoba Libraries' search engine. The reference's in each article identified lead to additional articles. A meta-analysis was not conducted because the focus of the studies, method of data analysis, subject area and types of physical exam finding varied considerably. The lack of assessment precision rendered a meta-analysis essentially meaningless.

The Lachman test was useful for ruling in ACL disruption with specificity from (0.91- 0.97) and poorly for ruling out ACL disruption with a sensitivity ranging from (0.70-0.87) The presence of an S3 heart sound is a highly specific test for the presence of heart failure with a specificity ranging from 0.88(18) to 0.99(9) and a patient with an S3 there is an LR of 11 that the patient is experiencing heart failure. In terms of diagnostic accuracy, the Alvarado score cut of a point off five was excellent for ruling out appendicitis with sensitivities reaching 99% overall with each subgroup being 96% men, 99% woman, and 99% in children.

The review showed that physical exam findings alone with clinical suspicion could not replace advanced imaging testing and specific blood work testing. Utilizing physical exam findings for clinical suspicion should remain in standard practice when examining patients and should be considered before ordering multiple tests. Physical exams provide essential information before the laboratory or diagnostic results are returned and support the diagnosis.

**Jeremy Peabody, MPAS, BSc, PA**

**Evaluating the Need for Physician Assistants in Sport and Exercise Medicine**

Injuries in sport are a common occurrence. When these injuries occur, it can affect the patient outside of sport. Therefore, the 19.8 week wait time to see a specialist in Manitoba can be more devastating than the injury itself. This paper aims to investigate the impact of implementing a physician assistant within existing sport and exercise medicine teams.

A questionnaire was sent off to six sport and exercise medicine physicians to understand the perceived scope of practice of a physician assistant, barriers to hiring a physician assistant, and preferred supervisory relationships. Each provider's scope of practice was compared to identify strengths and weaknesses. A literature review was performed to evaluate physician assistant cost effectiveness and physician assistant's effect on wait times.

The sport and exercise medicine physicians showed a limited understanding of the physician assistant's full scope of practice indicating that only under direct supervision would the PA ants be trusted with the entire physicians' scope of practice. Those physicians surveyed indicated this would likely change with time and improved familiarity. The most commonly expressed barrier to hiring a physician assistant was cost/funding. In primary care, surgical and emergency cases, physician assistants are shown as cost effective if utilized to their full scope of practice. In the surgical setting, physician assistants showed the most significant reduction in wait times.

Physician assistants have a broad scope of practice enabling them to extend the care of the attending physician and in some cases act as substitutes in the field of sport and exercise medicine. Since Manitoban sport and exercise medicine physicians do not know the entire scope of practice of physician assistants, this limits their ability to improve cost and wait times of the already existing sport and exercise medicine team.

**Vishnu Persad, MPAS, BSN, PA, RN**

**Epinephrine, the standard of care in cardiac arrest in ACLS. Does it increase survival and improve neurological outcomes?**

During cardiopulmonary resuscitation (CPR), epinephrine administered intravenously every 3-5 minutes is the recommended drug of choice per ACLS guidelines determined by the International Liaison Committee on Resuscitation (ILCOR), citing a higher likelihood of ROSC. However, recent evidence implies there may be impaired neurological outcomes when administering epinephrine to cardiac arrest patients out of the hospital.

To evaluate if epinephrine can increase return of spontaneous circulation, increase survival to discharge, and promote functional neurological outcomes in patients who sustain an out of hospital cardiac arrest event. Furthermore, to determine whether initial cardiac rhythms during cardiac arrest respond differently to epinephrine administration.

A literature review of randomized controlled trials was conducted using PubMed, Google Scholar and Cochrane Library databases. Key words used include but were not limited to: cardiac arrest, epinephrine, adrenaline, and out of hospital cardiac arrest. A total of five were selected based on inclusion criteria.

Three of the five RCTs demonstrated an increased likelihood of ROSC. However, there were conflicting results as to whether epinephrine increased survival to discharge. One RCT found epinephrine administration worsened neurological outcomes. There were inconsistent findings to discern whether different cardiac arrest rhythms respond differently to epinephrine administration.

The justification of epinephrine's use in ACLS is based on inconsistent data limited to trials with small enrollment. Further large-scale high quality RCTs are needed to determine whether help or harm is done to patients in imminent danger of death.

**Tammy Pham, MPAS, MSc, PA**

**Assessing Quality of End-of-Life Communication and Documentation in Intensive Care Patients using a Conceptual Framework and Quality Indicators**

Most deaths in Canada occur in hospitals, and almost one in five occurs in intensive care units. The goal of this study is to assess the quality of end-of-life (EOL) communication in two critical groups in intensive care in Winnipeg: (i) those who live in personal care homes (PCH) and (ii) those with severe cardiovascular or respiratory failure placed on external life support extracorporeal membrane oxygenation (ECMO).

The database used to identify patients meeting inclusion and exclusion date was the Winnipeg Adult ICU database of patients from the Health Sciences Center (HSC) and Saint Boniface Hospitals (St. B). The Four ICUs in Winnipeg selected for the review included HSC Medical Intensive Care Unit (MICU), the HSC Surgical Intensive Care Unit (SICU), St. B Intensive Care Medical Surgical (ICMS) unit, and St. B (Intensive Care Cardiac Sciences unit) ICCS.

Two domains of EOL communication were studied: Goals of Care Discussion and Documentation. We used a validated conceptual framework for the quality of EOL communication and documentation, operationalized by 18 specific quality indicators. We performed a retrospective, manual review of hospital charts (107 charts from the PCH subgroup and 103 charts from the ECMO subgroup) to extract these 18 quality indicators.

In conclusion, we assessed the quality of end-of-life (EOL) communication and documentation in two subgroups of intensive care unit (ICU) patients: (i) those who reside in personal care homes (PCH) and (ii) those with severe respiratory failure placed on extracorporeal membrane oxygenation (ECMO). Overall the quality of EOL communication and documentation was poor or good with the need for improvement in GOCD and for patients who received ECMO support. Addressing these gaps in EOL care is essential to improve patient-centered care and reduce harm for these especially ill or elderly patients, while significantly lowering healthcare costs.

**Megan Stefanson MPAS, PA**

**Physician Assistants as Hospitalists In Canada: A Literature Review**

Physician Assistants (PAs) are currently working as hospitalists in Canada, and there is an increasing demand to create more PA hospitalist positions. There are various stressors on the Canadian healthcare system, such as fiscally limited resources due to a publicly funded model as well as physician burnout. A possible solution may be the implementation of hospitalist PAs.

Articles examined for this literature review were identified using a PubMed search of the term “physician assistant hospitalist,” through manually searching journals, and an examination of references from relevant papers. Inclusion criteria for articles in this review were as follows: primary research, those written in English, focused on PAs, as hospitalists in an inpatient setting.

The PubMed search resulted in a total of 114 articles, of which five were relevant, and four articles through references and manual exploration of journals for a total of nine articles.

The limitations identified in this review include the limited data on PAs, the limited number of PAs in Canada, and no Canadian studies that examined PA hospitalists found. Additionally, none of the performed were randomized control trials, and all were retrospective chart reviews.

Stakeholders in the Canadian healthcare system include the economist, administrator, physician and patient. PAs provide accountability through a cost-effective, resource efficient means. Physicians can be pleased by PAs providing safe, high-quality patient care. These elements contribute positively to fostering the integral trusting relationship between physician and PA. The studies demonstrated that Patients are satisfied with their care by PAs.

Based on the data review, PAs are economically efficient and patients are satisfied with care. PAs provide quality, safe patient care, allowing for a trusting relationship between PA and physician and patients.

**Margaret Stromecki, MPAS, PA**

**MALIGNANT BRAIN TUMOR DIAGNOSIS IN MANITOBA: UNDERSTANDING PATIENT AND CAREGIVER PERSPECTIVES**

About 55,000 Canadians are living with a brain tumor today. Brain tumor diagnoses are preceded by the onset of headaches, nausea, vomiting, or seizures. Malignant brain tumors have a poor prognosis and are frequently associated with neurocognitive deficits. Within the first eight months after a new malignant brain tumor diagnosis, 15-20% of patients develop a depressive disorder. The capability of patients to cope and understand a brain tumor diagnosis is dependent on several factors, including their physical, cognitive and psychosocial health. In this study, we sought to determine which factors contribute to newly diagnosed malignant brain tumor patient and caregiver needs after diagnosis.

This study conducted interviews with two newly diagnosed malignant brain tumor patients and their caregivers to qualitatively explore the patients' and caregivers' perspectives about the diagnosis before and after tumor resection at the Health Sciences Centre (HSC). The software program NVivo was used to help analyze and code central themes within the interviews.

Findings resulted in 3 central themes: (1) Information preferences in newly diagnosed malignant brain tumor patients vs. caregivers, (2) Patients managing family, changing quality of life, and healthcare provider visits, and (3) Caregiver responsibility. Our results demonstrated that patients and caregivers differ in their care needs and wants during the diagnostic phase of a malignant brain tumor.

These interviews show how complex patient and caregiver needs are how difficult they can be to address with a new brain tumor diagnosis. For both newly diagnosed malignant brain tumor patients and caregivers' quality of life changes dramatically. Screening models aimed at identifying patient and caregiver needs would be helpful to ensure better health-related quality of life (HR-QoL) in brain tumor patients and their caregivers.

**Derek Whitehill MPAS, PA**

**Lifestyle based remission in type 2 diabetes: Implications for clinical practice**

Type 2 diabetes is a chronic and progressive disease. This paper evaluates three emerging methods of achieving remission of type 2 diabetes through dietary lifestyle interventions. This paper reviews the efficacy, safety, adverse effects and implementation of 'very-low' energy diets, low-carbohydrate diets and intermittent fasting on type 2 diabetes and the need for strategies for medication deprescribing guidelines.

A literature search for English language publications was conducted using PubMed, and Google Scholar with multiple MeSH keywords including "type 2 diabetes" plus "remission", "reversal", "intermittent fasting", "low energy diet", "low carb diet", "time restricted feeding", "prolonged fasts", "medication deprescribing", "Deprescribing", "Ramadan", "very-low energy", "low carb", "intermittent fasting", "time restricted feeding" were used. The searches filtered for human studies and only randomized clinical trials, meta-analyses, case studies included.

The very-low energy based on The Diabetes Remission Clinical Trial (DiRECT) demonstrated remission in 46% of participants after one year, with 74% taken off all anti-hyperglycemics. Low carbohydrate intake (<30g per day) in the Virta Health study demonstrated 83% of participants continuing to the one-year mark. Average HbA1c decreasing from 7.6 to 6.3 %, with an average weight loss of 13 kg. 94% of them reduced or eliminated insulin use. Intermittent fasting has been shown in literature to promote weight loss and glycemic control since the 1970's, however recent case studies show patients removed of 70+ units of insulin daily in 5-18 days.

While there is not yet a consensus 'best-way' to achieve remission of type 2 diabetes, nor a guarantee that it will work for all patients, there may need not be one. Practitioners need the knowledge to discuss a variety of potential options with patients and assist them with the medication deprescribing that may be necessary for their individual needs.